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I.M.A.G.S.B. News Bulletin

GUJARAT MEDICAL JOURNAL

GMJ INDIAN MEDICAL ASSOCIATION
GUJARAT STATE BRANCH
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PRESENTING THE FIRST EVER STUDY FROM INDIA ON CARCINOMA ENDOMETRIUM

SURGICOPATHOLOGICAL OUTCOMES AND SURVIVAL IN CARCINOMA BODY UTERUS: A RETROSPECTIVE ANALYSIS OF CASES MANAGED BY LAPAROSCOPIC STAGING SURGERY IN INDIAN WOMEN

Objectives: The context of this article is based on two main titles those being Gynecologic Oncology and Minimal invasive surgery. **The aim of this study was to report the laparoscopic management of a series of cases of endometrial carcinoma managed by laparoscopic surgical staging in Indian women.**

Materials and Methods: This study was conducted in a private hospital (referral minimally invasive gynecological center). This was a retrospective study (Canadian Task Force Classification II-3). Eighty-eight cases of clinically early-stage endometrial carcinoma staged by laparoscopic surgery and treated as per final surgicopathological staging. All patients underwent laparoscopic surgical staging of endometrial carcinoma, followed by adjuvant therapy when needed. Data were retrieved regarding surgical and pathological outcomes. Recurrence-free and overall survival durations were measured at follow-up. Survival analysis was calculated using Kaplan–Meier survival analysis.

Results: The median age of presentation was 56 years, whereas the median body mass index was 28.3 kg/m2. Endometroid variety was the most commonly diagnosed histopathology. There were no intraoperative complications reported. The median blood loss was 100 cc, and the median intraoperative time was 174 min. There were a total of 5 recurrences (5.6%). The outcome of this study was comparable to studies conducted in Caucasian population. **The predicted 5-year survival rate according to Kaplan–Meier survival analysis is 95.45%, which is comparable to Caucasian studies.**

Conclusion: Laparoscopic management of early-stage endometrial carcinoma is a standard practice worldwide. However, there is still a paucity of data from the Indian subcontinent regarding the outcomes of laparoscopic surgery in endometrial carcinoma. The Asian perspective has been highlighted by a number of studies from China and Japan. **To our knowledge, this study is the first from India to analyze the surgicopathological outcomes following laparoscopic surgery in endometrial carcinoma.** The outcome of this study was comparable to studies conducted in Caucasian population.

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Madhusmita : 99252 44878

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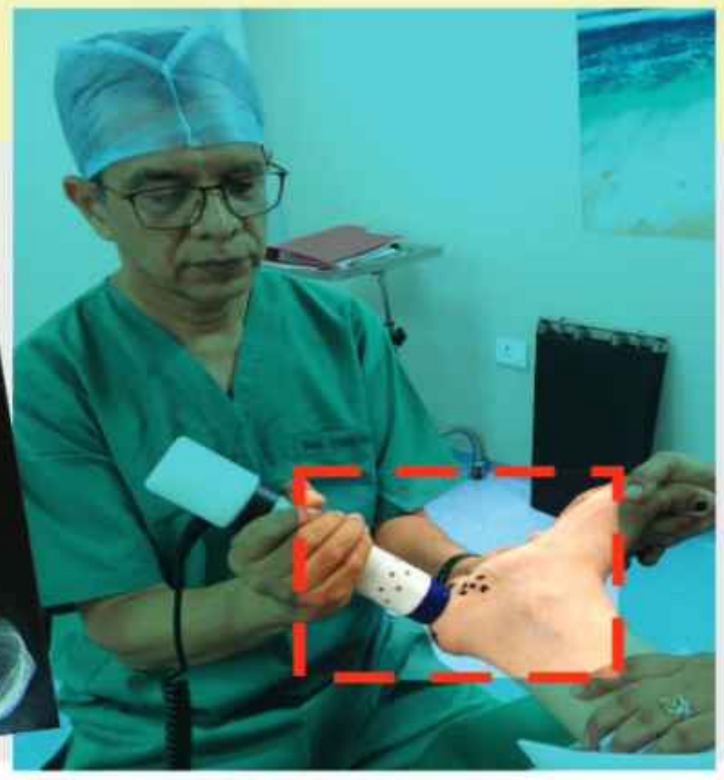

