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Introducing Khulna City Medical College, Khulna

KCMC essence of pure knowledge:

Khulna City Medical College (KCMC) convening and nurturing a diverse community of individuals dedicated to promoting excellence and leadership in Medicine and Science through education, research, clinical care and service. KCMC is committed to strongly supporting all in our community to ensuring an inclusive learning and working environment, and to a fair and more equitable society for all. We have a zero tolerance approach to discrimination, harassment and bullying.

The college has modern facilities and the tertiary care hospital provides medical care to patients from surrounding areas and also serves as a referral center for complex cases. The college has a faculty of highly qualified and experienced teachers who are dedicated to providing quality medical education to their students. This is one of the best medical colleges in the region. It is affiliated by Sheikh Hasina Medical University, Khulna and by Bangladesh Medical and Dental Council.

Overall, Khulna City Medical College is a reputable institution for medical education in Bangladesh and attracts students from home and abroad. In addition, Khulna is an important city of Bangladesh with a rich cultural heritage, beautiful natural scenery and a growing economy.

Location:

Khulna City Medical College is a private medical college located in the South-western part of Bangladesh, about 190 kilometers away from Dhaka and in close vicinity of Sundarbans, the largest mangrove forest in the world which is recognized as UNESCO world heritage site. Khulna is the third largest metropolitan city in Bangladesh, located on the banks of the river of the Rupsa and Bhairab rivers. Khulna has rich cultural heritage and historical landmarks and monuments. The city is also famous for its delicious sea foods, particularly different varieties of prawns.

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KCMCH is governed by its governing body which is headed by Dr Syed Abu Asfar, Chairman and Managing Director of KCMCH. The college section has an academic council led by Principal Prof Dr Bidhan Chandra Goswami.

Aims:

Khulna City Medical College (KCMC) aspires to achieve national and international recognition for its capability to produce physicians with the essential knowledge, skills, and professionalism to successfully continue their profession and pursue a career to serve the nation through health promotion, prevention, treatment and medical research. Bangladesh has achieved primary health care for all, but we are lacking in tertiary care which will be our intention to educate students who can provide tertiary health care to all.

Objectives:

The mission of KCMC is to produce competent, compassionate and dedicated health care professionals from home and abroad who

- Consider the care and safety of the patients, their first concern
- Established and maintained good relationship with patients, their attendants and colleagues
- Are honest, trustworthy, and act with integrity
- Are capable of dealing with common diseases and health problems of the country and are willing to serve the community, particularly the rural community; but at the same time acquire firm basis for future training, service and research at both national and international level
- Are committed to keep the knowledge and skill up to date through 'continuous professional development' all through their professional life.

Prof. Dr. Bidhan Chandra Goswami
Principal & Professor of Cardiology
Khulna City Medical College

About the Journal

Aims and Scope

Khulna City Medical College Journal (KCMCJ) aims to publish original articles, review articles, conference abstracts, letters to editor and case reports pertaining to clinical and surgical practice. The journal invites manuscripts of significant research findings from all fields of medical science. Any research study that prospectively influences the outcome of human health is welcome for publication in KCMCJ.

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- The procedure of the study in such a detail so that other worker can reproduce the results.
- Previously published methods (if applicable) with appropriate citations

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All submitted manuscripts will be checked initially by the editorial board members before proceeding to the review. Manuscripts violating the rules and regulations set by the journal committee will be disapproved and returned to the author for correction. Checked manuscripts will be forwarded to the reviewers for double blind peer review according to the expertise selected by the editorial board. Accepted articles will be the permanent property of Khulna City Medical College Journal and should never be reproduced anywhere without the written consent of the publisher.

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Editorial**Litigation, Medical Indemnity and Doctor's Liability for a Lawsuit**Hossain S.M.¹, Rahman A.²**A. Introduction**

The Medical Profession is a noble profession from ancient times. Medical care is an effort or activity to prevent, treat and restore health based on the relationship between doctor and patients¹. Patients' rights must be respected by all the health personnel ethically and professionally. At the same time physicians and other health workers deserve legal protection in accordance with the limits determined by medical ethics². Doctors and other health providers are like other ordinary human beings and full of flaws. There may be events of mortality and morbidity even after all possible professional standard of good medical services.

The noble profession of medical services is guided by two fundamental principles. First one is the 'willingness to do good for the patients' whereas the second one is 'No intend to harm, injury or even potential damage to a patient.'

The legal relationship between doctor and patient is actually an agreement between health providers and health receivers. For diagnostic and therapeutic procedures, doctors are obliged to give explanations of possible adverse outcomes related to the procedures. Patients have every right to ask for clarifications. If the health receivers clearly understand and agree with the explanations, they should sign an informed consent sheet (for approval of medical actions). Informed consent is an important medicolegal document that can be useful as defense against possible claims or demands from patients and their families³.

Negligence in medical service may harm the patients. Any misconduct by the health service receivers is also unlawful. After agreement between patient and doctor, both parties have the legal right for lawsuit proceedings for negligence, and misconduct⁴. Furthermore, malpractice can be categorized as an act of criminal and/or civil offence in many countries.

B. Litigation – Bangladesh and global perspectives:

Medicolegal claims continue to rise in Bangladesh and other countries of the world also. Recently, there were so many litigations against doctors specially surgeons as well as the anaesthesiologists. There are many lawsuits against

many hospitals also. We aim to focus on the causes of increasing claim, its financial impacts and effects of litigation on health service and individual surgeons.

- (a) **Greater public awareness:** With increasing facilities of social media, people tend to search for medical or surgical events. If there is any suspected case of inappropriate treatment, they like to claim. Additionally, the family members often do not hesitate to be violent against doctors at hospitals.
- (b) **Increased availability and access to legal help:** Advisory committee for lawsuit against doctors, conditioned fee arrangements, funding for lawsuit from insurance policy are more available than before.
- (c) **Common therapeutic and diagnostic problems**
 - i) **Delayed diagnosis:** Delayed diagnosis may lead to inappropriate treatment and fatal outcome, i.e. child birth. In some other surgical conditions, inappropriate resuscitation and delayed surgical intervention may be life threatening – where 'one golden hour' is very important for the patients.
 - ii) **Integrated consent:** Proper explanation regarding the disease, nature of surgery and informed consent are vital issues in surgery. Therapeutic agreement or consent is a written document that should be explained to the patients and his/her relatives. Inadequate information may be taken as clinical negligence or malpractice
 - iii) **Communication issues:** During medical or surgical emergency, a delay in treatment or due time consultation of respective specialists may be harmful for the patients with fatal outcome. This communication gap leads to events of lawsuits against the doctors.
 - iv) **Treatment problem:** Surgical errors like iatrogenic injury, unnecessary and inadequate operations, wrong surgery of wrong sides, instrumental hazards or retained surgical equipment or linen/mop/gauge etc., are the leading causes of post-operative surgical complications

- v) **Inappropriate delegation:** Every individual surgeon has some limitation of knowledge and skill. Before planning any surgery all the help lines should be available for complicated surgical or pathological involvement of multiple organs.
- vi) **Medical error:** Accidental wrong medicine like muscle relaxant, antibiotic, drugs are known to cause allergic reactions to patients etc.
- vii) **Lack of medical indemnity:** No doctor should practice without indemnity cover. With the act of indemnity, violence against doctors has been reduced to near zero. However, the patient will not be disadvantaged if they make a claim about clinical case.

viii) Broker based hospitals/clinic practice leading to maltreatment:

Business of brokers in public hospitals is a barrier to access to quality primary care in our country but this type of business aims to reduce the cost of patient care in many developed countries⁵. The shortage of logistics and mismanagement in public hospitals enable a syndicate to allure patients to other private clinics with promise of better treatment. In many cases brokers exploit money by offering beds or cabins along with food and other services in public facilities. Misleading patients to private clinics and unnecessary surgical procedures without proper indications result in maltreatment among the vulnerable population groups.

C. Medical negligence – law and practice in Bangladesh:

A deviation from accepted standard of medical care by a medical professional is defined as medical negligence. Medical negligence or malpractice may cause huge damage to the patients which is punishable by the law of Bangladesh.

- i) **Constitutional law:** Bangladesh constitution has declared ‘right of life’ (in article 32) as a fundamental right where the state has been obligated to ensure the basic necessities of life including food, clothing, shelter, education and medical care. Actually, the constitution does not provide any special rights to the patients⁶.

- ii) **Criminal law:** If the victims die because of hasty decisions or negligent act by the medical practitioner – the victim’s representatives may make a lawsuit against the practitioner under section 304 (A) of penal code.
- iii) **Civil law:** It is the civil suits for compensation under section 9 of code of civil procedures. Here the codes have jurisdictions to try the suits as civil nature, not as special one. The court will find out whether there is any breach of duties, lack of proper care or any careless conduct for treatment⁷.

Special cases

- a) **The ‘consumer rights protection act, 2009:** is another weapon for the claimant. This act is also applicable for any service like transport, electricity, hotel, private laboratories etc.
- b) **Contact act 1872:** Under the act, if there is any ‘contravention of contact’ the party who suffers any loss, is entitled to receive compensation of damage or loss.
- c) **The medical and dental council act 1980:** When medical professional is found guilty of misconduct in respect of his profession, the council may refuse to permit the registration of that person under section of 28(1).

Actually, no balanced legal framework mentions the specific rights of victimized patient. In fact, no specific authoritative judgments of Bangladesh supreme court are constructed for medical negligence and medical malpractice.

D. Medical Indemnity:

Medical indemnity is a specific area of insurance that relates primarily to malpractice or negligence in the medical profession so that the patients can get advantage if they make a claim for any mishaps in medical care. Security or protection against a loss or other financial burden or exemption from legal liability for one’s actions. Medical professionals play an essential role in society by providing healthcare services. They need legal protection so that they can provide quality care without the fear of legal consequences or harassment. There are well established medical indemnity rules in high-income countries like UK, USA etc. Any claim by patient or his family is solved according to the indemnity rule

and guideline of General Medical Council. In India, doctor and other medical professionals get legal medical protection provided under various laws, regulations and guidelines. Primary legal framework governing the practice of medicine in India is the Indian Medical Council Act, 1956.

Medical Indemnity in UK: Doctors practicing in UK maintain the guideline under section 63 of the 'Duties of a Doctor' as published by GMC. No doctor can practice without indemnity insurance; therefore, every patient get compensation if they can prove the mistake, harm or any negligence in clinical care. All hospitals, doctors and other professionals are solely under cover of the National Health Service (NHS). For hospitals and private practitioners not covered by NHS, indemnity is provided by medical defense organizations like Medical Defense Unit (MDU), Medical Protection Society (MPS) and Medical and Dental Defense Unit of Scotland (MDDUS).

E. Defense of Medical Litigation

All medical practitioners and surgeons are likely to become involved in some form of medical litigation during their career. When any physician or hospital gets a solicitor's letters. Concerned doctors or hospitals are obliged to provide a copy of the medical records with a release form signed by the patient. The normal time limit for claim is within three years from hospital leave. In contrast, there is no limitation period for children or mentally incapacitate patient. For every case claimant must fulfil three criteria as following:

- 1) Hospital/Doctor had taken the responsibility of the case.
- 2) There was a breach in the duty and the given treatment was below standard.
- 3) Provided below standard treatment led to harm or loss for the claimant.

The investigation team should respect the 'Balance of Probabilities' that means there is at least 50% chance of harm by negligence. Other than court, some legal bodies can investigate the case like respective organizations, BMDC or government's high authorities. After getting the notice of legal proceeding, the hospital or doctor can respond in the following ways-

- 1) Deny the claim entirely with explanation.
- 2) Admit some parts of claim and deny remaining part.
- 3) Accept the liability and offer to settle the case as per law.

Most of the cases are settled by the national constitutional body or organization. IN UK, only 2% cases actually reach the court for settlement. For a lawsuit, a defendant should have clear and detailed evidence of hospital record, hospital or national guideline, supportive literatures, expert opinion and witness. On the view of that, knowledgeable input from the defending clinician is important for the defense team. After a litigation the average length of litigation process varies from country to country. In UK, final verdict takes average 18 months while in Saudi Arabia, the duration is two years or more. However, such studies were not conducted in Bangladesh so far^{8,9,10}.

F. Conclusion

Medical litigation is increasing globally. Most of the lawsuits are against different surgical faculties. Every hospital or doctor are obliged to provide hospital documents in a lawsuit and defend the case accordingly. For a good defense of litigation, no doctor should practice without indemnity cover. To avoid litigation, proper record keeping, communication, standard medical and surgical care, informed consent, team performance with patients and colleagues are necessary. All doctors should practice remembering the medical ethics, attitude and communication and standard medical care guideline.

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Original Article

Relevant Factors and Challenges of Management of Idiopathic Granulomatous Mastitis: A Troublesome Condition in Surgical Practice

Hossain SM¹, Dhali DK², Parvin M³, Tithi SR⁴

Abstract

Back ground: Idiopathic granulomatous mastitis (IGM) is a challenging situation in surgical practice. Diagnosis is difficult, treatment is even more difficult. Despite of adequate treatment, the usual recurrence and relapse rate is relatively high. Therefore, it can be considered as a troublesome condition.

Objective: This study was conducted to assess the different clinical aspects- clinical feature, diagnosis, treatment, recurrence, relapse and overall outcome in our surgical practice.

Methodology: This study was a cross sectional study with a total number of 630 cases of idiopathic granulomatous mastitis (IGM) in tertiary level hospitals and in private chambers in Khulna. Study period was from January 2013 to November 2022 on the basis of convenient purposive sampling. Ethical clearance was taken from the Ethical review committee of Khulna City Medical College Hospital.

Result: In this study, mean±SD of age of affected women was 34.5±5.5 years. Peak incidence was seen in 30-40 years age group. Incidence was 88.1% at reproductive age group. Breast lump was the most common presenting symptoms (in 68.6% patients). In 23.8% cases, the disease was bilateral. In 37.8% cases, central quadrant involvement was seen and in 15.1% cases, multi-quadrant involvement was found. Most often, diagnosis was done on the basis of “triple assessment”. Surgical treatment was needed in 47.6% patients. Wide local excision was done in 34.1% cases. Recurrence and relapse rate were relatively higher following conservative treatment.

Conclusion: Idiopathic granulomatous mastitis is common in younger and middle-aged women with higher incidence rate at reproductive age. Breast lump is common symptom. Frequently, central quadrant is found. Bilateral and multi-quadrant involvement is also common. Surgical intervention may be required; though, recurrence and relapse are not an uncommon event even after surgery.

Keywords: Idiopathic granulomatous mastitis, IGM, clinical feature, diagnosis, treatment, surgery, recurrence, relapse.

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Introduction

Idiopathic granulomatous mastitis (IGM) is a rare inflammatory condition of the breast with unclear etiology and variable treatment options^{1,2}. Commonly the peak incidence is seen in 3rd decades with women of child bearing age. Event of incidence trends to fall with age. Clinical presentation usually may vary widely depending

on many factors³. The usual presenting symptoms of breast mass, pain, and erythema suggest an inflammatory or neoplastic process^{4,5}. Axillary lymph node involvement is not a cardinal feature like in carcinoma of breast, though this may occur seldom³. However, mammography and ultrasound findings are nonspecific and histopathologic

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features, which include non-caseating granulomatous changes centered on lobules, are notable for a distinct absence of neoplastic changes⁶. While the etiology of this disease remains obscure, the majority of cases of IGM are aseptic, and an autoimmune pathogenesis of the disease has therefore been endorsed^{7,8}.

There is significant controversy regarding the resilient way of management. Symptomatic treatment, analgesic, anti-inflammatory medication, steroid plays major role in case of conservative treatment¹. However, major challenge is recurrence and relapse after treatment^{9,10}. Surgery in form of lumpectomy, mastectomy or wide local excision is usually reserved for recurrent and refractory cases. However, after surgery, the chance of recurrence and relapse is also common^{2,5}. In this study, we are going to depict different clinical, diagnostic and treatment aspects of IGM in our surgical practice.

METHODS AND MATERIALS:

This study was conducted as a cross sectional study with a total number of 630 cases of idiopathic granulomatous mastitis (IGM) in Khulna Medical College Hospital, Khulna City Medical College hospital, Bangladesh, and in private chambers from a period of January 2013 to November 2022. Study population was selected by convenient purposive sampling based on inclusion and exclusion criteria. The survey data were usually be analyzed using both analytic as well as descriptive statistic. Such as; mean, SD, percentage etc. Informed consent was taken individually from patient and ethical clearance was taken from the Ethical review committee of Khulna City Medical College Hospital.

RESULTS

Age distribution of the patients with idiopathic granulomatous mastitis (IGM) is depicted in figure 1. IGM is common at early and middle aged women. Peak incidence was seen in between 30-40 years. Mean±SD of age was

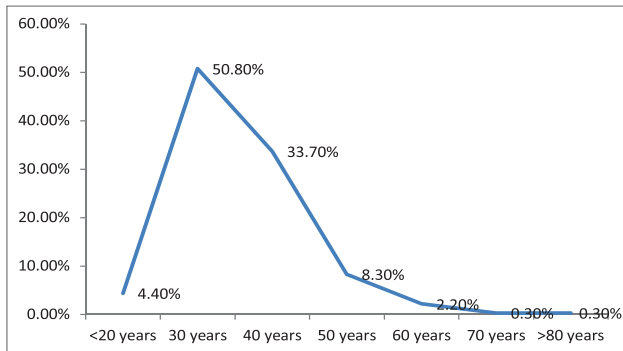


Figure 1: Age distribution of study population

Results suggests that majority of the affected women was in child bearing age (88.1%). The overall incidence was much lower after menopause.

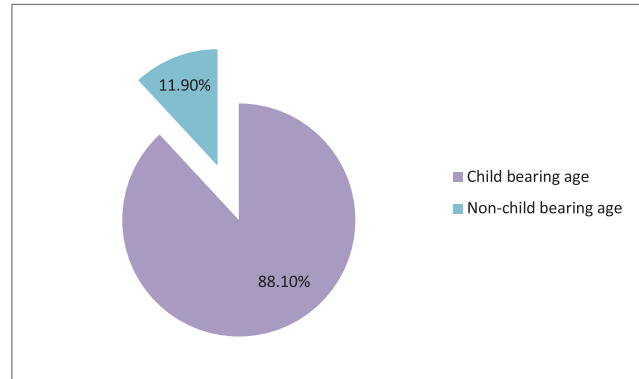


Figure 2: Incidence of IGM at child bearing age

Breast lump and mastalgia are the most common symptoms of IGM. Table 1 represents the pattern of sign-symptoms in case of IGM.

| Symptom | N | % |
|--------------------------|-----|------|
| Breast lump | 432 | 68.6 |
| Lumpiness | 108 | 17.1 |
| Mastalgia | 376 | 59.7 |
| Nipple discharge | 20 | 3.2 |
| Chronic breast abscess | 35 | 5.6 |
| Axillary lymphadenopathy | 28 | 4.4 |

Table 1: Clinical presentation of IGM

In 41.3% (260) cases, involvement of right breast was observed, whereas in 34.9% (220) cases, involvement of the left breast was seen. Bilateral involvement was presented in 23.8% (150) patients.