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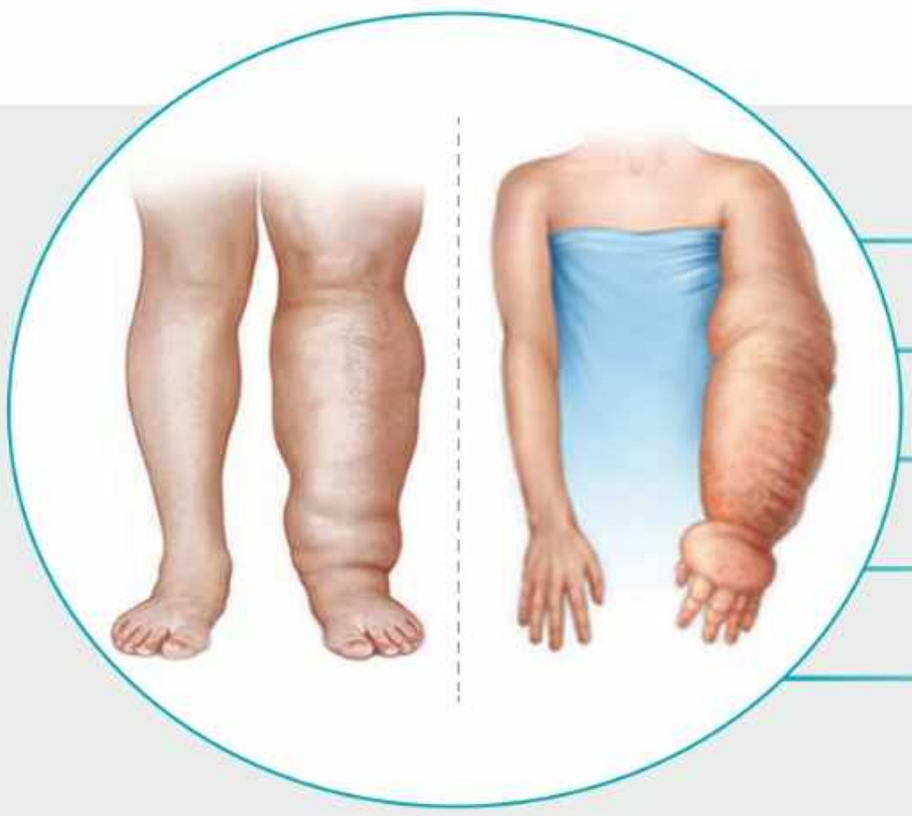

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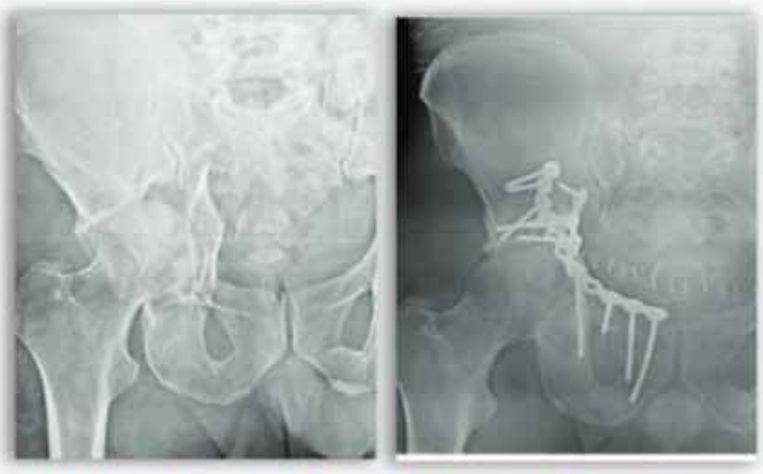