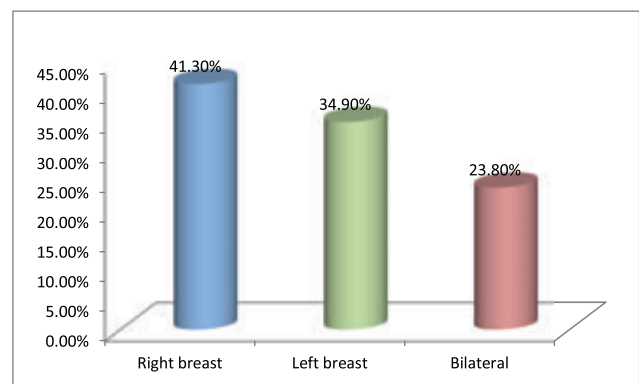


Figure 3: Involvement of the breast

Central quadrant is the most common site of involvement of breast (approximately in 48.1% cases), followed by upper and outer quadrant (39.8%).

| Site | N | % |
|----------------------------|-----|------|
| Upper & outer quadrant | 176 | 27.9 |
| Upper & inner quadrant | 75 | 11.9 |
| Lower & outer quadrant | 20 | 3.2 |
| Lower & inner quadrant | 26 | 4.1 |
| Central quadrant | 238 | 37.8 |
| Bilateral involvement | 150 | 23.8 |
| Multi-quadrant involvement | 95 | 15.1 |

Table 2: Site of involvement of breast

Among the total 630 patients, clinical examination was in favour of IGM in 475 (75.4%) cases. Ultrasonography of breast suggested IGM in case of 390 (61.9%) patients. FNAC/ Core biopsy and excisional biopsy was positive in 65.1% and 26.1% cases respectively.

| Diagnosis | N | % |
|---------------------------|-----|------|
| Clinical examination | 475 | 75.4 |
| Ultrasonography of breast | 390 | 61.9 |
| FNAC/ Core biopsy | 410 | 65.1 |
| Excisional biopsy | 164 | 26.1 |

Table 3: Diagnostic tools for IGM

Among the study patients, conservative treatment was given in 52.4% (330) cases. However, in 300 (47.6%) cases, surgery was warranted. Wide local excision was done in case of 34.1% (215) patients; whereas, mastectomy was done in 4.0% (25) cases. Recurrent surgery was done in 9.5% (60) patients.

| Treatment | N | % |
|------------------------|-----|------|
| Conservative treatment | 330 | 52.4 |
| Surgical intervention | 300 | 47.6 |
| Wide local excision | 215 | 34.1 |
| Mastectomy | 25 | 4.0 |
| Recurrent surgery | 60 | 9.5 |

Table 4: Treatment options for IGM

At least 02 years follow up was done in each patient. After conservative treatment, recurrence and relapse rate was 9.1% (30) and 14.0% (46) respectively. On the contrary, after surgery this was 7.3% (22) and 6.0% (18).

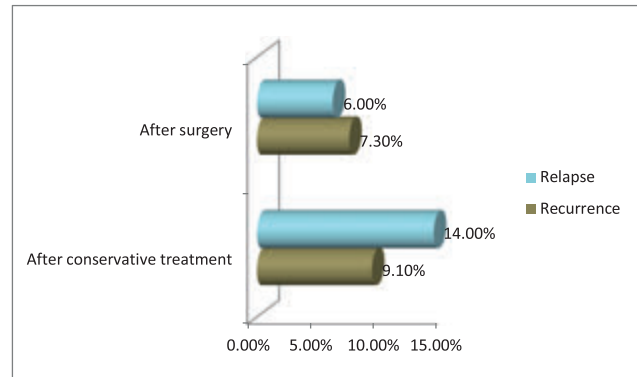


Figure 4: Recurrence & relapse rate

DISCUSSION

In this research, the peak incidence of IGM was seen in between 30- 40 years (approximately 50%). The incidence was trend to fall after 40 years. After 70 years, this was 0.3%. Most of the previous clinical studies suggest that IGM is a disease of early and middle age women of child bearing age^{1,11}. Peak age was 35-45 years^{11,12}. However, in some researches, the peak age was approximately 40-50 years¹. In our study, 88.1% affected patients were in child bearing age. Majority of the studies show that IGM has close association with reproductive age. In many studies, direct relationship has been observed between IGM and reproductive age¹³⁻¹⁵. With advancement of age and after menopause, the incidence rate was seen to fall dramatically. IGM may present with a wide range of clinical feature¹⁶. In this research, breast lump, mastalgia and lumpiness were the most common sign-symp-tom. Approximately 68.6% cases presented with breast lump, followed by 59.7% cases presented with mastalgia. Chronic breast abscess was another form of presentation of IGM, found in 5.6% patients. Axillary lymphadenopathy was observed in 4.4% cases in this study. Similar results were seen in some other studies^{17,18}. Breast lump was found as the commonest presentation in several studies¹⁹. However, in many studies, mastalgia was suggested to be the commonest symptoms^{20,21}. In different researches²⁰, the incidence of axillary lymphadenopathy was 2.2% to 10%. Many studies support this observation^{22,23}. Involvement of right and left breast was 41.3% & 34.9% respectively. Bilateral disease was seen in 23.8% patients. According to many studies^{22,24},

bilateral involvement was 10.5% to 22.2%. Central and upper & outer quadrant was the most common site of involvement of IGM. In this study, central quadrant involvement was seen in approximately 37.8% cases. Bilateral and multi-quadrant involvement is frequently found in case of IGM, reflected in different researches²⁵. Here, in our study, this was 23.8% and 15.1% respectively. In many literatures^{22,25}, the overall incidence of multi-quadrant is 8.2 to 26.8%. Diagnostic difficulty is major clinical problem in case of IGM. In many circumstances, triple assessment is usually effective diagnostic tool²⁶. In our researches, triple assessment was done in most of the patients (positive in >82% cases). Clinical assessment was positive in 75% cases; whereas ultrasonography of breast was positive in 61.9% cases. FNAC/ Core biopsy and excisional biopsy was positive in 65.1% and 26.1% cases respectively. This is a challenging decision whether conservative or surgical intervention should be done in case of IGM. However, this decision usually depends on so many factors²⁰. In our study, surgical intervention was done in case of 47.6% cases. Most often, wide local excision was done (in 34.1% cases). Mastectomy was needed in 4.0% cases. In many circumstances, surgery is done in recurrent cases (with previous history of surgery). In this study, in 9.5% cases, surgery was done in such case of recurrence. Many

literatures reflected that surgery should be reserved for refractory case of IGM to medical treatment and the overall rate of surgical intervention is in between 05% to 25%²². It is an established fact in many researches that recurrence and relapse is a big problem in case of management of IGM despite of conservative treatment or surgical intervention^{25,26}. The results of this study suggest that recurrence rate was 9.1% and 7.30% with conservative treatment and surgery respectively. However, the incidence of relapse was 14.0% and 6.0% respectively.

CONCLUSION

Idiopathic granulomatous mastitis is a disease of unknown aetiology in younger and middle aged women. The incidence is significantly higher in reproductive age. Breast lump and mastalgia is the most common presentation. Axillary lymphadenopathy is uncommon. Central and upper & outer quadrant is the most common site. Bilateral and multi-quadrant involvement is frequent event. Surgical intervention may be needed in many circumstances usually wide local excision. However, mastectomy is reserved for few refractory and extensively involved cases. Recurrence and relapse is more frequent in case of conservative treatment in contrast to surgical intervention.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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Original Article

Efficacy of Ethanolamine Oleate as a Sclerosing Agent for the Treatment of Benign Oral and Perioral Soft Tissue Vascular Lesions

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Abstract

Background: Vascular lesions are benign lesions of blood vessels relatively common in the head and neck region. This lesion requires therapeutic intervention if they start to cause clinical symptoms or personal discomfort. A number of treatment procedures have been proposed for the management of benign vascular lesions which include Surgical therapy, systemic and intralesional corticosteroids, intralesional injection of sclerosing agents, and interferon, laser, embolization, cryotherapy and radiation therapy. Such numerous and varied modes of treatment actually reflect that no single method is entirely satisfactory in the treatment of vascular lesions. Sclerotherapy is an effective and conservative technique for the treatment of benign Vascular lesions with no risk of hemorrhage. The agents used for sclerotherapy are 5% Sodium Morrhuate, 1% Polidocanol, Sodium Tetradecyl Sulfate, Absolute Alcohol and 5% Ethanol Amine Oleate.

Objective: To evaluate the effectiveness of 5% Ethanolamine oleate in the management of benign oral and perioral vascular lesions as a sclerosing agent.

Methods: It was an experimental study carried out in the department of oral and maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh. This study was carried out from January 2019 to December 2021. Diagnosis was made by accurate history taking and clinical examination and in some cases Color Doppler examination, MRI and/or Angiogram were done for confirmation. Intralesional injection of 5% Ethanolamine oleate was given as 1cc/1ml for each 1.5 cm of lesion size at an interval of 2 weeks between each session and The maximum dose of ethanolamine oleate was 0.4 ml(20 mg)/kg.

Result: A total of 40 diagnosed case of benign oral and perioral soft tissue vascular lesions were included for the study sample. Maximum (40.0%) patients had size >0.5 to ≤1.0cm followed by 20% patients had >1.0 to ≤1.5 cm and maximum 80.0% lesions were vascular malformation and 20% lesions were hemangioma. There was significant association of the number of applications with lesions size. Among 40 patients, 24 patients (60%) who had small lesions required only one application. On the other hand, 16 patients (40%) who had large lesions (>1.5cm) required 2 or more number of applications. The size of lesion, location and type of lesion was statistically significant (p<0.05), however, there was no significant association of clinical outcome with gender, age and number of application (p > 0.05). The most of the patients (85%) had complete regression followed by 15% patients had partial regression. The effectiveness as reducing the size or regression of the lesion either complete or partial, reported 40 patients (100%) followed by changed the color to became normal was 34 patients and evidence of fibrosis were found 20 patients. All patients, after followed up for one year, did not present recurrence.

Conclusions: Sclerotherapy with EO is an affordable and acceptable treatment option showed effectiveness with regression of the lesion, color change and evidence of fibrosis. Sclerotherapy with Ethanol Amine Oleate is a safe and less invasive method, easy to perform repeatedly with minimal complications which subsided within 72 hours.

Key words: Vascular Lesions (VLs), Sclerotherapy, Ethanol Amine Oleate (EAO), Oral lesion, Oral and perioral soft tissue lesions, Hemangioma, Vascular malformation (VMs)

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Introduction

Vascular anomalies are a wide range of conditions that result in an abnormal number, structure, or position of blood vessels. Vascular lesions of the maxillofacial region

are classified by Mulliken and Glowacki (1982) as either: (1) hemangiomas or (2) VMs. Hemangiomas are the most common cutaneous tumor of infancy and demonstrate

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rapid growth followed by a slow spontaneous involution or regression within 5–7 years. While VMs enlarge with the growth of the child, they do not undergo spontaneous involution. VMs are subdivided based on blood flow rate: “slow flow” (capillary, venous, lymphatic, or mixed) versus “fast flow” (arteriole, arteriovenous, fistulae, or shunt) subtypes (M. Mishra et al. 2017). Venous malformation is one of the most common benign vascular lesions, with approximately 40% of cases appearing in the head and neck (Rahman, A. et al. 2020). More than 60% of all occur in these areas, and the most affected oral regions are the lips, tongue, buccal mucosa, gums, and palate. There is a higher prevalence in females (65%), twins and preterm infants (Mulliken et al.1982). Vascular lesions are usually asymptomatic, varies in size from a few millimeters to several centimeters, and can lead to facial asymmetries. The color ranges from red to purple, according to the location and depth of tissue invasion, as well as the degree of vascular congestion of the affected area (Corrêa PH et al. 2007). It can present as a flat or raised lesion with a smooth or nodular surface, defined edges, sessile or pedunculated and a soft consistency on palpation. In contrast to hemangiomas and vascular malformations, oral varices are more frequent in adults over 60 years. Age is a predisposing factor, as is the loosening of tissue and increase in venous pressure. Sublingual varices are the most common type and appear as bluish-purple single or multiple nodules in the ventral-lateral border of the tongue. Although less frequent, varices can also occur in the lips and other regions of the oral mucosa (Kleinman HZ et al. 1967; Southam JC et al. 1974).The diagnosis of oral vascular lesions is based on the clinical characteristics and history of the lesion. Diascopy, aspiration of the lesion and imaging exams may also contribute to diagnosis and treatment planning in some cases. In addition, important findings such as the hemodynamics of the lesion (high or low blood flow) should be considered for the treating practice. (Jackson IT, et al. 1993; Donnelly LF et al. 2000; Baer AH et al. 2011). Surgical excision is one of the most used treatments, especially for small lesions. However, before this option is selected, some problems must be considered, such as bleeding, incomplete resection and aesthetic problems (Johann ACBR et al. 2005; Van Doorne L et al. 2002; Selim H et al. 2007). Alternative methods are mentioned in the literature, including laser surgery, cryotherapy, chemotherapy agents, corticosteroids,

embolization and sclerotherapy (Van Doorne L et al. 2002; Muto T et al. 1990). The mechanism of action of sclerotherapy involves the substitution of the vascular component by a fibrotic tissue in response to an inflammatory process. Although sclerotherapy is one of the most versatile and advantageous treatments, the concentration of the sclerosing agent, dose and mode of application are not properly standardized.

This applies to a wide variety of techniques and protocols, making the decision to use this treatment option extremely difficult. The development of a protocol must respect the morphological and functional uniqueness of each lesion in order to define an appropriate dosage of the sclerosing agent to be used (Johann ACBR et al, 2005). Thus, the aim of the present study is to describe the clinical characteristics of patients with oral vascular lesions treated by sclerotherapy in a single institution, in order to contribute to a better understanding of this technique that still has no well-established protocol in the scientific literature.

Material and Methods:

Period of study: January 2019 to December 2021.

Place of study: Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital. Mirpur -14, Dhaka.

Sample size:

Sample size has been calculated with the formula

$$n = \frac{Z^2 pq}{e^2}$$

Here,

n = sample size

Z = 1.96 (Z value of standard normal distribution at 5% level of significance).

P = 5% (P = 0.05) (Fernandes, D.T. et al., 2018)

q = (1- p) = (1 - 0.05) = 0.95

e = 0.05 (acceptable error in the estimate of e is set at 5% of pt.)

Using above formula the expected sample size

$$n = \frac{(1.96)^2 \times 0.05 \times 0.95}{(0.05)^2}$$

n = 72.9904

Estimated sample size is 73

Due to the pandemic situation patient was not available. So 40 patients were taken as sample.

Sampling technique: Convenient sampling.

Inclusion criteria:

- i. Patients with benign oral and perioral soft tissue vascular lesions.
- ii. Clinically diagnosed vascular lesions with low flow.
- iii. Patients have no history of previous treatment of this vascular lesions.

Exclusion criteria:

- i. If patient has known allergy to the agent Ethanolamine Oleate.
- ii. Patient did not come for follow-up.
- iii. Co-morbid disease that makes the patient not fit for this sclerotherapy treatment
- iv. Psychotic patient.

Ethical clearance:

1. For data collection written permission were taken from Oral and Maxillofacial Surgery department of Dhaka Dental College Hospital, Dhaka.
2. The study was approved by the institutional ethics committee.

Ethical consideration:

1. An informed written consent was taken from every patient or the patient’s legal guardian.
2. All subjects were informed verbally about the study design and right for the participant to withdraw from the study at any time, for any reason, what so ever.
3. No placebo was used.
4. All of the subjects were provided with standard treatment for the disease.
5. Ethical clearance was obtained from the Ethical Committee of Dhaka Dental Collage and Hospital.
6. Participation into the study was completely voluntary.

Results and Observations

A total of 40 diagnosed cases of benign oral and perioral soft tissue vascular lesions who attended the Department of Oral and Maxillofacial Surgery of Dhaka Dental College Hospital were included for the study sample. The data was analyzed with the help of statistical software SPSS version 26. In order to analyze the distribution of a variable, data should be organized according to the occurrence of different results in each category. As for categorical variables, frequency distributions were presented in a table or a graph.

Table-3.1: Age distribution of the patients (n= 40)

| Age group (in years) | Frequency | Percent |
|----------------------|------------|---------|
| <30 | 8 | 20% |
| 30-50 | 18 | 45% |
| >50 | 14 | 35% |
| Total | 40 | 100% |
| Mean±SD | 39.15±7.61 | |
| Range (min – max) | 9-74 years | |

Table-3.1 showed the most affected age group was between 30-50 years (45.0%) followed by 35% age above 50 years. Minimum age was 9 years and maximum was 74 years. Mean age was 39.15±7.61 years.

Figure-3.1: Sex distribution of the patients (n= 40)

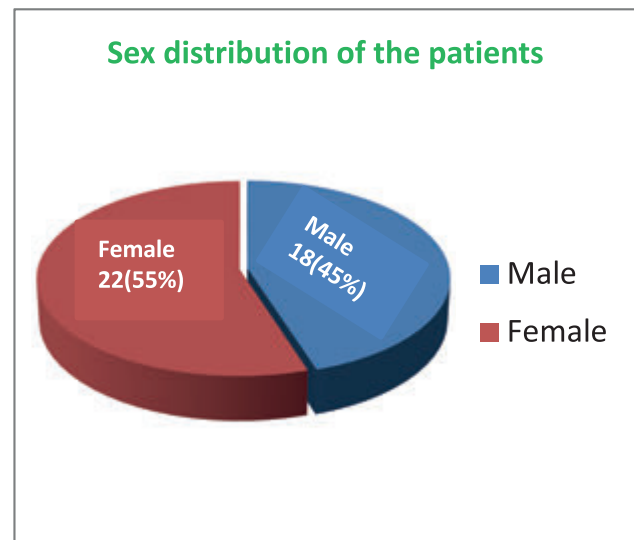


Figure-3.1: Showed the sex distribution of the study patients, maximum 55% were female and 45% patients were male. Male : female ratio 1:1.2.

Table-3.2: Distribution of study patients by location (n= 40)

| Location | Frequency | Percent |
|---------------|-----------|---------|
| Lower lip | 22 | 55% |
| Upper lip | 8 | 20% |
| Tongue | 6 | 15% |
| Buccal mucosa | 4 | 10% |
| Total | 40 | 100% |

Table 3.2 showed regarding the location, there was a highest rate of occurrence on the lips (75%) followed by the tongue (15%) and buccal mucosa (10%).

Table-3.3: Distribution of the study patients by size of lesion (n= 40)

| Size of lesion (cm) | Frequency | Percent |
|---------------------|-----------|---------|
| ≤0.5 | 6 | 15% |
| >0.5 to ≤1.0 | 16 | 40% |
| >1.0 to ≤1.5 | 8 | 20% |
| >1.5 to ≤3.0 | 6 | 15% |
| >3.0 | 4 | 10% |
| Total | 40 | 100% |

Table 3.3: Showed size of lesion, maximum (40.0%) patients had size >0.5 to ≤1.0cm followed by 20% patients had >1.0 to ≤1.5 cm.

Table-3.4: Distribution of patients by type of lesion (n= 40)

| Type of lesion | Frequency | Percent |
|-----------------------|-----------|---------|
| Hemangioma | 8 | 20% |
| Vascular malformation | 32 | 80% |
| Total | 40 | 100% |

Table 3.4 showed, considering clinical characteristics maximum 80.0% lesions were vascular malformation and 20% lesions were hemangioma.

Table 3.5: Association of the number of applications with lesions size (n=40).

| Number of applications | n (%) | Lesion size (cm) Mean±SD |
|------------------------|------------|--------------------------|
| 1 | 24 (60.0%) | 1.16±0.67 |
| 2 | 6 (15.0%) | 1.35±0.50 |
| 3 | 4 (10.0%) | 2.06±0.70 |
| 4 | 4 (10.0%) | 2.4±2.26 |
| 6 | 2 (5.0%) | 3.5±2.12 |
| Total | 40 (100%) | 2.09±0.86 |

Table-3.5 Showed significant association of the number of applications with lesions size. Among 40 patients, 24 patients (60%) who had small lesions required only one application. On the other hand, 16 patients (40%) who had large lesions (>1.5cm) required 2 or more number of applications.

Table 3.6: Association of clinical outcome with demographic parameters (n=40).

| Parameter | n | Clinical outcome | | Pvalue |
|----------------------------|----|-----------------------------|----------------------------|--------|
| | | Partial regression on (n=6) | Complete regression (n=34) | |
| Gender | | | | |
| Male | 18 | 2(11.1) | 16 (88.9) | 0.668 |
| Female | 22 | 4 (18.2) | 18 (81.8) | ns |
| Age (Years) | | | | |
| ≤ 50 | 30 | 4 (13.3) | 26 (86.7) | 0.724 |
| > 50 | 10 | 2(20.00) | 8 (80.0) | ns |
| Number of | | | | |
| 1 | 24 | 4 (16.7) | 20 (83.3) | 0.427 |
| 2 | 6 | 2 (33.3) | 4 (66.7) | ns |
| ≥3 | 10 | 0 (0.0) | 10 (100.0) | |
| Size of lesion (cm) | | | | |
| ≤0.5 | 6 | 0(0.0) | 6 (100.0) | |
| >0.5 to ≤1.0 | 16 | 0(0.0) | 16 (100.0) | |
| >1.0 to ≤1.5 | 8 | 0(0.0) | 8 (100.0) | 0.038 |
| >1.5 to ≤3.0 | 6 | 2 (33.3) | 4 (66.7) | s |
| >3.0 | 4 | 4 (66.7) | 0 (0.0) | |
| Location | | | | |
| Lower lip | 22 | 2(9.1) | 20(90.9) | |
| Upper lip | 8 | 0(0.0) | 8 (100.0) | 0.005 |
| Tongue | 6 | 0(0.0) | 6 (100.0) | s |
| Buccal mucosa | 4 | 4(100.0) | 0(0.0) | |
| Type of lesion | | | | |
| Hemangioma | 8 | 4 (50.0) | 4 (50.0) | 0.033 |
| Vascular malformation | 32 | 2(6.3) | 30 (93.7) | s |

Table 3.6 showed size of lesion, location and type of lesion was statistically significant (p<0.05), however, there was no significant association of clinical outcome with gender, age and number of application (p > 0.05).

Table 3.7: Association of final outcome with lesion size (n=40).

| Final outcome | n | Lesion Size (cm) | | | p-value |
|---------------------|----|------------------|------------|---------|---------|
| | | ≤ 1 | > 1 to ≤ 2 | >2 | |
| | | n (%) | 3 n (%) | n (%) | 0.31 |
| Partial regression | 6 | 2 (33.3) | 2 (33.3) | 2(33.3) | ns |
| Complete regression | 34 | 20(58.8) | 12(35.3) | 2 (5.9) | |

Chi-square test was done, ns= not significant, *significant

Table 3.7 showed that, among 34 patients with complete regression, maximum 20(58.8%) lesion size ≤1 cm. No significant association of regression with different lesion size (p > 0.05).

Figure 3.2: Final clinical outcome

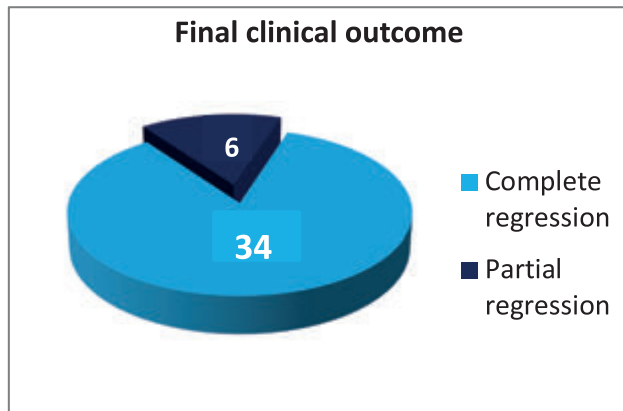


Figure 3.2 showed that most of the patients (85%) had complete regression followed by 15% patients had partial regression.

Table-3.8: Distribution of patients by complications (n= 40)

| Complications | Frequency | Percent |
|--|-----------|---------|
| Pain | 16 | 40% |
| Swelling | 20 | 50% |
| Allergic reaction (Skin blistering with Skin Scarring or ulceration) | 4 | 10% |

Table 3.8 showed swelling was the common type of complaint, reported by only 20 patients (50%) followed by allergic reaction 4(10.0%) patient. The vast majority of patients reported no pain (60%). All patients, after followed up for one year, did not present recurrence.

Table-3.9: Association of complications with confounding variables (n=40)

| Parameter | n | Complications | | | p-value |
|-------------------------------|----|---------------|---------------|-------------------------|---------|
| | | Pain n=16 | Swelling n=20 | Allergic reaction (n=4) | |
| Gender | | | | | |
| Male | 18 | 6 (33.3) | 10 (55.6) | 2 (11.1) | 0.86 |
| Female | 22 | 10 (45.5) | 10 (45.5) | 2 (9.1) | ns |
| Age (Years) | | | | | |
| ≤ 50 | 30 | 8 (26.7) | 18 (60.0) | 4 (13.3) | 0.10 |
| > 50 | 10 | 8 (80.0) | 2 (20.0) | 0 (0.0) | ns |
| Number of applications | | | | | |
| 1 | 24 | 6 (25.0) | 18 (75.0) | 0 (0.0) | 0.01 |
| 2 | 6 | 4 (66.7) | 2 (33.3) | 0 (0.0) | 8s |
| ≥3 | 10 | 6 (60.0) | 0 (0.0) | 4 (40.0) | |
| Size of les (cm) | | | | | |
| ≤0.5 | 6 | 2 (33.3) | 4 (66.7) | 0 (0.0) | |
| >0.5 to ≤1.0 | 16 | 6 (37.5) | 10 (62.5) | 0 (0.0) | 0.30 |
| >1.0 to ≤1.5 | 8 | 6 (75.0) | 2 (25.0) | 0 (0.0) | ns |
| >1.5 to ≤3.0 | 6 | 2 (33.3) | 2 (33.3) | 2 (33.3) | |
| >3.0 | 4 | 0 (0.0) | 2 (50.0) | 2 (50.0) | |
| Location | | | | | |
| Lower lip | 22 | 8 (36.4) | 10 (45.5) | 4 (18.2) | |
| Upper lip | 8 | 4 (50.0) | 4 (50.0) | 0 (0.0) | 0.63 |
| Tongue | 6 | 4 (66.7) | 2 (33.3) | 0 (0.0) | ns |
| Buccal mucosa | 4 | 0 (0.0) | 4 (100) | 0 (0.0) | |
| Type of lesion | | | | | |
| Hemangioma | 8 | 6 (75.0) | 2 (25.0) | 0 (0.0) | 0.27 |
| Vascular malformation | 32 | 10 (31.3) | 18 (56.3) | 4 (12.5) | ns |

Figures in the parentheses indicate corresponding percentage;

Chi-squared Test (χ^2) was done to analyze the data, s=significant, ns = not significant

Table 3.9 showed that, number of application was statistically significant ($p < 0.05$), however, there was no significant association of complications with gender, age, location and type of lesion ($p > 0.05$).

Table-3.10: Distribution of patients by effectiveness (n= 40)

| Effectiveness | Frequency | Percent |
|---|-----------|---------|
| Fibrosis | 20 | 50% |
| Normal color | 34 | 85% |
| Reduction in size or regression of the lesion | 40 | 100% |

Table 3.10 showed the effectiveness as reducing the size or regression of the lesion either complete or partial, reported 40 patients (100%) followed by changed the color to became normal was 34 patients and evidence of fibrosis were found 20 patients.

Photograph



Photograph-1: Female patient, 22 years old with a vascular lesion in the upper right alveolobuccal mucosa.



Complete regression of the lesion after 1 application of Ethanolamine Oleate



Photograph-2: Female patient, 18 years old, with lip lesion present for 15 years.



Complete regression of the lesion after 3 application of Ethanolamine Oleate.



Photograph-3: Male patient, 58 years old, with tongue lesion present for 10 years.



Complete regression of the lesion after 2 application of Ethanolamine Oleate.

Discussion:

This was a quasi-an experimental study carried out in the Department of Oral and Maxillofacial Surgery, Dhaka Dental College and Hospital, Dhaka during the 2 years of study period. The general objective of the study to evaluate the effectiveness of Ethanolamine Oleate (EO) for the treatment of benign oral and perioral soft tissue vascular lesions. Low flow vascular malformations can be managed in numerous ways, sclerotherapy, laser therapy, cryotherapy or surgery (Hemant and Sarika, et al. 2012).

Presentation of vascular lesions varies with age, size and anatomic location, and there are no known parameters to assess therapeutic efficacy. This study has also attempted to study factors that might predict the result of Sclerotherapy. The study has analyzed the possible association of variables with the result of Sclerotherapy.

In present study the most affected age group was 30–50 years, mean age 39.15 ± 7.61 . In accordance with the study Fernandes et al. (2018) reported the most affected age group was between 41 and 70 years (mean age: 47 years, range: 4-87 years). Prodhan et al. (2011) demonstrated the mean age of the patient was 19 years \pm 11 with a range of 11 to 40 years and 31.7% of them were in 21-30 years of age group.

In this study the female gender was predominant (55%), and the male : female ratio was 1:1.2. Which is similar with the study Fernandes et al. (2018) reported the female predominant (56%) and Medeiros Jr et al. (2015) reported, most of the patients were female (86.6 %). S. Haque and B Das also reported maximum patients were female.

Regarding the location, there was a highest rate of occurrence on the lips (75%) followed by the tongue (15%) and buccal mucosa (10%) in this present study. Fernandes et al. (2018), Mohammad et al. (2017) and Medeiros Jr et al. (2015) also reported lips were the most affect site followed by the tongue.

In the present study Maximum (40.0%) patients had size of lesion >0.5 to ≤ 1.0 cm followed by 20% patients had >1.0 to ≤ 1.5 cm. The study Fernandes et al. (2018) reported

40% of lesions were 0.5 to 1.0cm in size and Hong et al. (2010) reported the mean diameter of the lesions was 0.8cm (range 0.3 to 1.2cm) is approximately similar to this present study.

Considering clinical characteristics maximum (80%) lesions were vascular malformation and 20% lesions were hemangioma in this present study. Kaji et.al (2009) and Pradhan et al. (2011) reported maximum lesions were vascular malformation.

In present study there was no significant association of clinical outcome with gender, age and number of application ($p > 0.05$), however Size of lesion, location and type of lesion was statistically significant ($p < 0.05$). Number of application was statistically significant ($p < 0.05$), however, there was no significant association of complications with gender, age, location and type of lesion ($p > 0.05$). In accordance with the study Bonan et al. (2007), Fernandes et al. (2018), Mohammad et al. (2017) also reported same result.

The final outcome in this study was complete clinical regression occurred in 85% of cases, whereas 15% showed partial regression. In accordance with the study Fernandes et al. (2018) reported 39 patients (91%) complete regression and four patients (9%) showed partial regression of the lesions. Another similar study done by Hong et al. (2010) reported the use of EO as a treatment for benign oral and perioral soft tissue vascular lesion was 95% satisfactory.

This study also showed the effectiveness as reducing the size or regression of the lesion either complete or partial, reported by 40 patients (100%) followed by changed the color and evidence of fibrosis were found which is correlated with the study Pradhan et al. (2011) reported the effectiveness of treatment was based on three criteria: change in color, reduction in size of the lesion and evidence of fibrosis.

In this study, the incidence of complications associated with Sclerotherapy was relatively low, In this study, maximum patients (90%) presented with swelling and/or pain

immediately after the treatment. They were improved by taking medication within 72 hours. Which corresponds with the findings of Johann et al., (2005), Choi et al. (2002) and Gomes et al., (2006). Skin blistering was seen in one patient and skin scarring or ulceration was seen in one patient which is similar with the study Pradhan et al. (2011), Rimon et al. (2004), Das and Hoque et al (2008) and Mohammad et al (2017).

In this study no recurrences were reported during the one year of follow-up period. In accordance with the study Fernandes et al. (2018) and Pradhan et al.

(2011) reported no recurrences during follow-up period.

Limitations:

The present study had the following limitations. These

should be kept in mind while deciding on the implications of the findings of the study.

- The study was conducted in on particular tertiary level hospitals, so the findings could not represent the accurate events.
- Relatively small sample size and short duration of follow-up were another limitation.

Conclusions & recommendations:

Sclerotherapy with EO is an affordable and acceptable treatment option showed effectiveness with regression of the lesion, color change and evidence of fibrosis. Sclerotherapy with Ethanol Amine Oleate is a safe and less invasive method, easy to perform repeatedly with minimal complications which subsided within 72 hours.

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Original Article

Cholelithiasis and Its Relationship with Serum Lipids in a Tertiary Care Hospital of Rajshahi

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Abstract

Back ground: Background: It is now almost accepted that the disturbance of lipid metabolism may help to develop gallstone disease. Therefore, an increased Lipid profile may be a good predictor for developing gall stones, especially cholesterol stones.

Aim of the Study: To find the association between gallstones and serum lipids.

Methods: All patients diagnosed with gallstone diseases were enrolled by purposive sampling. After that, they were scrutinized according to eligibility criteria, and 150 patients were finalized in the Department of Surgery at Rajshahi Medical College Hospital, Rajshahi, Bangladesh, from September 2018 to August 2019. Besides, 150 medical staff and patients' attendance with age and sex matches were considered a control group. A pre-tested, observation-based, peer-reviewed data collection sheet was prepared before the study. Data regarding clinical, biochemical, and surgical profiles were recorded. Data were compiled, edited, and analyzed.

Results: The mean age of both groups was 39.7918.16 years and 38.67±7.99 years respectively. The male-to-female ratio in both groups was the same 1:2.57 as it was an age and sex-matched case-control study. Out of 150 participants in the study group 48%, 24%, 23% and 5% were suffering from chronic cholecystitis with cholelithiasis, chronic cholecystitis with choledocholithiasis, acute calculus cholecystitis and empyema gallbladder with cholelithiasis respectively. 61% and 39% of patients had cholesterol stone and mixed stone respectively and undesirable lipid parameters in patients with cholesterol gallstone and mixed stone. The mean values of all cholesterol except HDL-C were higher in the participants of the case group than in the controls.

Conclusion: This study emphasized that the lipid profile can be a good indicator for gallstone diseases.

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Introduction

Gallstones disease (GD) or Cholelithiasis is one of the most prevalent gastrointestinal diseases, with a substantial burden to health care systems¹. The prevalence of GD varies widely by region. In Western countries, the prevalence of gallstone disease reportedly ranges from approximately 7.9% in men to 16.6% in women. In Asians, it ranges from approximately 3% to 15%, is nearly

non-existent (less than 5%) in Africans, and ranges from 4.21% to 11% in China. With an overall prevalence of 10-20%, GD represents one of the industrialized countries' most frequent and economically relevant health problems². Obese persons specially with high body mass index and elderly persons have more tendency to develop cholesterol^{3,4}. Gallstones are of three types as cholesterol, pigment, and

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mixed stones. Cholesterol gallstones result from bile secretion by the liver supersaturated with cholesterol. This results in cholesterol crystallization and stone growth within the gallbladder, which can be exacerbated by gallbladder stasis. This may be associated with obesity, high-caloric and cholesterol-rich diets, or drugs [for example, clofibrate]. Moreover, it may result from increased activity of hydroxy methyl glutaryl Co-A (HMG CoA) reductase, the rate-limiting enzyme of hepatic cholesterol synthesis, and increased hepatic uptake of cholesterol from the blood. In patients with gallstones, dietary cholesterol increases biliary cholesterol secretion. The composition of the bile salt pool may also influence the ability to maintain cholesterol in solution. Patients over age 60 and those with numerous bowel operations [particularly in the region where the small and large bowel meet] are at especially high risk, Al-Saddi et al⁵. High triglycerides and low HDL have been most consistently associated with gallstones, whereas the associations of total cholesterol and LDL with gallstones are less consistent, Andreotti G et al.⁶. The etiology of the gallstone is probably multifactorial. The implicated factors are metabolic, infection, and bile stasis. Pathogenesis of black and pigment stones is due to hemolytic, e.g., hereditary spherocytosis, sickle cell anemia, thalassemia, and malaria, in which bilirubin production is increased. Systems mainly in the intra or extrahepatic duct. Their pathogenesis may be due to stasis and infection by gram-negative bacteria, D.Conte et al⁷. The gallstone can be divided into three groups depending upon their colour: pale yellow and Whitish stones as cholesterol, black and blackish brown as pigment calcul and brownish Yellow or greenish with laminated features as mixed calculate; on the whole, the elevation of serum total cholesterol, LDL cholesterol, tri-acyl glycerols and reduction of HDL cholesterol level seem to play a major contributing role in the pathogenesis of gallstones, especially in females, Channa NA et al⁸. The role of serum lipids in the etiology of gallstones has been assessed in a case-control study. The highest gallstone risk was found at low high-density cholesterol levels and high triglyceride levels. An additional weakly negative association was found between total cholesterol level and gallstone risk by Thijs C et al⁹. The main aim of this study was to assess the lipid profile status of cholelithiasis patients and the control group. Gallstones are common in the Western world. The prevalence among adults is approximately 10-15% for men

and 20% for women in Europe and North America. American Indians and Mexican Americans have a higher prevalence than Afro-Americans, Schemer et al. In Asia, Kapoor et al. analyzed different risk factors associated with gallstones in a survey conducted in Jharkhand, India^{10, 11}. The study purported that a cholesterol-rich diet, especially non-vegetarian consumption (68% of patients were non-vegetarian), and age are the major risk factors. The study also revealed that gallstones are found more frequently in women than men. The ratio of male to female gallstone patients was about 13. Furthermore, 72.6% of cases were between the age of 21-50. The study concluded that the incidence of gallstones increases with age, while genetics, diabetes, and smoking are not much related to gallstone formation. A very high and increasing prevalence has been reported in the northern states. Gallbladder diseases commonly manifest as gallstones (Cholelithiasis), polyps, sludge, cholecystitis, choledocholithiasis, cholesterolosis, and gallbladder cancer. Amongst these numerous gallbladder diseases, gallstones appear to be the most prevalent in American Indians (60-70%), but less prevalent in Hispanics of mixed Indian origin and further reduced amongst Black Americans Shaffer A By analysis of their chemical compositions, gallstones can be categorized into three main types: cholesterol, black pigment stones, and brown pigment stones¹². The black pigment stones are derived from the precipitation of calcium hydrogen bilirubin, where pigment supersaturation and deposition of inorganic salts, phosphate, and calcium bicarbonate accelerate the nucleation, as reported in the study of Conte et al¹³. Cholesterol gallstones, on the other hand, form by unphysiological biliary supersaturation from hypersecretion of cholesterol, gallbladder hypomotility, and the accumulation of mucin gel. The explanation given by Conte et al. further illustrates that the brown pigment stones are formed in the ducts due to bile stasis, parasites, uncompleted polymerization of calcium hydrogen bilirubin, saturated fatty acids, and bacterial infection with enzymatic hydrolysis of biliary lipids¹⁴. As the incidence of gallstone disease escalates, there is a concomitant increase in complications like gallstone-related pancreatitis. Previous work in Saudi Arabia shows that cholesterol stones were predominant compared to mixed and pigment stones, while 57% of the gallstones were of cholesterol variety. The result conforms with the studies conducted in Korea, Germany, the United States, and Singapore.