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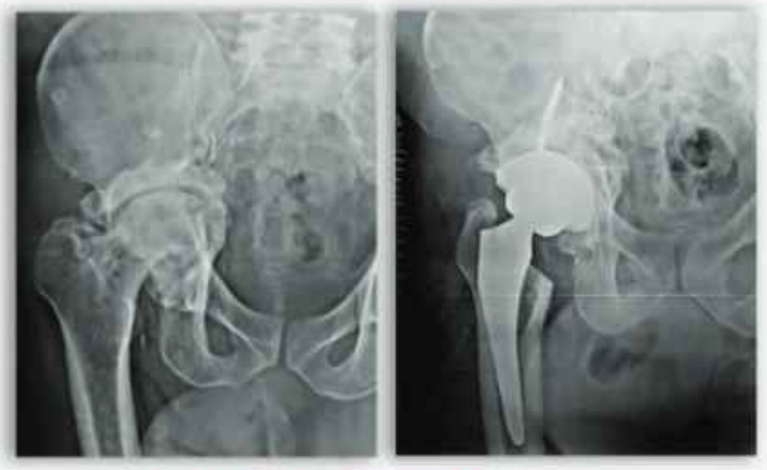

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INTERESTING CASE: A VERY RARE OCCURENCE OF SEVERE APLASTIC ANEMIA WITH A PAROXYSMAL NOCTURNAL HEMOGLOBINURIA CLONE IN AN ADOLESCENT WITH SICKLE CELL DISEASE SUCCESSFULLY TREATED WITH STEM CELL TRANSPLANT

BackGround;

Sickle-cell disease (SCD) is one of the most common severe genetic disorders worldwide. In SCD, individuals demonstrate an increased adhesiveness of blood cells, including red blood cells, neutrophils, eosinophils and platelets; this plays a fundamental role in the vaso-occlusive process. Aplastic Anemia (AA) is characterized by peripheral blood pancytopenia and a hypocellular bone marrow. Paroxysmal nocturnal hemoglobinuria (PNH) is an acquired hemolytic disease associated with intravascular hemolysis and thrombosis.

Case:

A 12-year-old African female with SCD was initially found to have isolated thrombocytopenia which later progressed to pancytopenia. Bone marrow done was consistent with the diagnosis of SAA. She was started on cyclosporine as Immune suppressive therapy (IST) and responded transiently but eventually became transfusion dependent. 12 months later her PNH clone was increased and she declared herself with PNH. At this point she underwent transplant with unrelated donor (9/10 matched) without any complications. Currently she is 12 months post transplant with no evidence of PNH clone, stable counts and hemoglobin electrophoresis consistent with sickle cell trait.

Hemoglobin Electrophoresis

	Pre Transplant	1 month Post Transplant	12 months Post Transplant
HGB A %	0	72.1	61.8
HGB A2 %	3.5	3.3	3.8
HGB F %	24.7	4.9	1.3
HGB S %	71.8	19.7	33.1

I.M.A.G.S.B. NEWS BULLETIN

Estd. On 2-3-1945

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G M J

STATE PRESIDENT'S MESSAGE

"Aao Gaon Chale"

Dear IMA colleagues,

Greetings from the desk of President,

Let me first congratulate you all for receiving first state level prize in Aao Gaon Chale project of IMA at national level. On your behalf We, myself & Dr. Mehul Shah received this award at Delhi, on the occasion of doctor's day. Three cheers for all of you.

This program was introduced way back in 2004, during the CWC meeting at Bangkok by our own World Medical Association President Dr. Ketan Desai at that time. It was launched in Lakhvad village of Mehsana district within 2 months only. Thus Gujarat is a pioneer of the project.

Goal :

The goal of the project is to bring about holistic improvement in the village health scenario using existing infrastructure & promoting intersectorial networking between IMA, Public sector & community. This will help in improving healthcare access in underdeveloped & underserved regions. This goal can be achieved by:

1) Encouraging the doctors to practice in rural area
2) Improving participation of community
3) Building capacity by providing training & resources to rural healthcare workers
4) Organising regular health camps & mobile clinics to provide services in remote areas.
5) Educating community about hygiene, nutrition & disease prevention.