It means that cholesterol stones are high in Saudi Arabia, like in western and other developing countries. Factors predisposing to cholesterol hypersecretion are obesity, ageing, diabetes mellitus, and the use of drugs ageing thiazide and oral conceptions. Estrogenic influences, including oral contraception and pregnancy, increase the expression of hepatic lipoprotein receptors and stimulate hydroxyl-methyl glutaryl Coenzyme A (HMGCOA) reductase activity. Thus both cholesterol levels and biosynthesis are increased from the above observations; the increased incidence of cholesterol stones in Saudi Arabia may be due to a high-fat diet. Again the custom of multiple marriages, multiple pregnancies, and the use of oral contraception by females may be responsible for the increased occurrence of gallstones in females three and half times more as compared to males.¹⁵ The study aimed to find out the association between gallstones and serum lipids.

Methodology & Materials

The study was carried out in the Department of Surgery at Rajshahi Medical College Hospital, Rajshahi, Bangladesh, from September 2018 to August 2019. All patients who were diagnosed as patients of gallstone diseases were enrolled by purposive sampling. After that, they were scrutinized according to eligibility criteria, and 150 patients were finalized. Besides, 150 medical staff and patients' attendance with age and sex-matched were considered the control group. A pre-tested, observation-based, peer-reviewed data collection sheet was prepared before the study. Data regarding clinical, biochemical, and surgical profiles were recorded. Data were compiled, edited, and analyzed.

Inclusion Criteria:

- Adult patient who was diagnosed to have gallstone disease in RMCH
- Sex: Both sex.
- Control was a healthy volunteer from the medical staff & patient's relative (matched for age & sex) who gave consent.

Exclusion Criteria:

- Patients under 18 years
- Patient with gallbladder malignancy diagnosed by ultrasonography and histopathology, liver cirrhosis, cholangitis, pancreatitis

- Patients on current anti-cholesterol medication
- Hemolytic disorders e.g. sickle cell disease, hereditary spherocytosis
- Diabetes Mellitus, pregnancy 6. Cardiac (Myocardial infarction, CHD, Angina pectoris) and renal disease and others with serious illness will be excluded from the study.

Collected data were analyzed upon completion of the study using the computer SPSS (Statistical Package for Social Science) and Microsoft Excel Software (version 21.0 windows). Statistical student's t-test did the statistical analysis. A 95% confidence interval was taken, and a p-value less than 0.05 was considered statistically significant. Data were expressed in the form of tables and charts where feasible. Ethical clearance from the concerned authority, the Institutional Review Board (IRB) of Rajshahi Medical College, was taken to carry out this study after an explanation of the study purpose, and informed consent, both verbal and written, was taken from the patients. The confidentiality of the patient will be maintained.

Result

The overall demographic profile of the case and control groups where it was portrayed that the mean age of both the groups were 39.79±18.16 years and 38.67±7.99 years, respectively. The male-to-female ratio in both groups was the same 1:2.57 as it was an age and sex-matched case-control study. This study showed a female predominance with 72% female and 28% male, with a ratio of male and female, which was 1:2.57 in Table-I. Figure 1 shows that out of 150 participants in the study group, 48%, 24%, 23%, and 5% were suffering from chronic cholecystitis with cholelithiasis, chronic cholecystitis with choledocholithiasis, acute calculus cholecystitis and Empyema gallbladder with cholelithiasis respectively diagnosed by ultrasonography. Figure 2 shows that out of 150 participants in the study group, 81% (91) had cholesterol stones, and 39% (59) had mixed stones, respectively (NB-Pigment stones were excluded as per exclusion criteria). Table II shows that out of 150 participants in the study group, 61% (91) had cholesterol stones. Among them, triglyceride, HDL-C, total cholesterol, and LDL-C were 63%, 80%, 45%, and 40%, respectively. Also, 39% (59) had mixed stones. TN glyceride, HDL-C, and total cholesterol LDL-C were 59.32%, 52.84%, 28.81%, and 25.42%, respectively.

Table III Shows that the mean BMI of the case was significantly higher than controls, as these values were 25.73±2.10 and 22.38±1.82, respectively. (p<0.001). Table IV shows that the serum TC, LDL-C, and TG were all statistically higher in the case group than in the control group. HDL-C was statistically lower in the case of the study group than in the control. In this study, case group TC (191.78 +/-15.66), TG (146.59 +/-11.97), LDL-C (128.13 +/-10.48), and HDL C (35.46 +/-2.89). The serum TC and TG LDL-C were all statistically significantly higher in the case group than the control group [p =<0.031, p<0.036, p<0.001], respectively. HDL-C was statistically significantly lower in the case group than in the control group. [pe<0.049). Figure 3 shows that out of 150 participants in the case group, 148 (98.66%) had non-malignant, and 2 (1.33%) had malignant, respectively.

Table 1: Distribution of patients according to demographic variables (n=300)

| Demographic variables | Case (N=150) | Control (N=150) | P-value |
|----------------------------|--------------|-----------------|---------|
| Mean age (Years) (Mean±SD) | 39.79±8.16 | | 0.43 |
| Sex Distribution | | | |
| Gender | 12.57 | 12.57 | - |
| Male | 42 (28%) | 42 (28%) | - |
| Female | 108 (72%) | 108 (72%) | - |

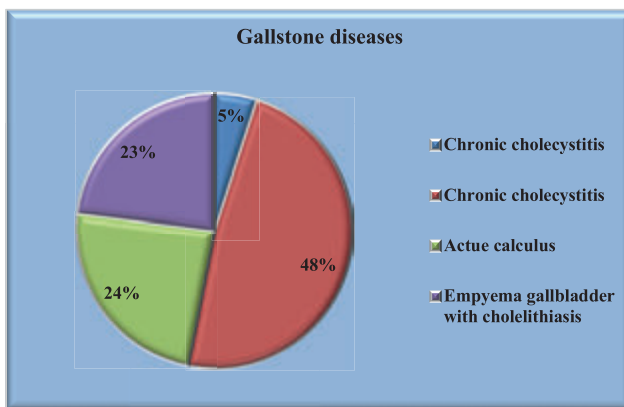


Figure 1: Distribution of cases according to gallstone diseases (n=150)

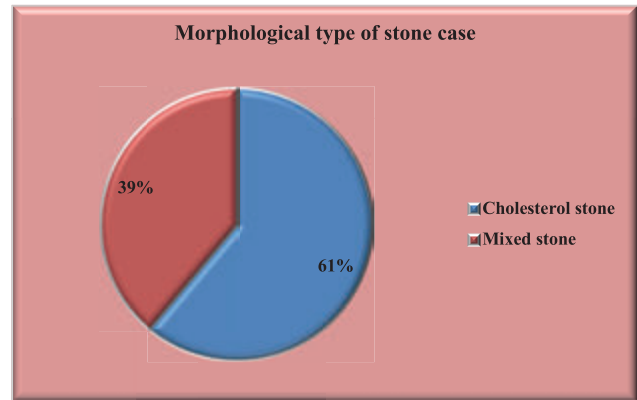


Figure 2: Distribution of Morphological type of stone in case (n=150).

| Serum lipid parameter | Cholesterol stone 91 (61%) | | Mixed stone 59 (39%) | |
|-----------------------|----------------------------|-------|----------------------|-------|
| | N | % | N | % |
| TG | 57 | 62.64 | 35 | 59.32 |
| HDL-C | 55 | 60.44 | 31 | 52.54 |
| TC | 32 | 35.16 | 17 | 28.81 |
| LDL-C | 29 | 31.87 | 15 | 25.42 |

Table III: Distribution of participants according to BMI (n=300)

| BMI Category | Case (N=150) | | Control (N=150) | |
|--------------------------|--------------|-------|-----------------|----|
| | N | % | N | % |
| Underweight (<18.5) | 0 | 0.00 | 0 | 0 |
| Normal weight(18.5-24.9) | 48 | 32.00 | 141 | 94 |
| Overweight (25.0-29.9) | 67 | 44.67 | 9 | 6 |
| Obese (>30) | 35 | 23.33 | 0 | 0 |
| Mean BMI ± SD | 25.73±2.10 | | 22.38±1.82 | |

Table IV: Distribution of participants according to mean lipid Lipid profile Distribution (n=300)

| Lipid profile (Mean ± SD) | Case (N=150) | Control (N=150) | p-value |
|---------------------------|--------------|-----------------|----------------------|
| | 191.78±15.66 | 123±10.04 | <0.031 ^s |
| HDL- | 191.78±15.67 | 123±10.05 | <0.049 ^s |
| LDL- | 191.78±15.68 | 123±10.06 | <0.0015 ^s |
| | 191.78±15.69 | 123±10.07 | <0.036 ^s |

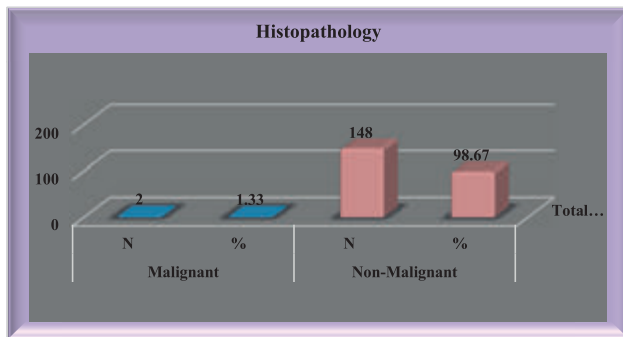


Figure 3: After cholecystectomy, Histopathological examination of gallbladder specimen:

Discussion

Gall stones are the most common biliary pathology. Formation of gallstone are multifactorial and complex such as metabolic, infection, and stasis. Biliary cholesterol supersaturation is identified as the main prerequisite for forming cholesterol gallstones, and elevated unconjugated bilirubin in bile is considered the primary cause of the pigment gallstone. Thus gall stones are formed due to impaired metabolic regulation of the human body. Serum high TG and low HDL-C have shown a significant association with gallstone disease, H Thilanka et al. Gallstones are formed in the gall bladder and Biliary tract¹⁶. There are three types of gallstones usually observed among cholelithiasis patients. Among them, cholesterol stone is the commonest form. Unfortunately, our country does not routinely examine gallstones to determine the types. Adult patients and both sex groups are included in the study. The mean age of the presentation groups in the case was 39.79, and in control, 38.86 years, respectively. The bulk of the disease presented in the age group of 35-45 years. Le 40% of the total cases. This study showed a female preponderance, with 72% female and 28% male, with a ratio of male to female, which was 12.57. Our study correlated with the studies conducted by Nagaraj SK et al.¹⁷. In this study, Cholelithiasis had a peak incidence in the age group of 35-45 years. Nevertheless, Nagaraj SK et al. show that the peak incidence age group is 40-50 years, and male to female ratio is 1.2:57. Schirmer et al. show that the peak incidence age reproductive years and the male-to-female ratio is 1:4. Gallstone disease or Cholelithiasis was diagnosed by ultrasonography¹⁸. One hundred fifty participants in the study group 48% 24%, 23%, and 5% were /suffering from chronic cholecystitis with Cholelithiasis, chronic cholecystitis with choledocholithiasis, acute calcu-

lus cholecystitis and Empyema gallbladder with Cholelithiasis respectively. Stone was analyzed morphologically. Then only cholesterol stones and mixed stones were included in this study. One hundred fifty cases are selected to have cholesterol stones (61%) and mixed stones (39%), respectively. Out of 150 participants in the study group, 91(61%) had cholesterol stones; Triglyceride, HDL-C total cholesterol, and LDL-C were 63%, 61%, 35%, and 31%, respectively. Also, 39% (59) had composite stones. Among them triglyceride HDL-C, and total cholesterol LDL-C were 59%, 53. %, 29%, and 25%, respectively. Nevertheless, H.Thilanka et al. study show that out of 73 participants, 37(51%) cholesterol stones, including Triglyceride, total cholesterol, LDL-C, HDL-C, were 19%, 14%, 19%, and 0% Obesity is a significant risk for gastone¹⁹. A larger body size (BM) was suggested to be associated with a higher risk of stone formation. My study shows that out of 150 participants, 32%, 44.00%, and 23.33%, 0% were average, overweight, obese, and underweight, respectively. In our study, we observed that the mean BMI of the case group than the control group was higher (25.73+/-2 ten vs. 22.38+/-1.82) and statistically significant (p<0.001) v Bhandar et al. study shows that The mean BMI was statistically higher in the case group than the control group (27.5+/-0.71 vet 24.31+/-0.32 and p<0.001. All the patients were subjected to the determination of the serum lipid profile like total cholesterol, HDL cholesterol, LDL cholesterol, and Triglyceride. The results were compared with the lipid profile of healthy persons taken as control. The result of serum total cholesterol, triglycerides, and LDL cholesterol show a significant increase, whereas serum HDL cholesterol shows a significant decrease compared to the control subject. The serum lipid parameters were compared to that of different studies conducted by different authors, which were similar to their findings. The serum TC, LDL-C, and TG were all statistically higher in the case group than in the control group. HDL-C was statistically lower in the case of the study group than control. In my study case group TC (191.78 +/-15.66), TG (146.59 +/-11.97), LDL-C (128.13 +/-10.48), and HDL-C (35.46 +/- 2.89) The serum TC, TO LDL-C were all statistically significantly higher in case of the group than the control group (p<0.031, p<0.036, p<0.001) respectively HDL-C was statistically significantly lower in the case group than the control group (p<0.049) V Bhandari et al., study shows that TC(186.78+/- 49.13)²⁰. TG (142.54 +/-58.52) LDL-C (126.06 +/-45.82) HDL C (39.46

+/-27.97). TC, TG, and LDL-C are statistically significantly higher in the case group than the control group, [$p < 0.001$] and HDL-C was lower, but that are not statistically significant [$p = 0.179$] S Hayat et al.²¹, study shows that TC (154.50), TG (198.2) HDL-C (29.54) and LDL-C (118.40) [$p < 0.625$, $p < 0.013$, $p < 0.000$ and $p < 0.544$] respectively. TC level was higher than the control group but not statistically significant, TG level was higher than the control group and statistically significant, HDL-C level was lower in the case group, and statistically significant. The patient's LDL-C level was low compared to the control group, but the result was not statistically significant. Chana NA et al.²². Study shows that TC (199.3+/-5.4), TG (191.4 +/-10.0), HDL-C (23.9+/-0.28). LDL-C (118.7+/-3.8) and TC [$p = 0.275$] TG [$p = 0.437$], HDL-C [$p = 0.085$] and LDL-C [$p = 0.315$] Serum lipid profile between case and control showed no significant variation except TG. Gall bladder malignancies diagnosed by ultrasonography were excluded as per exclusion criteria. However, histopathological examination of gallbladder specimen after cholecystectomy, incidental gall bladder malignancy were found 2 (1.33%) and non-malignancy 148 (98.60%) in my study Tadeusz et al.²³ study shows that gall bladder malignancy after histopathology 0.87% and Faisal G Siddiqui et al., study shows that gallbladder malignancy after histopathology 2.8%, So it is a highly justifiable histopathological examination of all gallbladder specimen after cholecystectomy²⁴. My study reveals that high lipids levels, especially TG, TC, LDL-C, and low HDL-C, contribute to Cholelithiasis. However, it

is not conclusive as it is a case-control study. The sample size was small, the stones were not analyzed chemically, and the duration was short. Further study, especially RCT, should be conducted about this topic in this region.

Limitations of the study: It was a case-control study, conducted in a single hospital with a small sample size in a short duration. So, the results may not represent the whole community.

Conclusion And Recommendations

This study emphasized that the increased lipid profile can be a good indicator for gallstone diseases, and females are more susceptible to forming gallstones with high cholesterol levels. Obesity is a risk factor for gallstones, so people should maintain an ideal body weight. Gallstones are a predisposing factor for malignancy, so all gallbladder specimens should be investigated histopathologically after cholecystectomy. A multicentered study in Bangladesh's divisional/tertiary hospitals can reveal an accurate picture. The study period should be the long and Multi-disciplinary approach to research work can make a study more precise and authentic in this regard.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

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Original Article

Outcome, feasibility, scope and limitation of laparoscopic surgery in a district hospital, Bangladesh

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Abstract

Back ground: Laparoscopic surgery is the resilient modality of surgical procedure with best operative outcomes. Now-a-days this is the worldwide accepted and established surgical procedure. However, due to lack of facility and expertise, this minimal invasive surgical option is not available in many hospitals, especially in district level hospital of Bangladesh.

Aims & objectives: The aim of this study was to evaluate the scope and outcome of laparoscopic operations in our district hospital, Bagerhat.

Methodology: A prospective study was done in 250 Beded Razia Naser Zila Hospital, Bagerhat, Bangladesh with a total 110 cases of different laparoscopic surgery from 15th August 2022 to 30th May 2023. Study population was selected by convenient purposive sampling. Ethical clearance was taken from the Ethical review committee of 250 Beded Razia Naser Zila Hospital, Bagerhat.

Results: In our hospital, laparoscopic cholecystectomy was the leading laparoscopic surgery (56.4%) followed by laparoscopic appendectomy (14.5%). Other laparoscopic operations were repair of different ventral hernias, inguinal hernia, repair of duodenal ulcer perforation, right hemicolectomy, ovarian cystectomy, diagnostic laparoscopy and Palomo operation. In case of laparoscopic cholecystectomy, 25.8% cases were acute and 16.1% was empyema. Incidence of port site infection was 2.7% and the rate of open conversion was 1.8%. Procedure specific complications were nearly zero. Majority of the patients (75.5%) were discharge within 24-48 hours with excellent outcome.

Conclusion: Despite of limitations, scope of laparoscopic surgery in district level hospital in Bangladesh is huge with experienced surgeons, technical support, ICU and anaesthetic facility. Not only laparoscopic cholecystectomy but also other major surgery can be performed safely in minimal invasive way. Port site infection, open conversion rate, procedure specific complications were quite acceptable in this study.

Keywords: Laparoscopic surgery, cholecystectomy, appendectomy, hernia, ovarian cystectomy, Bagerhat District Hospital, complications, outcomes.

Introduction

In this modern era, laparoscopic surgery is the most popular and gold standard surgical option. Many complex surgery now-a-days can be performed in this minimal invasive way. Laparoscopic surgery was first presented in the eighth decade of 20th century, shortly after that it became

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the surgical treatment of choice for many operations¹. Laparoscopic cholecystectomy is the commonly performed laparoscopic surgery worldwide; and laparoscopic cholecystectomy is the gold standard treatment for symptomatic gallstones². Its advantages include decreased

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hospital stay postoperatively, earlier return to work, decreased post-operative pain, minimum surgical incisions and so better cosmetic results and lesser postoperative complications³. Most of the studies suggest that laparoscopic surgery is a highly technical demanding operation. This modality of operation is also associated with a different set of complications.

Direct coupling, capacitive coupling, insulation failure, visceral injury, peroperative haemorrhage, port site infection etc. are established complications of this procedure^{4,5}. The incidence of port site infection is 1.4 – 6.7%, reported in a research⁶. Expertise, technical support, ICU and good anaesthetic facility are essential element of laparoscopic surgery^{7,8}. Laparoscopic surgery unit was start in our hospital on 15th August 2022. Thereafter, within ten months over hundred laparoscopic surgeries were performed. The overall results were very promising. This unit was consisted of three individual laparoscopic panels. “Laparoscopic surgery unit” was aimed at specialized laparoscopic surgery at this district level hospital. The objective of our study was to evaluate our initial experience and outcome of laparoscopic surgery in this hospital.

Methods And Materials

This study was conducted as a prospective study in 250 Beded Razia Naser Zila Hospital, Bagerhat, Bangladesh with a total 110 cases of different laparoscopic surgery. Study population was selected by convenient purposive sampling based on inclusion and exclusion criteria from 15th August 2022 to 30th May 2023. The survey data were usually be analyzed using both analytic as well as descriptive statistic. Such as; mean, SD, percentage etc. Informed consent was taken individually from patient and ethical clearance was taken from the Ethical review committee of 250 Beded Razia Naser Zila Hospital, Bagerhat.

RESULTS

Since 15th August 2022 to 30th May 2023, a total 110 cases of laparoscopic surgery was done in our institute. Table 1 suggests that laparoscopic cholecystectomy was the commonly performed laparoscopic surgery (56.4%) followed by laparoscopic appendicectomy (14.5%).

| Laparoscopic surgery | Number (n) | % |
|--------------------------------------|------------|------|
| Cholecystectomy | 62 | 56.4 |
| Appendicectomy | 16 | 14.5 |
| Ovarian cystectomy | 08 | 7.3 |
| Paraumbilical hernia (TAPP) | 08 | 7.3 |
| Epigastric hernia (TAPP) | 06 | 5.5 |
| Diastasis recti (TAPP) | 02 | 1.8 |
| Inguinal hernia (TAPP) | 02 | 1.8 |
| Repair of duodenal ulcer perforation | 02 | 1.8 |
| Diagnostic laparoscopy | 02 | 1.8 |
| Right hemicolectomy | 01 | 0.9 |
| Palomo operation (Varicocelelectomy) | 01 | 0.9 |
| Total | 110 | 100 |

Here TAPP represents trans-abdominal preperitoneal repair

Table 1: Different types of laparoscopic surgery from August 2022 to May 2023

Among the 62 cases of laparoscopic cholecystectomy, indications of surgery is represented in figure 1; which suggest laparoscopic cholecystectomy was commonly performed in patient with chronic cholecystitis due to cholelithiasis (50.0% cases).

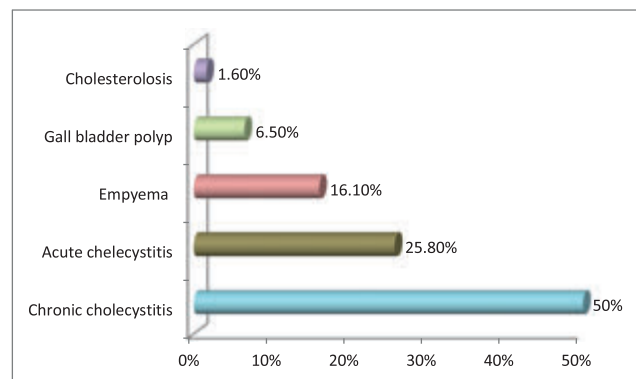


Figure 1: Indications of laparoscopic cholecystectomy

Major peroperative and postoperative events (including complications) is depicted in table 2; which suggests that port site infection rate was 2.7%. Spillage of pus, stone, bile or infected materials occurred in 8.2% cases and port site contamination rate was 4.5%. Open conversion was required in 1.8% cases.

| Event | Number (n) | % |
|----------------------------------|------------|-----|
| Perioperative haemorrhage | 00 | 00 |
| Visceral injury | 00 | 00 |
| Diathermy injury | 00 | 00 |
| Port site infection | 03 | 2.7 |
| Open conversion | 02 | 1.8 |
| Difficult operation | 06 | 5.5 |
| Bile, stone, pus spillage | 09 | 8.2 |
| Port site contamination | 05 | 4.5 |
| Port site haematoma/ seroma | 03 | 2.7 |
| Postoperative major complication | 00 | 00 |

Table 2: Major operative and postoperative events

Most of the patients (75.5%) were discharged with 24-48 hours. In case of 6.4% patients, the duration of hospital staying was more than 72 hours (figure 2).

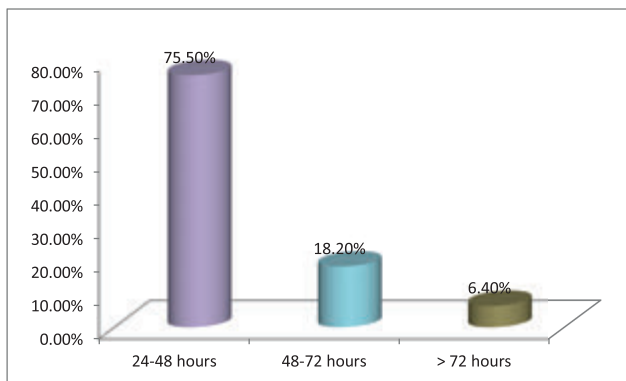


Figure 2: Length of hospital staying

Discussion

Now-a-days laparoscopic surgery or the minimal access surgery is commonly performed as fast track basis. However, this modality is not commonly performed in district level hospital; most often due to lack of facility and expertise. Moreover, laparoscopic cholecystectomy is the common operative in most of the centers, even in tertiary level and medical college hospitals. Other operation is seldom performed even in the highest facility centers. In our hospital, over the past few months, 110 cases of different operations were done by this modality of surgery. Laparoscopic cholecystectomy was performed in 56.4% cases of all laparoscopic surgery. Laparoscopic appendectomy and ovarian cystectomy was performed in 14.5%

and 7.3% cases respectively. Laparoscopic TAPP (transabdominal preperitoneal repair) for paraumbilical hernia was done in 7.3% cases; whereas laparoscopic TAPP for epigastric hernia was done in 5.5% cases. Laparoscopic repair (TAPP) of diastasis recti was performed in 1.8% cases. Laparoscopic repair (TAPP) of inguinal hernia was done in 1.8% cases. We have done a case of laparoscopic right hemicolectomy for right colonic mass (adenocinoma of caecum); possibly this is the first such laparoscopic surgery in the south-east zone of Bangladesh. Other laparoscopic operations were diagnostic laparoscopy (1.8%) and Palomo operation for varicocele (0.9%). In a particular study, the frequency of laparoscopic cholecystectomy was 85.7% of all laparoscopic operations⁹. Similar finding was observed in many studies^{9,10}. In our hospital chronic cholecystitis (due to gall stones) was the most common indication of laparoscopic cholecystectomy. It was performed in 25.8% cases of acute cholecystitis. Empyema of gall bladder is a very challenging condition in common surgical practice. However, we have able to performed laparoscopic cholecystectomy successfully in approximately 16.1% cases. In 6.5% cases laparoscopic cholecystectomy was done for gall bladder polyp (large polyp > 2cm, multiple polyps or polyp with fast growth rate on follow up Ultrasound). In a study, among the total 1478 patients, 78 patients were in acute states (acute cholecystitis, empyema of gall bladder)¹⁰. The overall results in our hospital were not only promising but also excellent; and comparable to the other standard centers in Bangladesh. Port site infection is a preventable but troublesome condition in case of laparoscopic surgery. In this study, it was 2.7% (03 out 110 cases). According to the US CDC (United States Centers for Disease Control and Prevention), surgical site infection is infection at the site of surgery within 30 days^{9,11}. Micro-cluster granulomatous port site infection/ non-tuberculous granulomatous infection is a very troublesome condition at the port^{12,13}. The rate of port site infections (PSIs) is 3.92% in a study in Bangladesh¹⁴. In another published paper in BSMMU is has been mentioned that port site infection is not an uncommon entity in laparoscopic cholecystectomy¹⁵. It has been reported in 1.4-6.7% of the cases^{16,17}. Open conversion was done in 1.8% (02) cases of all laparoscopic operations. Intra-peritoneal spillage (bile, stone, pus, infected fluid was seen in 8.2% (09) cases. Port contamination occurred in 4.5% (05) cases.

In a particular study, bile/ stone spillage occurred in 24 (1.6%) patients. Among these patients of spillage, port site infection rate was 58.3% (significantly higher)¹⁸. In another study in Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh, similar findings were seen. In this study, approximately 35.42% patients of port site infection had spillage of bile/ stone²². Similar results were seen in most of the national and international studies¹⁹⁻²¹. Haematoma/ seroma formation was observed in 2.7% (03) patients in this research. No major procedure specific peroperative or postoperative complication was seen in any patient. In our hospital, most often laparoscopic surgery was done by fast track basis. Over months, patients were optimized and pre-anaesthetic check up was done on outpatient basis before the admission (on the day before surgery). Approximately 75.5% patients were discharged within 24-48 hours following surgery; in 18.2% patients were discharged between 48-72 hours. Only in 6.4% cases, length of hospital staying was more than 72 hours.

Conclusion

We have so many limitations for laparoscopic surgery especially in district hospitals; lack of expertise, facility, technical support, ICU and anaesthetic support. In our hospital we have done so many cases over the last few months; and the results were attractive. Laparoscopic cholecystectomy was the commonly performed procedure (56.4%). Few rare cases like right hemicolectomy, TAPP for inguinal hernia, repair of duodenal ulcer perforation was done successfully with excellent results. Port site infection and open conversion rate was 2.7% and 1.8% respectively. Procedure specific major perioperative complication was almost nil. Majority of the case was done by fast track basis and successful discharge from hospital was possible within 24-48 hours in case of 75.5% patients.

Conflicts of interest:

The authors declare no conflict of interest for this study.

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Original Article

Study on the Use of Modified Alvarado Scoring System (MASS) for Diagnosing Acute Appendicitis at a Tertiary Care Hospital

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Abstract

Back ground: Acute appendicitis is a common abdominal surgical emergency, with a global lifetime prevalence of 1 in 7 individuals. Failure to diagnose this condition early can lead to significant morbidity and mortality. Approximately 6% of the population is estimated to experience acute appendicitis during their lifetime. Early diagnosis and prompt surgical intervention are crucial for successful management. However, the challenge lies in distinguishing appendicitis from other conditions with similar symptoms, especially in certain age groups such as young females, reproductive-age groups, and the elderly. This difficulty in diagnosis often results in a relatively high rate of unnecessary appendectomies. Various scoring systems have been developed to improve diagnostic accuracy, but most are complex and impractical in emergency settings. The Modified Alvarado Scoring System (MASS) has shown promise as a simple and cost-effective tool for supporting the diagnosis of acute appendicitis, particularly for junior surgeons.

Aim of the study: This study aims to investigate the use of the Modified Alvarado Scoring System (MASS) for diagnosing acute appendicitis at a tertiary care hospital.

Methods: A cross-sectional study was conducted at the Department of Surgery, Khulna Medical College and Hospital, Khulna, Bangladesh, aiming to assess the efficacy of the Modified Alvarado Scoring System (MASS) in patients with acute appendicitis. The study spanned from January 2022 to December 2022 and all patients enrolled in the study were initially examined by the admitting registrar or assistant registrar who determined the need for surgery.

Result: In this study, a total of 120 patients were included and divided into three separate groups. The majority 41.67% of patients were from the age group 21-30 years, 2nd most 33.33% of patients were from age group 11-20 years and lowest were from 61-70 years with 1.67% of patients respectively. Most 63% of patients were male and rest of 37% of patients were female. The majority of patients (52.50%) belonged to Group 3 with a score of 7-9, while 29.17% were in Group 2 with a score of 5-6. The most minor proportion (18.33%) was observed in Group 1, with a score of 1-4. Patients in Group 1 (MASS 1-4) were not considered likely to have appendicitis. They received conservative treatment and were discharged after 2-3 days, with follow-up visits scheduled every month for six months. None of the patients in this group required surgery during the observation period.

Conclusion: In conclusion, this study demonstrates that MASS is highly sensitive, specific, and accurate for diagnosing acute appendicitis. It particularly benefits male patients with a higher positive predictive value compared to females.

Keywords: Modified Alvarado Scoring System (MASS), Acute appendicitis, and Tertiary Care

Introduction

Acute appendicitis is one of the most common surgical emergencies worldwide, often requiring prompt diagnosis and treatment to prevent complications, and is considered one of the most common causes of abdominal surgical emergencies¹⁻³. Approximately it has been estimated that

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6% of the population will suffer from acute appendicitis during their lifetime. Increasing efforts are made to enable early diagnosis and, thereby, early surgical intervention^{4,5}. A negative appendicectomy rate of 20-40% has been reported in the literature. Many surgeons accept a negative

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appendicectomy rate of about 15-20% to avoid perforation and early surgical intervention⁶. The premise that removing a normal appendix is better than delay in diagnosis does not stand up to scrutiny, especially in elderly patients. It poses an economic burden on patients and health resources. Complications like perforation and peritonitis occur if there is a delay in diagnosis or misdiagnosis⁷. Various scoring systems to assist in diagnosis have been developed. Most of these are complex and unfeasible in emergency settings². The Alvarado Scoring System (ASS) is a widely used clinical tool that aids in diagnosing acute appendicitis. However, its accuracy has been debated, with concerns about its limited sensitivity and specificity. Researchers have recently proposed modifications to the original Alvarado scoring system, known as the Modified Alvarado Scoring System (MASS), to enhance its diagnostic utility⁷. Recent studies have shown MASS to be a simple, easy and cheap diagnostic tool helpful, especially for junior surgeons for supporting the diagnosis of acute appendicitis^{8,9}. In recent years, several studies have evaluated the efficacy of the MASS for diagnosing acute appendicitis in different healthcare settings. However, there needs to be more research on using MASS in the context of Bangladesh, a country with a high burden of acute appendicitis cases and limited resources^{10,11}. Understanding MASS's applicability and diagnostic accuracy in a tertiary care hospital in Bangladesh is essential for improving the management of acute appendicitis in this setting. This study aims to investigate the use of the Modified Alvarado Scoring System (MASS) for diagnosing acute appendicitis at a tertiary care hospital.

Methodology & Materials

A cross-sectional study was conducted at the Department of Surgery, Khulna Medical College and Hospital, Khulna, Bangladesh, aiming to assess the efficacy of the Modified Alvarado Scoring System (MASS) in patients with acute appendicitis. The study spanned from January 2022 to December 2022 and all patients enrolled in the study were initially examined by the admitting registrar or assistant registrar who determined the need for surgery. The Principal Investigator evaluated the patients using the variables of MASS and then divided them into three groups.

Group 1: Patients with MASS of four and below (Patients unlikely to have acute appendicitis).

Group 2: Patients with MASS of 5-6 (Patients likely to have acute appendicitis).

Group 3: Patients with MASS of seven and above (Patients probably to have acute appendicitis).

- Inclusion criteria:

All patients who were diagnosed with acute appendicitis and scheduled for an appendectomy were enrolled in the study after providing informed consent.

- Exclusion criteria:

Patients with a mass in the right iliac fossa failed to provide information, had no nearby relatives, and no histopathological results were excluded from the study.

An abdominal ultrasound was conducted when patients displayed typical symptoms. Emergency appendectomies were performed on all patients, and the removed appendices were sent for histopathological examination. The histopathological examination confirmed the diagnosis of acute appendicitis. Based on their relationship, the collected data was organized into appropriate tables and graphs. Detailed descriptions accompanied each table and graph to ensure clear comprehension. The statistical analysis was conducted using the SPSS program on a Windows platform.

Result

In this study a total of 120 patients were enrolled and analyzed into three individual groups. Table 1 presents the distribution of ages in the study population, revealing that the majority of patients (41.67%) were aged between 21 and 30 years. The second largest group comprised 33.33% of patients aged between 11 and 20 years, while the lowest representation was seen in the 61-70 years age group, with only 1.67% of patients. Among the patients, 63% were male, and the remaining 37% were female, as illustrated in Figure 1. The distribution of pain locations, outlined in Table 2, indicated that 44 patients (36.67%) experienced pain from the umbilical to the right iliac fossa. In comparison, 39 patients (32.50%) reported pain, specifically in the right iliac fossa. Central abdominal pain was observed in 14 patients (11.67%). Table 3 displayed the physical signs observed in the study population, where over 95% of patients exhibited tenderness in the right iliac fossa.

Additionally, 92 patients (76.67%) demonstrated rebound tenderness, 84 patients (70.00%) had a fever, and the lowest percentage of patients (11.67%) exhibited a mass in the right iliac fossa. Figure 2 depicts the grouping of the study population according to the Modified Alvarado Score System (MASS). The majority of patients (52.50%) belonged to Group 3 with a score of 7-9, while 29.17% were in Group 2 with a score of 5-6. The most minor proportion (18.33%) was observed in Group 1, with a score of 1-4. Patients in Group 1 (MASS 1-4) were not considered likely to have appendicitis. They received conservative treatment and were discharged after 2-3 days, with follow-up visits scheduled every month for six months. None of the patients in this group required surgery during the observation period. Among the 35 patients in Group 2 (MASS 5-6), 7 underwent surgery due to a high suspicion of acute appendicitis. Of the operated patients, five were male, and two were female, and among the males, 3 out of 4 were diagnosed with acute appendicitis, 3 were male and 1 was female patients (Table 4). Within Group 3 (n=63), 60 patients underwent appendectomy, while the remaining 3 cases were not operated upon. These three patients were observed, discharged after 3 to 4 days of hospital stay, and followed up every month for six months. None of them required surgery during the observation period. Out of the 63 patients, 54 patients were with HP appendicitis and 6 patients were without appendicitis (Table 5). The sensitivity for diagnosing appendicitis was highest among males at 92.11%, whereas for females, it was 56.00%. Regarding specificity, male patients exhibited a higher percentage (52.63%) than females (44.00%). Further details regarding the positive predictive value can be found in Table 6.