By focusing on these areas, IMA aims to reduce disparities between urban & rural population. Thus quality healthcare is accessible to all sections of society.

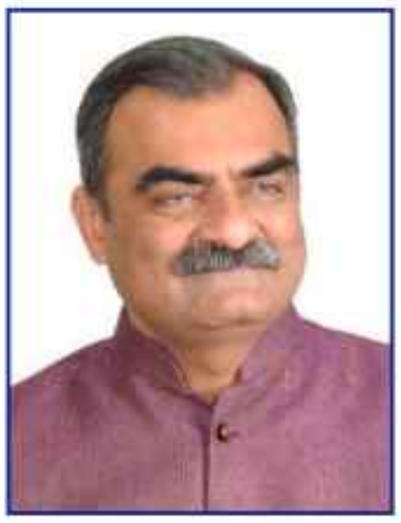
Till date, more than 1000 villages are adopted by various state & local branches. This has benefitted more than 20 lac people. However, this is not the end but just a beginning of the journey. Many more branches are in process of adopting village & are eager to serve. Then after since last 2 years this programme Re Launch with more zeal, Enthusiasm. Chief Patron National IMA & Our Visionary leader Dr. Ketan Desai has sponsored & donated for First Three Prize of this project, Gujarat has played a flagship project in our state. I earnestly request all of you to join & support, in whatever form possible, this noble initiative.

I am eager to receive your feedback & suggestion. See you soon at GIMACON – 2024 @ Rajkot.

With deepest respect & gratitude,

JAI IMA, JAI JAI GARVI GUJARAT, JAI HIND.

DR. BHARAT M. KAKADIA
President, G.S.B.,I.M.A.



HON. STATE SECRETARY'S MESSAGE

Dear Fellow Doctors,

As we embrace August, a month marked by the spirit of Independence, I am filled with a profound sense of pride. This time of year invites us not only to celebrate our nation's freedom but also to reflect on our roles as torchbearers of health and wellness in our community and country.

Our collective efforts in supporting the IMA Health Policy have never been more critical. This policy is not just a set of guidelines; it is a vision for a healthier India. Let's delve into the specifics—whether it's improving rural healthcare access or enhancing urban health infrastructure, our initiatives must resonate with this national vision. I urge you all to engage deeply with these policies, bringing forth your unique insights and experiences to drive impactful changes.

Our young doctors, fresh from the rigors of medical education and medical practice often face immense pressure. Stress management is not a luxury; it is a necessity. We're planning innovative programs like mindfulness retreats, peer support networks, and interactive seminars on work-life balance. These initiatives are designed to equip our young professionals with the tools they need to thrive, not just survive, in their demanding roles.

Medical Innovation is where our legacy meets the future. We are on the brink of launching groundbreaking projects that focus on cutting-edge medical research, advancements in patient care, and the development of new healthcare technologies. Your involvement in these research endeavors can lead to transformative breakthroughs. Let's harness our collective expertise to push the boundaries of what's possible in medical science.

This **Independence Day,** let's honor our freedom by committing to another form of liberation—**freedom from preventable diseases and inadequate healthcare.** Through community health drives, educational outreach, and collaborative projects, we can make a tangible difference.

In closing, I encourage each of you to be a part of these exciting ventures. Your dedication, creativity, and passion are the driving forces that will lead us to a brighter, healthier future. If you have any specific ideas or suggestions, please send them to our office. Your input is invaluable in shaping our collective journey forward.

With warm regards and high hopes,

Dr. Mehul J. Shah
(Hon. State Secy., G.S.B.,I.M.A.)

FROM THE DESK OF EDITORS

Dear friends,

Season's Greetings !

We are thankful to all the central council members of GSB IMA for putting their faith, trust and confidence in us and giving the charge of prestigious Gujarat Medical Journal (GMJ) for this year. On our side, we promise to see that the faith and trust that is put in us is full filled and for that, we shall try our best.