Table 1: Age distribution of the study population (N=120)

| Age (years) | Frequency | Percentage |
|-------------|-----------|------------|
| 0-10 | 5 | 4.17 |
| 11-20 | 40 | 33.33 |
| 21-30 | 50 | 41.67 |
| 31-40 | 17 | 14.17 |
| 41-50 | 3 | 2.50 |
| 51-60 | 3 | 2.50 |
| 61-70 | 2 | 1.67 |
| Total | 120 | 100.00 |

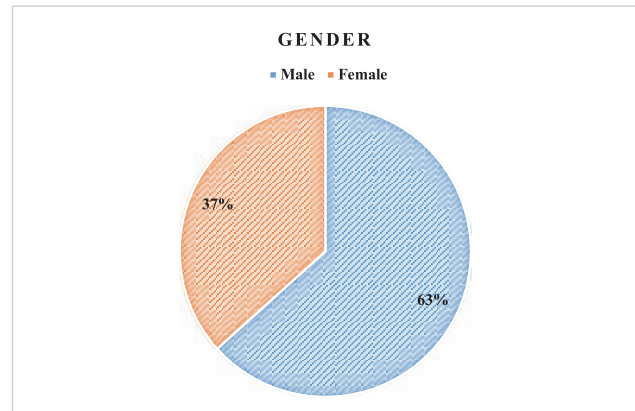


Figure 1: Gender distribution of the study population (N=120).

Table 2: Site of pain.

| Site | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Right iliac fossa | 39 | 32.50 |
| Umbilical to right iliac fossa | 44 | 36.67 |
| Epigastric | 10 | 8.33 |
| Diffuse | 13 | 10.83 |
| Central abdominal | 14 | 11.67 |

Table 3: Physical signs.

| Signs | Frequency | Percentage |
|-------------------------------------|-----------|------------|
| Tenderness at rt iliac fossa | 115 | 95.83 |
| Fever | 84 | 70.00 |
| Rebound tenderness | 92 | 76.67 |
| Rovsing's sign | 26 | 21.67 |
| Hyperesthesia at Sherren's triangle | 22 | 18.33 |
| Mass in RIF | 14 | 11.67 |

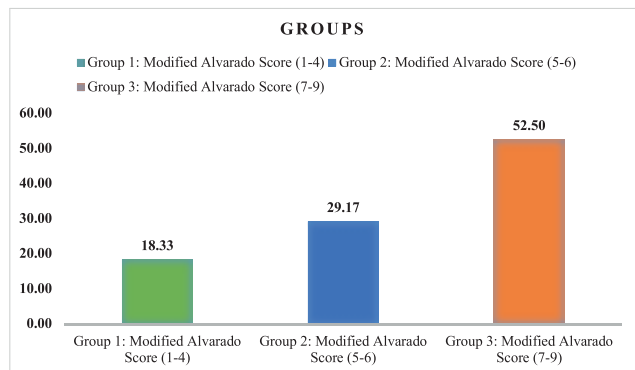


Figure 2: Group wise patients' distribution.

Table 4: Distribution of cases according to Group 2: Modified Alvarado Score (5-6).

| Category of cases | Number of cases with HP Appendicitis | Number of cases without HP Appendicitis | Number of cases operated |
|-------------------|--------------------------------------|---|--------------------------|
| Male (n=26) | 5 | 3 | 8 |
| Female (n=9) | 2 | 1 | 3 |
| Total (n=35) | 7 | 4 | 11 |

Table 5: Distribution of cases according to Group 3: Modified Alvarado Score (7-9).

| Category of cases | Number of cases with HP Appendicitis | Number of cases without HP Appendicitis | Number of cases operated |
|-------------------|--------------------------------------|---|--------------------------|
| Male (n=38) | 34 | 4 | 38 |
| Female (n=25) | 20 | 2 | 22 |
| Total (n=63) | 54 | 6 | 60 |

Table 6: Study sensitivity and specificity.

| Variables | Frequency | Percentage |
|----------------------------------|-----------|------------|
| Males with score 7 to 9 (N=38) | | |
| Sensitivity | 35 | 92.11 |
| Specificity | 20 | 52.63 |
| Positive predictive value | 37 | 97.37 |
| Females with score 7 to 9 (N=25) | | |
| Sensitivity | 14 | 56.00 |
| Specificity | 11 | 44.00 |
| Positive predictive value | 18 | 72.00 |

Discussion

The use of MASS has been reported to improve the diagnostic accuracy in the diagnosis of acute appendicitis and thereby reducing negative appendectomy rate and complications^{12,9}. This study was conducted to evaluate the effectiveness of MASS in patients with acute appendicitis in this setting. Studies in Kenya, Nigeria, and Ethiopia found a male dominance similar to our study¹³. The difference in sex distribution in these studies may be attributed to female patients with right iliac fossa pain having a wide range of differential diagnoses. As a result, acute appendicitis may be over diagnosed in this gender group. Therefore, additional investigations may be required in female patients to confirm the diagnosis of acute appendicitis. However, in females, the negative appendectomy rates were quite high in groups with scores of 5 to 6 and 7 to 9. Out of the 120 patients, 63% of patients were male, and the

rest of, 37% were females. The male: female ratio is 1.7:1. Similar results were documented by Kimberly et al. in their study; the incidence of males and females was 55% and 45%, respectively¹⁴. Saidi H et al. documented different results of male: female ratio is 1:1¹³. The result may be due to racial, dietary, and regional variations. According to previous studies, 80% of acute appendicitis cases may present with migratory pain; in this study, it is 60%. It may range from 61% to 92% for nausea and vomiting; in this study, it is 72%. Positive physical findings, excluding pyrexia, can be seen in up to 95% of cases. Patients' factors related to positive history (shifting pain, anorexia, and nausea-vomiting) were prominently less than in previous studies. In this case, the lower frequency of symptoms may result from patients' inability to define the symptoms. Most of the time, relatives had to be asked for assistance. Physicians face This common problem in developing countries with low socioeconomic status. Other studies from Iran revealed that these factors are not as diagnostic as physical findings¹⁵. The cause of this difference with other regions is unknown. Maybe our patients do not give an accurate history. Among adult patients, 80% to 85% of cases may have leukocytosis. In this study, it is 73%¹⁶. However, the literature does not agree on the prevalence of leukocytosis in pediatric and elderly^{17,18}. The sensitivity of acute appendicitis is 92.11% for males and 56% for females in the present study, with a score of 7 to 9 correlates well with the figures of studies by Kalan et al. (who have reported 93%) and Bhattacharjee et al., (who have reported 94.1%)^{19,20}. The overall sensitivity of acute appendicitis being 85% in the present study with a score of 7 to 9 correlates well with the figures of studies by Kalan et al. (who have reported 83.7%) and Bhattacharjee et al. (who have reported 82.7%)^{19,20}. Another study by Bengezi et al. was conducted on 45 patients prospectively using the modified Alvarado score. They found a positive predictive value of 95.2% for males and females, 93.3%²¹. They concluded that the score was useful in distinguishing acute appendicitis from other acute abdominal conditions, thus decreasing negative appendectomy. In another study by Fente, BG was conducted on 128 patients retrospectively using the modified Alvarado score. In this study, we found a specificity of 52.63% for males and 44% for females, with a score of 7 to 9. They found that a sensitivity of 92.93% and a specificity of 92.93% were recorded in their study²². It has been shown in the present study that MASS provides a high degree of sensitivity, specificity, PPV, NPV, and

accuracy in the diagnosis of acute appendicitis, which is in agreement with findings reported by others^{23,24}. Our study also revealed that MASS is more helpful in male patients by showing a lower negative appendectomy rate and high positive predictive value for male patients than females. In females, additional investigations may be required to confirm the diagnosis. Literature also supports this observation²⁵⁻²⁶.

Limitations of the study: A limitation of the study on using the Modified Alvarado Scoring System (MASS) for diagnosing acute appendicitis at a tertiary care hospital is the potential need for more generalizability. The study's findings may not apply to other healthcare settings with different patient populations, resource availability, or clinical practice variations, limiting the results' broader utility.

Conclusion And Recommendations

In conclusion, this study examined the effectiveness of the Modified Alvarado Scoring System (MASS) in diagnosing acute appendicitis at a tertiary care hospital. The results demonstrated that MASS provides a reliable and accurate method for identifying acute appendicitis, aiding in timely diagnosis and appropriate treatment. Implementing MASS in clinical practice can enhance diagnostic accuracy, reduce unnecessary surgeries, and improve patient outcomes, making it a valuable tool for physicians in a tertiary care setting.

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Review Article

The Role of Dietary Fibre in Colorectal Cancer Prevention

Khanam ZS¹, Adib SA², Rahman A³**Abstract**

Back ground: Introduction: Colorectal cancer (CRC) is a significant global health issue, ranking high in terms of incidence and mortality rates. Lifestyle choices, including diet, play a crucial role in the occurrence of CRC. Dietary fibre has been proposed as a potential preventive measure for colorectal cancer, but the evidence supporting its role is still being investigated. This literature review aims to explore the clinical and public health significance of dietary fibre consumption in preventing colorectal cancer.

Methods: A comprehensive search of PubMed and Medline databases was conducted to identify relevant studies for inclusion in this review. The search terms used combined synonyms for each component and focused on prospective cohort studies. Inclusion criteria required studies to be in English, report on human subjects, and have full-text availability. After screening 384 publications, seven studies were included in this review.

Results: The reviewed studies consistently demonstrated an inverse association between dietary fibre intake and colorectal cancer risk. Higher fibre intake was associated with a reduced risk of colorectal cancer in various geographical regions. Most studies relied on food frequency questionnaires (FFQs) to assess dietary fibre intake, which may be prone to recall bias and subjective desirability bias. However, FFQs remain a widely used method due to their accessibility and ease of administration. The source of fibre and its types were also explored in the studies. Some studies found that fibre from grains and fruits was associated with a reduced risk of colorectal cancer, while associations with other fibre groups were inconclusive. There was no significant difference observed between soluble and insoluble fibre in their effects on colorectal cancer risk. The studies also examined the role of biological sex in the association between dietary fibre intake and colorectal cancer risk, with mixed findings.

Discussion: Despite the limitations and potential confounding factors, the evidence supports the protective role of dietary fibre in reducing the risk of colorectal cancer. However, there is a need for further research to address the inconsistencies and limitations in the current studies. Future studies should consider factors such as food preparation methods, genetic susceptibility in different ethnic groups, and potential interactions with other lifestyle and dietary factors.

Conclusion: The reviewed studies provide evidence of an inverse association between dietary fibre intake and CRC risk; with a recommended daily intake of 30g of dietary fibre.

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Introduction

In 2020, colorectal cancer (CRC) ranked third and second most frequent cause of cancer incidence and mortality, respectively, with nearly 1.93 million new cases and 916,000 deaths worldwide¹. In the UK, ranking fourth most common form of cancer², CRC has approximately 43,000 new cases and 16,500 deaths confirmed annually³.

Colorectal cancer – also named bowel cancer – is a disease caused by genetic and environmental factors that influence the origination of uncontrolled cell proliferation in the colon or rectum. Research shows that hereditary mutations only account for a small percentage of CRC cases^{4, 5}.

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In contrast, Cancer Research UK classified 54% of CRC cases (in 2015)⁶ as preventable, compared to an estimated 47% in the United States⁷. This highlights how lifestyle choices may be more crucial in CRC occurrence. Modifiable risk factors include an unhealthy diet, smoking, obesity, and insufficient physical activity. Statistics illustrate how prevalent and fatal colorectal cancer is, but simple lifestyle modifications may prevent it; thus, CRC remains a focal point of research.

Regarding dietary modifications, dietary fibre has been postulated as a potential preventative measure for colorectal cancer, following Burkitt's observations⁸. Dietary fibre is a substance derived from plant-based foods which cannot be digested or absorbed by the human body. Based on its solubility and chemical properties, it can be categorised into either soluble or insoluble fibres. Soluble fibres include oats, peas and beans, while examples of insoluble include nuts, cauliflower and carrots⁹. Despite dietary fibres' minimal energy contribution, several scientifically plausible mechanisms have been proposed for its role in CRC. This paper will review current evidence to assess the potential etiological importance of dietary fibre in colorectal cancer prevention.

Aim

To explore dietary fibre consumption's clinical and public health significance in preventing colorectal cancer.

Objective

- To assess whether there is a relationship between fibre intake and the risk of developing CRC.
- To analyse the role of dietary fibre in the aetiology of CRC.
- To evaluate which source of fibre may be more effective in CRC prevention.
- To understand if the fibre consumption types determine the CRC risk.
- To assess the influence of biological sex on the association between dietary fibre intake and CRC risk

Method

To identify studies for inclusion in this critical review, a comprehensive search of PubMed and Medline was done. The search terms, outlined in Table 1, involved using Boolean operators 'OR' and 'AND' to combine synonyms for each component. Inclusion criteria stipulated that studies must be in English, report on human subjects, and have full-text availability. Article type preferably being

prospective cohort study. For the subtopic under consideration, the most recent year of publication was prioritised to include the latest research finding

Table 1: Search terms

| Problem | Intervention | Comparator | Outcome |
|--------------------|--------------------|-------------------|---------|
| Colorectal cancer | Diet high in fibre | Diet low in fibre | |
| Bowel cancer | Dietary fibre | | |
| Rectal cancer | Soluble fibre | Insoluble fibre | |
| Colorectal polyp | Butyrate | | |
| Colorectal adenoma | Whole grains | | |

Results

Following the screening of 384 publications, this literature review identified and included a total of seven studies: five prospective cohort studies for colorectal cancer¹⁰⁻¹⁴ and one for adenoma¹¹; a randomised controlled trial¹⁵ (RCT) and a case-controlled trial¹⁶ for adenoma. Of these, three were conducted in the United States^{11,12,15}, one in Japan¹³, and one in Europe¹⁰, which included the United Kingdom (UK). The mean follow-up duration for the cohort studies ranged from 7 years¹⁶ to 15 years¹². All studies collected data via administering food frequency questionnaires (FFQ)¹⁶.

Exclusion of 377 publications from inclusion in this paper was based on several scientifically valid reasons. One significant factor was the identification of duplicate publications across the two databases used for this study. Furthermore, the availability of more recent papers, such as the EPIC study, which had publications in both 2003¹⁷ and 2012¹⁰, provided more up-to-date information on the topic under investigation. Including these recent studies ensures that the findings of the paper are based on the most current and relevant research available. Another reason for exclusion was the unavailability of full-text versions of certain publications. Additionally, the decision to exclude certain publications was influenced by the focus of the paper. Research papers often have specific objectives or topics they aim to address. If a publication deviated significantly from the central theme or research question of this study, it was excluded to maintain the coherence and relevance of the paper.

Table 2: Colorectal cancer incidence and fibre intake prospective studies

| First author, year | Study name | Region | Study design | Mean follow-up | Study population | CRC incidence |
|--|---|---|--------------|----------------|------------------|---------------|
| Hulling et al. (2020)¹² | Whole grain and dietary fiber intake and risk of colorectal cancer in the NIH-AARP Diet and Health Study cohort | USA | Cohort | 15 years | 478,994 | 10,200 |
| Kunzmann et al. (2015)¹¹ | Dietary fiber intake and risk of colorectal cancer and incident and recurrent adenoma in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial | USA | Cohort | 13 years | 57,774 | 733 |
| Murphy et al. (2012)¹⁰ | Dietary Fibre Intake and Risks of Cancers of the Colon and Rectum in the European Prospective Investigation into Cancer and Nutrition (EPIC) | Denmark, Sweden, Norway, France, Germany, Italy, Greece, Spain, Netherlands, UK | Cohort | 11 years | 477,312 | 4,517 |
| Wakai et al. (2007)¹³ | Dietary fiber and risk of colorectal cancer in the Japan collaborative cohort study | Japan | Cohort | 7.6 years | 60,569 | 433 |
| Nomura et al. (2006)¹⁴ | Dietary fiber and colorectal cancer risk: the multi-ethnic cohort study | USA | Cohort | 7.3 years | 191,011 | 2,110 |

Table 3: Colorectal adenoma incidence and fibre intake studies

| First author, year | Study name | Region | Study design | Mean follow-up | Study population | Colorectal adenoma incidence |
|--|---|--------|-----------------|----------------|------------------|------------------------------|
| Fu et al. (2014)¹⁶ | Associations between dietary fiber and colorectal polyp risk differ by polyp type and smoking status | USA | Case-controlled | 7 years | 12,585 | N/A |
| Kunzmann et al. (2015)¹¹ | Dietary fiber intake and risk of colorectal cancer and incident and recurrent adenoma in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial | USA | Cohort | 13 years | 16,980 | 1,004 |
| Peter et al. (2003)¹⁵ | Dietary fibre and colorectal adenoma in a colorectal cancer early detection programme | USA | RCT | N/A | 33,971 | 3,591 |

Colorectal Cancer

A total of 17,993 colorectal cancer cases were reported from 1,265,660 participants included in this review (Table 2).

The European Prospective Investigation into Cancer and Nutrition (EPIC) study¹⁰ is an ongoing multicentre prospective cohort study conducted in ten European countries: Denmark, Sweden, Norway, France, Germany, Italy, Greece, Spain, the Netherlands, and the United Kingdom (UK). The most recent 2012 EPIC research article issued by Murphy.

The study consisted of 477,312 participants (142,250 men and 335,062 women). Dietary information was collected using both FFQs and 24-hour dietary recall. After a mean follow-up of 11 years, 4,517 incident cases of colorectal cancer were documented; 2,869 were of the colon, while 1,648 were of the rectum. The sample group with the higher fibre intake had a higher proportion of physically active and never-smoker participants, with lower intakes of red/processed meat and alcohol.

In the initial model, which was adjusted for total energy intake and stratified by age and sex, elevated consumption of total dietary fibre was linked to a statistically significant decline in the risk of colorectal cancer. Nevertheless, following the adjustment for various variables, this association was weakened to a certain extent but continued to be statistically significant, leading to a 17% reduced risk. The most significant confounding factors affecting this association's weakening were alcohol consumption and smoking. Upon using calibrated models, it was concluded that consuming 10g/day of cereal fibre led to a significant 11% decrease in CRC risk.¹⁰

Likewise, Kunzmann et al. (2015)¹¹ discovered an inverse relationship between total fibre intake and CRC incidence. However, this association was observed to be specific to the distal colon after further adjustment for smoking status and processed meat intake. The median fibre intake was 23.3g/day. The study was conducted in the United States over 13 years with a total of 57,774 participants. Diagnostic assessments consisted of sigmoidoscopy and histology.¹¹

The Japanese cohort study¹³ enrolled individuals aged

40-79. It confirmed over 10,000 incident cases of CRC through records of population-based cancer registries, augmented by a systemic review of the death certificate and, when necessary, hospital-based registries or inpatient records. Participants with higher dietary fibre intake tended to be older, more educated, and to exercise for more than an hour per week; this was assessed at baseline via a questionnaire. Furthermore, the likelihood of being a smoker decreased with increasing fibre consumption.

The highest intake (13.4 ± 2.8 g/day) was associated with a 25% reduction in CRC risk compared to the lowest intake (6.7 ± 2.0 g/day). Based on these findings, Wakai et al. concluded that dietary fibre intake was inversely associated with colorectal cancer risk in the Japanese population of the cohort¹³. The same was established by Nomura et al.¹⁴ – “high consumers of dietary fibre had a reduced risk of colorectal cancer”. The median daily intake of dietary fibre across the study population was 22.4 g for men and 21.6 g for women.¹⁴

Colorectal Adenoma

Kunzmann et al. (2015)¹¹ conducted a study with 57,774 participants (shown in Table 3), of whom 16,980 were observed for incident adenoma, and found that consuming higher amounts of dietary fibre was associated with a reduced risk of incident colorectal adenoma and distal CRC. Following further adjustments for smoking status, alcohol intake, and total folate intake, individuals in the highest tertile of total fibre intake and fibre from cereal, but not fibre from vegetables or fruit, had a reduced risk of incident colorectal adenoma compared to those in the lowest tertile.¹¹

Fu et al.'s (2014)¹⁶ case-controlled investigated the relationship between dietary fibre and colorectal polyps while considering smoking status. The participants were aged 40-75 and evaluated using FFQ, colonoscopy, and histology. The first finding was a statistically significant inverse relationship between dietary fibre and adenomatous and hyperplastic polyp. Second, the inverse association was stronger among participants who had smoked than those who had never smoked; with a 38% reduced risk of high-risk adenomas among cigarette smokers who smoked ≥ 23 years.¹⁶

Likewise, a 2003 published article¹⁵ on the analysis of the role of dietary fibre in the “colorectal cancer early detection programme” found a 27% lower risk of adenoma in participants of the highest quintile (30.6g/day) of dietary fibre intake than those in the lowest quintile (15.4g/day). However, this did not apply to rectal adenoma.¹⁵

Source of Fibre

In 2020, Hulling et al.¹² analysed the effect of fibre on each anatomical site (i.e. proximal and distal colon and rectum). The average participant was a non-Hispanic white male in their 60s. Participants were asked to carry out an FFQ and a 24-hour dietary recall. The study focused on observing the source and type of fibre and found a lower incidence of CRC (specifically distal colon and rectal cancer) associated with fibre from grains but no other sources. The derived statistics showed that the greatest median intake of whole grains (1.3 servings) was linked to a 16% decreased risk of CRC and a stronger inverse correlation for rectal cancer.¹²

On the other hand, Kunzmann et al.¹¹ found that when different fibre groups were examined, fruit fibre intake was associated with a reduced risk of colorectal cancer, even after further adjustment; however, associations with other fibre groups were essentially null.

Peter et al.¹⁵ identified that fibre from both grains/cereals and fruits, but not from legumes or vegetables, was associated with a reduced risk of colorectal adenoma.

Hossain et al.¹⁸ conducted a study highlighting the potential of herbs and spices commonly utilized in Indian and Bangladeshi cuisine for their protective effects against colorectal cancer (CRC). These natural ingredients have been traditionally employed across generations and even employed as adjuvant therapies in high doses to counter CRC. The bioactive compounds present in herbs and spices exhibit chemotherapy preventative properties mediated through diverse pathways, including BCL-2, K-RAS, and MMP. Furthermore, they demonstrate antiproliferative effects on cancer cells and exhibit inhibitory activity on angiogenesis, the process of new blood vessel formation.

Soluble Vs. Insoluble

No statistically significant difference was observed between the effects of soluble and insoluble fibre on the inverse relationship between CRC risk and dietary fibre intake.¹³

Biological Sex

Murphy et al.¹⁰ observed a significant 11% decrease in colorectal cancer risk of equal magnitude in both men and women. In parallel with the findings of the EPIC study, Hulling et al.¹⁰ found no significant differences in the strength of the association between gender and risk. For colorectal adenoma, no effect modifications by sex were seen by both Fu et al.¹⁶ and Peter et al.¹⁰

In contrast, Nomura et al.¹⁴ observed that although no significant interactions were found between dietary fibre and ethnicity in men or women, the inverse association remained significant in men after further adjustment for lifestyle and dietary factors. However, in women, the association became non-significant after adjusting for the combination of hormone replacement use with either cigarette smoking or body mass index.¹⁴

Discussion

Seven studies were reviewed, and they consistently demonstrated an inverse association between dietary fibre intake and colorectal cancer risk. A relationship observed across various geographical regions globally^{8,10,13}. This corresponds with the World Cancer Research Fund's identification of low dietary fibre intake as a modifiable risk factor for CRC⁷.

Most studies¹⁰⁻¹⁶ based their assessment of fibre intake on FFQs. However, FFQ involves reliance on generic memory being retrospective; thus, there is a likelihood of recall bias. Additionally, questionnaires are prone to subjective desirability bias. This subjectivity reduces the validity of the collected data and should be acknowledged in future studies. Moreover, the FFQs remain a poor indicator of individuals' overall diet as the portion sizes are not accounted for. The quantity of food items can be limiting, with some only including 40 items¹³. Hulling et al. note that administration of FFQ at baseline only restricts assessment of dietary modifications over time¹² - adding to subjective bias. Despite the many known limitations, FFQs remain a highly preferable data collection method in more extensive dietary studies due to their relative ease of administration and high accessibility rates. Another strength, FFQ allows assessment of long-term participant diet compared to a 24-hour dietary recall. FFQs are also much less time-consuming than food diaries, increasing participant adherence.

Secondly, the definition of dietary fibre may differ between studies as there are naturally occurring fibre and added fibres. Third, studies have not considered food preparation methods. Nucci et al.¹⁹ discovered new evidence indicating that fibre structure alterations arise during processing, resulting in biological impact changes. Fourthly, other components of fibre foods may counteract or even reverse the effect causing misinterpretation of data.

Despite the validation of the data, the possibility of residual confounding factors by other lifestyle and dietary factors may persist. For example, in European countries, folic acid fortification in foods is not mandatory¹⁰; eating patterns in the US consists of mainly refined grains, saturated fats and sodium while low in vegetable, fruit and dairy - an important aspect that should be considered as the vast majority of included studies were conducted in the USA. In addition, immigrant studies showed Japanese Americans to have a higher incidence rate than U.S. Caucasians¹³, exemplifying that genetic susceptibility may differ in ethnic groups. However, nevertheless, there is a plausible relationship.

There have been inconsistent findings on whether an individual's sex influences the protective role of dietary fibre in the risk of colon and rectal cancer. Some studies found no significant difference between males and females^{10,12,16}. However, then Kunzmann et al. and Nomura et al.¹⁴ concluded a higher protective role of dietary fibre in colorectal carcinogenesis in men than women. Several explanations have been postulated for the difference by sex: hormone replacement therapy¹⁴, smoking status¹⁶ (men more likely to smoke) and BRCA1 mutations²⁰.

Although Wakai et al. observed no significant difference in the overall effect of soluble and insoluble fibre on the risk of developing CRC, a stronger association of insoluble fibre with colon cancer was evident in a case-control study. Nevertheless, World Health Organisation (WHO) suggests dismissing such distinction considering the beneficial effects of both dietary fibre components and because solubility does not always predict biological effects¹⁹.

Method analysis

It is essential to acknowledge that the search terms presented in Table 1 may not have identified all pertinent literature

related to the research objectives. The lack of words such as "CRC" and "Colorectal Carcinoma" could lead to incomplete or biased outcomes. Future studies should adopt a more comprehensive search approach to ensure the inclusion of all relevant publications. Such an approach could enhance the accuracy and generalisability of the research findings.

For inclusion in this review, prospective cohort studies were preferred due to their ability to establish a temporal relationship between exposure (dietary fibre intake) and outcome (CRC risk), which allows for the assessment of cause-and-effect relationships with greater confidence. Additionally, these studies have less potential for recall bias, large sample sizes, and the ability to control for confounding variables. This ensures an accurate assessment of the genuine relationship between dietary fibre intake and CRC risk.

Mechanism of Fibre in CRC

Fibre intake should increase stool bulk and dilute faecal carcinogens in the colonic lumen²¹. Additionally, it can shorten the faecal transit time, thereby reducing contact of carcinogens in the stool with the colon epithelium. This may explain why constipation may be a risk factor for bowel cancer²². Dietary fibre may also undergo bacterial fermentation, lowering colonic pH and producing short-chain fatty acids (such as butyrate) with anticarcinogenic properties that stimulate apoptosis.

Colorectal adenoma

Colorectal cancer typically starts as an adenomatous polyp, a benign tumour that can become malignant and transform into colorectal adenocarcinoma. Therefore, preventing the development of the precursor lesion (polyp) can indirectly prevent CRC. Subsequently, the findings of Oh et al.²³ and Peter et al.¹⁵ further reinforce the protective role of dietary fibre in bowel cancer. Fu et al.'s study also highlights the importance of dietary fibre in reducing the risk of colorectal polyps, especially among those with a history of smoking¹⁶.

Fu et al.'s findings suggest that dietary fibre may have a protective effect against carcinogens, thus reducing the risk of high-risk adenomatous polyps, which are well-established precursors of CRC.

Clinical application

According to the National Health Service (NHS)²⁴, the treatment plan for colorectal cancer currently includes a combination of surgical intervention, chemotherapy, radiation therapy and targeted therapies such as cetuximab and panitumumab. However, these treatments come with severe, unpleasant side effects. For example, undergoing chemotherapy weakens a patient's immunity, increasing their infection susceptibility and hospital admissions. Unfortunately, there is not always a cure, depending on the stage of cancer, and there is a probability of recurrence. Considering this, it would be unwise not to reinforce dietary behaviour in clinical practices if it's easy implementation can avert few or no years of toxicity interventions and mortality. Healthcare professionals (not just nutritionists) and the general public should be educated about the benefits of dietary fibre, which is not limited to CRC prevention, such as diabetes and breast cancer prevention²⁵⁻²⁷.

Despite the benefits, if patients were prescribed a dietary fibre intervention, total commitment may not be 100% guaranteed. This is due to the challenges of starting a new habit, which involves making conscious meal preparations and time management decisions. Thus, successfully encouraging and supporting people to increase their fibre intake may be difficult.

Dietician referral could be considered but as a final call for high-risk patients, as employing this with all patients would be unfeasible. A more viable approach may involve a brief talk regarding dietary fibre during any appropriate consultation between a patient and their healthcare professional, similar to guidelines for smoking cessation. Information booklets and directions to relevant websites may be given to the broader community alongside educational talks in schools and other settings.

Physician's advice

Physicians in Bangladesh have compiled a comprehensive list of foods that promote optimal digestive health, prevent inflammation, and reduce the risk of cancer. Yogurt, rich in probiotics, plays a crucial role in enhancing the population of beneficial gut bacteria, ultimately diminishing the likelihood of various cancers. Spinach, with its abundance of magnesium and fibre, significantly contributes to the overall well-being of the gastrointestinal tract. Additionally, certain fruits such as bananas, mangoes, and papayas, not only being excellent sources of dietary fibre, aid in regulating blood sugar levels and specifically lower the susceptibility to colon cancer. Almonds, renowned for their high levels of magnesium and fibre, provide valuable support for gut health, as well as bestowing benefits upon the skin and hair. Lastly, incorporating legumes and pulses, recognized for their fibre content, into salads and a variety of dishes serves to promote gastrointestinal health and enhance overall well-being.

Conclusion

In summary, increased dietary fibre intake can prevent cancer and the recommended daily intake is 30g. Research has consistently shown an inverse relationship between fibre intake and the risk of developing colorectal cancer, with no significant difference between men and women. Both soluble and insoluble fibre are equally effective but further research to establish the effectiveness of different fibre types is needed. Whole grains may be a better source of fibre for cancer prevention. Promoting a high-fibre diet as part of a healthy lifestyle is a simple and low-cost strategy that may contribute to reducing the burden of colorectal cancer globally. Overall, this review highlights the importance of dietary fibre for colorectal cancer prevention and underscores the need for further research in this area.

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Case Report**Title: Enteric Fever with Multiple Organ Dysfunction Syndrome (MODS):
Uncommon Complication of A Common Disease.**Ferdous S¹, Ahmmed MF²**Abstract**

Back ground: Enteric fever is a very common infectious disease of tropics, associated with high morbidity and mortality. It is a systemic illness which affects many organs. Rarely, multiorgan involvement in enteric fever may occur simultaneously in the same patient. Here, a case of Enteric Fever presented with Multiple Organ Dysfunction Syndrome (MODS). Timely diagnosis, early institution of specific therapy and proper monitoring can improve the prognosis of these patients.

Key Words: Enteric fever, Salmonella hepatitis, Multiple Organ Dysfunction Syndrome (MODS), Acute kidney injury (AKI), Acute liver failure (ALF)

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Introduction

Enteric fever is a very common infectious disease of tropics, associated with high morbidity and mortality. It usually starts as an acute systemic disease without localization, and is clinically indistinguishable from other bacterial and viral infections. Multiple organs are known to be affected by the disease¹. Hepatic involvement has been

reported in 23—60% of patients with enteric fever². Renal complications due to enteric fever occur in 2-3% of patients, and rarely found in children³. We report a case of enteric fever accompanied by salmonella hepatitis with acute liver failure, acute kidney injury with hypovolemic shock in a 12 years old boy.

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Case Report:

A 12 years old boy presented with history of high grade intermittent fever with chills and rigor, abdominal pain and diarrhea for 12 days. From last 3 days he developed frequent vomiting, severe weakness, clouding of consciousness and reduced urine output. There was no history of cough, chest pain, dyspnea, dysuria, skin rashes, pruritus, dark urine, pale stool or any bleeding manifestations. He had no significant history of any medical illness, drug ingestion, surgical procedure or blood transfusion. There is no family history of such type of illness. On examination the boy was toxic, drowsy, disoriented and dehydrated. Regarding vital signs he was in hypovolemic shock. Blood pressure was 80/40 mm of Hg, Pulse 62 beats/min, Respiratory rate 20 breaths/ min, and temperature was 99.0 F. On abdominal examination, abdomen was soft, tender hepatomegaly 2 cm palpable below right costal margin along mid-clavicular line. Other systemic examination findings were unremarkable.

His laboratory investigations were: Hb% 13.6 g/dl, WBC $6.8 \times 10^9/L$ with 84% polymorphnuclear cells, Platelet $147 \times 10^9/L$, ESR 39 mm in 1st hour. Widal test was suggestive of salmonella infection, 1:320 TO and 1: 160 TH. Regarding liver function test there was acute hepatitis with acute liver failure. S. ALT 413 U/L, S. AST 361 U/L, S. LDH 120 U/L, S. bilirubin 0.9 mg/dl, S. albumin 2.9 g/dl, PT 17 sec with INR 1.54. On renal function assessment, Acute kidney injury was present along with dyselectrolytemia. S. creatinine was 1.7 mg/dl, BUN 16 mg/dl, S. C3 1.66, S. Na 133 mmol/L, S. K 2.8 mmol/L, HCO₃ 23.7 mmol/L accordingly. Routine urine examination was normal. Dengue serology was turned out negative. Viral markers e.g. Anti HAV Ig M, Anti HEV Ig M, HBs Ag were negative. Blood culture isolated salmonella typhi. USG of abdomen showed mild hepatosplenomegaly.

After admission the boy was settled with volume replacement by bolus dose of I/V fluid along with inotrope support. Dyselectrolytemia was also corrected properly. Supportive treatment including vitamin K was given for hepatic dysfunction. All the predisposing factors of acute liver failure was closely monitored and managed accordingly. On 3rd day the patient became oriented and became afebrile on 5th day. Parenteral antibiotic (Meropenem) was given according to culture sensitivity for 10 days. With

treatment boy showed significant clinical well-being along with improvement of laboratory parameters. He was discharged after 10 days of hospitalization. The patient report to OPD after 1 month with liver and renal function tests, which were normal.

Discussion:

Enteric fever continues to be a common infection in the developing countries. *S. typhi* is only transmitted to humans by direct or indirect contact with infected ones. Populations that have lack access to potable water, and adequate sanitation and hygiene are most affected. Incidence is highest in southern Asia and sub-Saharan Africa^{4,5}. William Osler initially reported hepatic involvement of typhoid fever in 1899⁶. Hepatomegaly has been reported in 55% of patients with enteric fever. Hepatitis has been described as a constant feature of the disease rather than a complication occurring during the second and the third week of onset of symptoms in up to 60–100% of the cases². It remains difficult to distinguish clinically viral hepatitis from salmonella hepatitis. This is more attainable biochemically as the levels of aminotransferases are markedly elevated in hepatitis compared with typhoid hepatitis. Admission ALT/LDH ratio has been reported to be the best discriminator between both diagnoses (<9 for salmonella hepatitis and >9 for viral hepatitis)⁷. In this case, the admission ALT/LDH ratio was 3.4, suggestive of salmonella hepatitis.

Kidney disease resulting from enteric fever complications are rare, occurring 2-3% of patients. Mostly reversible and temporary acute nephritis accompanied by proteinuria and hematuria can occur⁸. According to Jassen et al. temporary renal failure can be found in 36% of salmonella infected patients⁹. The prognosis is usually good as salmonella hepatitis responds well to specific antibiotic therapy¹⁰. As in our setting enteric fever and viral hepatitis are common ailment and Salmonella hepatitis is a rare incident so, we like to highlight the case to reduce causality in the future. The timely institution of antimicrobial therapy has reduced typhoid case-fatality rates from 15%–20% to less than 1%¹¹. The clinical course can be severe, with a mortality rate as high as 20%, particularly with delayed treatment or in patients with other complications of salmonella infection¹².

Conclusion:

Enteric fever is a common infection in a certain areas of the globe. In some patients, it can lead to multi-systemic complications and subsequent development of MODS. The recognition of salmonella hepatitis and other complication is of clinical importance. Timely diagnosis, prompt treatment and proper monitoring are the key to the restoration of normal organ function. This may improve the prognosis in these patients.

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Case Report

Extrafollicular Adenomatoid Odontogenic Tumor of the Maxilla: A Rare Case Report

Shameem SI¹, Ava KMM², Rana J³, Islam S⁴**Abstract**

Back ground: Adenomatoid odontogenic tumor (AOT) is an uncommon benign odontogenic tumor representing approximately 3% of all odontogenic tumors. It occurs twice as common in females than male and usually in the second decade of life. The tumor is more commonly occurs in the maxilla is about 2/3 cases. There are three subclinical types of this tumor with identical histology: follicular type (73%), extrafollicular variant (24%) and peripheral form (3%). Here, we report a case of extra follicular AOT of the anterior maxilla in a 24-year-old female patient.

Keywords: Adenomatoid Odontogenic Tumor; Odontogenic Tumors; AOT; Hamartoma; Benign Tumor; Oral & Maxillofacial Surgery.

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Introduction

Adenomatoid odontogenic tumor (AOT) is a benign, uncommon, slow growing tumor representing 3% of all odontogenic tumors^{1,2}. The tumor is usually associated with impacted tooth, frequently maxillary canines. It often causes expansion of surrounding bone and the displacement of adjacent teeth. However, owing to the slow growing nature, the lesion remains unnoticed until obvious

deformity is developed³. Intra-osseous variant of AOT which is not associated with an unerupted or impacted tooth is reported as very rare, is referred as extra follicular AOT⁴.

In this case report, we describe an extra follicular AOT which presented as a swelling in the left maxillary anterior region of a 24-year-old female patient.

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Case Report

A 24 years old female patient came to the Dental & Maxillofacial Surgery department in the Khulna City Medical College Hospital with the complaints of there was a swelling in the left side of the upper jaw for 2 years. She also reported it gradually increased in size to attain the present size. There was no history of trauma, pain, discharge, or any other symptoms related to the lesion. The patient was apparently healthy, and her vital signs were within normal limits.

Extra oral examination

Facial asymmetry was observed. There was a diffused swelling in the left side of the face with obliteration of nasolabial fold. Normal temperature, non-tender, normal nerve function both motor and sensory, no nasal discharge.