Here, we want to tell our members about the procedure that we are adopting in selection of an article for GMJ. We ask the author to send the article on CD, and three physical copies, of which one copy bears names, addresses, etcs., of authors but two other copies, don't have any name or address of authors, they contain only the material of the article. On receiving this our office clerk puts code number on it. Articles are known from its code number only. GMJ editor is given the copy which doesn't have the name, etcs. of the author. And editor then sends the said article for review to a retired professor or HOD or having that level of expertise in the subject (whom we call "referee" or "reviewer"). So the reviewer also doesn't know about the author. This procedure is adopted since years and we shall continue that.

Our country and particularly, Gujarat has entered in the field of medical tourism. People from developed and under developed countries come here for treatment and we provide world best treatment to them at a cheaper rates then that is available in developed countries. Our hospitals and expertise are world class and that pushes the medical tourism in Gujarat far ahead. From our own domestic population also we get large number of patients. Now we have more then forty medical colleges (and few new will start functioning from next year). Many of them are in smaller towns also. That will help us in collecting data from urban and rural areas. This provides opportunities for research to our doctors. Now we have better infrastructure facilities for data collection and access to world data, for comparison. It has provided a big boost to research wok in our state. We appeal our colleagues to send their research articles and papers for publication in GMJ. This will help our other colleagues and also government in handling and controlling certain diseases. Government will also be able to determine where more efforts are required.

Without making any compromise with our laid down policy, we have made all the efforts to make GMJ more informative, more interesting and more popular so that large number of our colleagues read it and utilize the knowledge and information provided in it. For this, we welcome your suggestions and comments also.

We have created our own online article submission and management portal at gmjonline.in, which is ready to be operational. We prepared it with use of OJS software.

The requirement for DOAJ Indexation is in process and within short time we shall apply again for that also. By the time we are indexed with Index Copernicus International.

Our sincere thanks to GSB President Dr. Bharat Kakadia and Hon. Secretary Dr. Mehul Shah for encouragement and suggestions, and giving us free hand in publication of this journal. We are grateful to them. We are also grateful to GSB past presidents Dr. Jitubhai Patel, Dr. Mahendrabhai Desai, Dr. Bipinbhai Patel & Dr. Yogendra Modi for their guidance and help. Dr. Urvesh Shah, Dr. Chinmay Shah, Dr. Ashish Bhojak, Dr. Divyeshkumar Panchal and their team worked very hard for online platform & try to getting our journal at per with the requirement of NMC noums.

With regards,

DR. KAMLESH B. SAINI	DR. KIRIT C. GADHAVI	DR. HARSHAD C. PATEL
Editor-IMA-GSB-GMJ	Hon. Secreatary-IMA-GSB-GMJ	Jt. Editor-IMA-GSB-GMJ

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I.M.A. G.S.B. NEWS BULLETIN (Gujarat Medical Journal)

Vol. : 19 JULY-2024 Issue : 07

CONTENTS

Original Article

Role of HRCT Thorax in ICU Admitted Patients with Respiratory Disease

Dr. Patel Tamanna V.*, Dr. Chhaya J. Bhatt, Dr. Sahil. N. Shah*****

*3rd Year Resident Department of Radio-Diagnosis, **Proffessor of Department of Radio-Diagnosis,

***Assistant Professor of Department of Radio-Diagnosis, SVP Hospital, NHLMMC, Ahmedabad.

KEY WORDS : ICU, HRCT Thorax, Respiratory Disease, Pulmonary Edema, Pleural Effusion

ABSTRACT

Introduction: HRCT Thorax provides comprehensive evaluation of lung parenchyma, pleural spaces, heart, thoracic vessels, soft tissues of chest wall, mediastinum and position of invasive devices. The common pulmonary abnormalities that is encountered in critically ill patients admitted in intensive care unit include pulmonary edema, acute respiratory distress syndrome (ARDS), atelectasis, pneumonia, aspiration pneumonitis, pulmonary embolism, pulmonary hemorrhage and various other iatrogenic causes. The role of HRCT thorax in these patients are useful for early detection of cause, further management, any changes in existing treatment protocol and predicting the prognosis.