Intra oral examination

Intraorally, a single, well-defined swelling measuring 3 cm × 3 cm was observed on the alveolus between the left maxillary lateral canine and first molar (Figure 1). Surface of the swelling was smooth with normal overlying mucosa. A buccopalatal expansion was seen on the maxillary alveolus with obliteration of labial vestibule. There was grade II mobility of 1st and 2nd premolar. There was no pulsation visible or palpable. The swelling was firm to hard in consistency and non- tender on palpation. Fine needle aspiration yielded no fluid.

Radiographic findings

Panoramic radiograph showed a well-defined radiolucent area with a peripheral condensation border having an oval shape between left canine and 1st premolar. Displacement of roots of these teeth was seen with root resorption. (Figure 1)



Figure 1: Panoramic Radiograph

Computed tomography findings

Computed tomography (CT) scans demonstrated a well-demarcated hypodense lesion with scattered hyperdense foci, but no loss of cortical bone.

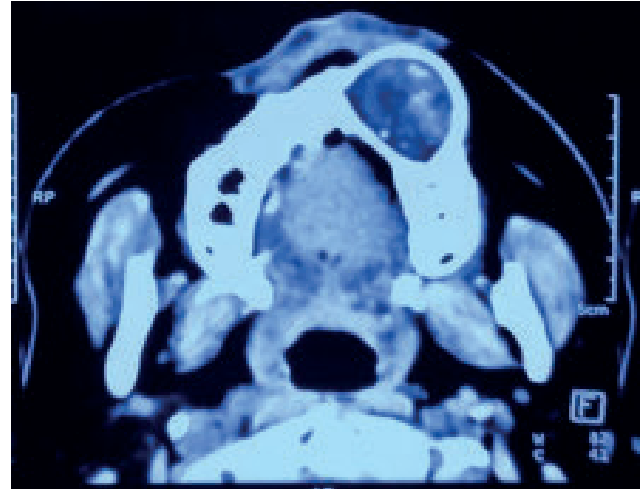


Figure 2: Computed Tomography

Differential diagnosis

1. Adenomatoid odontogenic tumor (AOT)
2. Ameloblastoma
3. Ossifying fibroma
4. Keratocystic odontogenic tumor.

Treatment

The lesion was totally enucleated and the tissue was submitted to histopathological examination. No recurrence has been reported till date. (Figure 3,4,5)

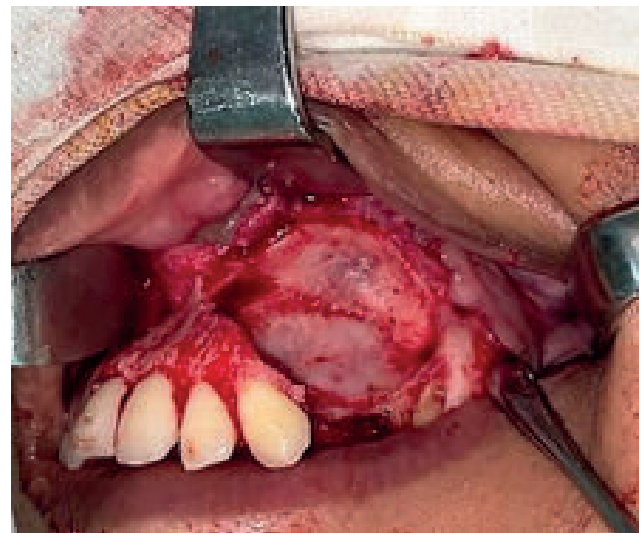


Figure 3: Cavity after enucleation of the tumor.

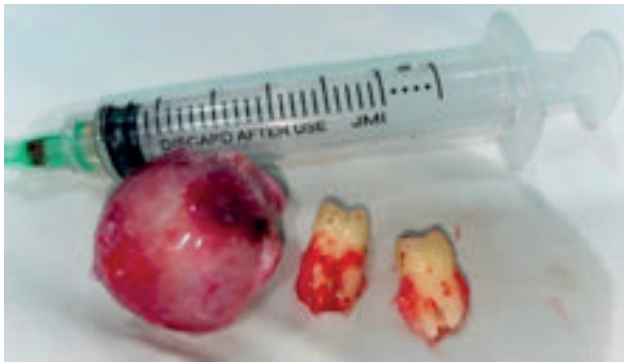


Figure 4: Encapsulated tumor and send for histopathological report.

Microscopic features

Sections of the soft tissue showed a neoplasm, composed of spindle shaped epithelial cells arranged in cords and islands. These cells had eosinophilic cytoplasm and elongated nuclei. Focal areas of rosette formation with central deeply eosinophilic amorphous material were noted. A few areas of duct like structure with nuclei polarized away from central lumen were seen. Calcification was present. No evidence of malignancy was seen. (Figure 6)

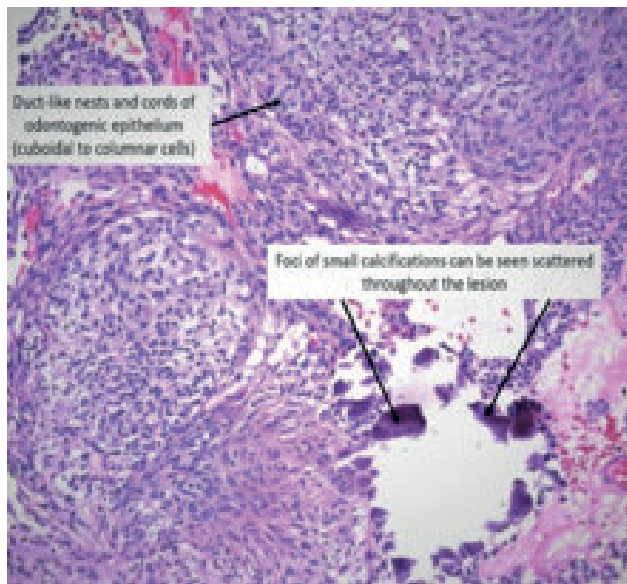


Figure 6: Typical Histopathological features of AOT

Outcome and follow-up: The patient is currently under regular follow-up every 6 months interval. (Figure 7,8)

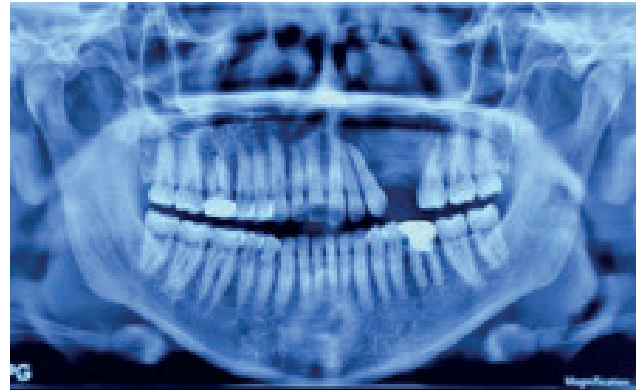


Figure 7: Post-operative panoramic radiograph showed no recurrence.



Figure 8: Post-operative intraoral picture.

Discussion:

Adenomatoid Odontogenic tumor (AOT) is a benign tumor of epithelial origin and thought to be originate from remnants of dental lamina or enamel organ¹. The name of AOT was first proposed and differentiated it from ameloblastoma by Philipsen and Birn². Most of the cases are reported in the second decade of life with a female predilection of 2.3:1 and site predominance for anterior maxilla associated with impacted maxillary canine. AOT usually reports with a complaint of slow growing asymptomatic hard swelling, and causes cortical expansion, impaction, and uneruption of the involved tooth and displacement of the adjacent teeth. Root resorption may occur when tumor become large. Majority of the AOT are associated with

unerupted/impacted tooth. Rarely the affected tooth manages to erupt through the lesion as in our case³. Exact nature of pathogenesis of AOT is still not clear and remains controversial. Some authors believe it to be a hamartoma of the remnant odontogenic epithelium⁴. The tumor has three clinicopathologic variants, namely intraosseous follicular, which is associated with an unerupted tooth (74%), whereas intraosseous extrafollicular type (24%) which has no relation to an impacted tooth as in the case presented here, and the peripheral variant (3%) which is attached to the gingival structures⁵. Reichart and Philipsen subdivided extrafollicular AOT into four subtypes (E1–E4) based on radiographic appearance. E1 subtype has no relation to tooth structures either erupted or unerupted and is extremely rare. E2, E3 and E4 has relation to tooth structures. In any process of eruption of associated tooth through the lesion, spatial relationship between AOT in relation to the tooth can be on the lateral root surface (E2; inter- radicular), at a root apex (E3; radicular/periapical) or superimposed over the root (E4)⁶. In This case we reported E2 subtype of extrafollicular AOT.

The radiographic findings showed circumscribed radiolucent area with fine calcifications⁷. In this case showed well-defined radiolucent area with a peripheral condensation border. The possibilities of ossifying fibroma, adenomatoid odontogenic tumor (AOT), ameloblastoma, and keratocystic odontogenic tumor were considered in the differential diagnosis preoperatively⁷. It is generally believed that the lesion is not a neoplasm'. The histologic appearance of all variants is identical and exhibits remarkable consistency. At low magnification, the most striking pattern is that of various sizes of solid nodules of columnar or cuboidal epithelial cells forming nests or rosette-like structures with minimal stromal connective tissue.

Between the epithelial cells of the nodules and in the centre of the rosette-like configuration is found eosinophilic amorphous material, often described as tumour deposits. Conspicuous within the cellular areas are structures of tubular or duct-like appearance. These islands may contain pools of amorphous amyloid-like material and globular masses of calcified material⁸. The histopathological finding of this cases was similar. Conservative surgical enucleation is the treatment modality of choice. As AOT being encapsulated tumour enucleation produce excellent results, with almost null recurrence rate noticed⁹. Treatment consists of surgical enucleation and no reoccurrence has been reported even after incomplete removal, its main difference from ameloblastoma¹⁰.

Conservative surgical enucleation reported excellent outcome without recurrence. Our patient has been under follow-up with no evidence of recurrence.

Declaration of patient consent

Consent has to be obtained with appropriate patient consent forms. In the form the patient consents for her images and other clinical information to be reported in the journal but anonymity cannot be guaranteed.

Conflicts of interest: No

Learning points

- AOT is very rare with its different variety. Among them extrafollicular is uncommon.
- Extrafollicular AOT has similar features and confused with other painless swelling in anterior maxilla.
- In this case illustrate the clinicopathological characteristic of the extrafollicular variety of AOT with its management.

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Abstract From Current Literature

Implications of Recent Clinical Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines

Scott M. Grundy, James I. Cleeman, C. Noel Bairey Merz, H. Bryan Brewer Jr, Luther T. Clark, Donald B. Hunninghake, Richard C. Pasternak, Sidney C. Smith Jr, Neil J. Stone

doi: 10.1161/01.CIR.0000133317.49796.0E

Abstract

The Adult Treatment Panel III (ATP III) of the National Cholesterol Education Program issued an evidence-based set of guidelines on cholesterol management in 2001. Since the publication of ATP III, 5 major clinical trials of statin therapy with clinical end points have been published. These trials addressed issues that were not examined in previous clinical trials of cholesterol-lowering therapy. The present document reviews the results of these recent trials and assesses their implications for cholesterol management. Therapeutic lifestyle changes (TLC) remain an essential modality in clinical management. The trials confirm the benefit of cholesterol-lowering therapy in high-risk patients and support the ATP III treatment goal of low-density lipoprotein cholesterol (LDL-C) <100 mg/dL. They support the inclusion of patients with diabetes in the high-risk category and confirm the benefits of LDL-lowering therapy in these patients. They further confirm that older persons benefit from therapeutic lowering of LDL-C. The major recommendations for modifications to footnote the ATP III treatment algorithm are the following. In high-risk persons, the recommended LDL-C goal is <100 mg/dL, but when risk is very high, an LDL-C goal of <70 mg/dL is a therapeutic option, ie, a reasonable clinical strategy, on the basis of available clinical trial evidence. This therapeutic option extends also to patients at very high risk who have a baseline LDL-C <100 mg/dL. Moreover, when a high-risk patient has high triglycerides or low high-density lipoprotein cholesterol (HDL-C), consideration can be given to combining a fibrate or nicotinic acid with an LDL-lowering drug. For moderately high-risk persons (2+ risk factors and 10-year risk 10% to 20%), the recommended LDL-C goal is <130 mg/dL, but an LDL-C goal <100 mg/dL is a therapeutic option on the basis of recent trial evidence. The latter option extends also to moderately high-risk persons with a baseline LDL-C of

100 to 129 mg/dL. When LDL-lowering drug therapy is employed in high-risk or moderately high-risk persons, it is advised that intensity of therapy be sufficient to achieve at least a 30% to 40% reduction in LDL-C levels. Moreover, any person at high risk or moderately high risk who has lifestyle-related risk factors (eg, obesity, physical inactivity, elevated triglycerides, low HDL-C, or metabolic syndrome) is a candidate for TLC to modify these risk factors regardless of LDL-C level. Finally, for people in lower-risk categories, recent clinical trials do not modify the goals and cutpoints of therapy.

The Gut Microbiota and Host Health: A New Clinical Frontier

Julian R Marchesi, David H Adams, Francesca Fava, Gerben D A Hermes, Gideon M Hirschfield, Georgina Hold, Mohammed Nabil Quraishi, James Kinross, Hauke Smidt, Kieran M Tuohy, Linda V Thomas, Erwin G Zoetendal, Ailsa Hart

doi: 10.1136/gutjnl-2015-30999

Abstract

Over the last 10–15 years, our understanding of the composition and functions of the human gut microbiota has increased exponentially. To a large extent, this has been due to new ‘omic’ technologies that have facilitated large-scale analysis of the genetic and metabolic profile of this microbial community, revealing it to be comparable in influence to a new organ in the body and offering the possibility of a new route for therapeutic intervention. Moreover, it might be more accurate to think of it like an immune system: a collection of cells that work in unison with the host and that can promote health but sometimes initiate disease. This review gives an update on the current knowledge in the area of gut disorders, in particular metabolic syndrome and obesity-related disease, liver disease, IBD and colorectal cancer. The potential of manipulating the gut microbiota in these disorders is assessed, with an examination of the latest and most relevant evidence relating to antibiotics, probiotics, prebiotics, polyphenols and faecal microbiota transplantation.

Abstract From Current Literature

Reduction Mammoplasty: A Ten-Year Retrospective Review of the Omega Resection Pattern Technique

Juan A. Viscardi, Carlo M. Oranges, Dirk J. Schaefer, and Daniel F. Kalbermatten

doi: 10.3390/jcm10194418

Abstract

Reduction mammoplasty is the gold standard procedure for symptomatic breast hypertrophy and it is also used for contralateral breast symmetrisation following breast cancer surgery. We aim at introducing a new procedure, which uses an omega resection pattern to simplify the inferior pedicle breast resection technique. A retrospective review of all patients who underwent the omega resection reduction mammoplasty at the University Hospital of Basel between 2010 and 2020 was carried out. We collected patient demographics, surgical outcomes, operation time, type and frequency of complications at 12 months follow-up. Outcomes were compared with the most commonly used techniques. Additionally, we assessed if patients' and clinical characteristics augmented/diminished the complication rate. During the study period, 67 reduction mammoplasties were performed by a senior plastic surgeon (Mage = 42.5, SDage = 15.6; MBMI = 27.28, SDBMI = 3.4; 20% smokers). The average tissue removed was 826 g (ranging from 15 to 2307 g). In 10 breasts (15%) occurred minor complications. No major complications were reported. Operation time (M = 149 min; ranging from 87 to 270 min) was significantly shorter than the inferior, superomedial, and superior pedicle techniques. Univariate Odd Ratios showed that no-smoker status, a BMI in a normal range, resection weight between 500 g to 1500 g, NTN distance < 30 cm, removal of drains one day after the operation, ASA index of 2, inpatient clinic hospitalisation, and not undergoing other concomitant surgical operations were protective factors against the risk to develop complications. The omega resection pattern technique demonstrated to be an effective, safe, and fast mammoplasty reduction procedure for bilateral macromastia and unilateral symmetrizing procedures, even for large breasts, able to be adopted as a new valid alternative to the existing ones.

Evolving Trends in Surgical Management of Breast Cancer: An Analysis of 30 Years of Practice Changing Papers

Stephen Keelan, Michael Flanagan, Arnold D K Hill

doi: 10.3389/fonc.2021.622621

Abstract

The management of breast cancer has evolved into a multi-disciplinary evidence-based surgical specialty, with emphasis on conservative surgery. A number of landmark trials have established lumpectomy followed by radiation as the standard of care for many patients. The aim of this study is to construct a narrative review of recent developments in the surgical management of breast cancer and how such developments have impacted surgical practice. A comprehensive literature search of PubMed was conducted. The latest search was performed on October 31st, 2020. Search terms "breast cancer" were used in combinations with specific key words and Boolean operators relating to surgical management. The reference lists of retrieved articles were comprehensively screened for additional eligible publications. Articles were selected and reviewed based on relevance. We selected publications in the past 10 years but did not exclude commonly referenced and highly regarded previous publications. Review articles and book chapters were also cited to provide reference on details not discussed in the academic literature. This article reviews the current evidence in surgical management of early-stage breast cancer, discusses recent trends in surgical practice for therapeutic and prophylactic procedures and provides commentary on implications and factors associated with these trends.

Abstract From Current Literature

Recent Biomedical Applications of Gold Nanoparticles: A Review

Narges Elahi, Mehdi Kamali, Mohammad Hadi Baghersad

doi: 10.1016/j.talanta.2018.02.088

Abstract

Recent advances in nanotechnology are as a result of the development of engineered nanoparticles. Efficiently, metallic nanoparticles have been widely exploited for biomedical application and among them, gold nanoparticles (AuNPs) are highly remarkable. Consequent upon their significant nature, spherical and gold nanorods (Au NRs) nanoparticles attract extreme attention. Their intrinsic features such as optical, electronic, physicochemical and, surface plasmon resonance (SPR); which can be altered by changing the characterizations of particles such as shape, size, aspect ratio, or environment; ease of synthesis and functionalization properties have resulted to various applications in different fields of biomedicine such as sensing, targeted drug delivery, imaging, photothermal and photodynamic therapy as well as the modulation of two or three applications. This article reviewed the popular AuNPs synthesis methods and mentioned their established applications in various demands, especially in biological sensing.


Rheumatoid Arthritis and Associated Lung Diseases: A Comprehensive Review

Ahmad T Azam, Oladipo Odeyinka, Rasha Alhashimi, Sankeerth Thoota, Tejaswini Ashok, Vishnu Palyam, Ibrahim Sange

doi: 10.7759/cureus.22367

Abstract


Rheumatoid arthritis (RA) is a prevalent autoimmune disorder affecting 0.5-1% of the population in North America and Europe. Pulmonary manifestations in rheumatoid arthritis patients result in significant morbidity and mortality. Management of these pulmonary manifestations in RA patients causes various challenges for the physicians. This review article has discussed the current state of knowledge of these pulmonary manifestations, including interstitial lung diseases, airway-related diseases, pulmonary vasculature, and pleural involvement in RA patients. This review article has also explored various pharmacological options, including steroids, disease-modifying antirheumatic drugs (DMARDs), immunosuppressive drugs, and biologic agents. Non-pharmacological options include conservative treatment, supplemental oxygen, pulmonary rehabilitation, smoking cessation, and lung transplantation.



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