Aims : Studying the role of HRCT in diagnosing various abnormalities related to respiratory disease in ICU admitted patients.

Methods : This is a retrospective observational study in which HRCT thorax was performed on patients admitted in ICU on a 128-slice Philips CT scanner machine. 66 patients were studied from February 2022 to May 2023 in SVP Hospital, Ahmedabad. No age or gender bias was followed.

Results : During the study period, Out of 66 patients studied, 37 (26.2% of cases) patients had ground glass opacities and 24 (17.0%) had consolidation. These two were the most common pathological findings in lung parenchyma. Other findings include pleural effusion (23; 16.3%), signs of right ventricular strain and pulmonary hypertension (12; 8.5%), peribronchial cuffing with mucus plugging (12; 8.5%), pneumothorax (10; 7.1%), pulmonary contusion (8; 5.7%), atelectasis (5; 3.5%), pulmonary embolism (4; 2.8%), extensive emphysematous changes (3; 2.1%), subcutaneous emphysema (2; 1.4%), pneumomediastinum (1; 0.7%).

Conclusion : HRCT thorax examination plays an important role in the diagnosis of cause of respiratory related conditions in patients admitted in intensive care units. When used in conjunction with clinical symptoms and history, HRCT can enhance the detection of acute abnormalities and complications.

Declaration:

Funding: None

Conflict Of Interest: None Declared

INTRODUCTION

Conventional chest radiographs remain the primary radiological tool for screening of patients with respiratory distress. These are obtained daily in critically ill patients in the intensive care unit. Chest radiographs are generally used to detect significant changes in lung parenchyma, cardiac status; to look for pleural abnormalities; to evaluate the position of the tubes, lines, and catheters used in monitoring and treatment; and to detect complications arising from the use of monitoring and ventilation devices. In accordance with the American College of Radiology (ACR) and Society of Pediatric Radiology (SPR) guidelines (ACR.org), the goal of portable chest radiography is to help determine presence or absence of thoracic disease, to follow known abnormalities, and to evaluate clinical support devices such as endotracheal tubes, chest tubes, vascular catheters, and ventricular assist devices.(1)

Clinical presentations of these patients include dyspnea, cough, breathlessness on rest, gabharaman and sometimes associated with nausea & vomiting.

Correspondence Address : **Dr. Sahil N. Shah**
SVP Hospital, Smt. NHL Medical College, Paldi, Ahmedabad-380006.
Email : Tamanna13797@gmail.com

They often require a multidisciplinary diagnosis, i.e., an integration of clinical and radiological findings. However, after the introduction of high-resolution computed tomography (HRCT), the diagnosis could be precisely obtained. Therefore, radiologists play an important and critical role in its diagnosis and characterization.

METHODS AND MATERIAL

TYPE OF STUDY

This is a retrospective observational study of patients admitted in intensive care unit with complaints of respiratory disease, who were referred for HRCT thorax to the department of radiodiagnosis at the tertiary care Sardar Vallabhbhai Patel (SVP) Hospital, Smt. Nathiba Hargovandas Lakhmichand (NHL) Municipal Medical College (MMC), Ahmedabad, were included in this study.

SAMPLE SIZE Total 66 patients were studied.

DURATION OF THE STUDY The study period from February 2022 and May 2023.

STUDY SITE The study was conducted at the Department of Radiodiagnosis, Sardar Vallabhbhai Patel Institute of Medical Sciences and Research (SVPIMSR), Smt. NHL Municipal Medical College; Ahmedabad.

INCLUSION CRITERIA

The study included all age groups irrespective of their sex and all patients admitted in intensive care unit and presented with complaints of respiratory disease.

EXCLUSION CRITERIA

The study excluded those patients who did not hold the breath due to excessive breathlessness or attached ventilatory systems while scanning, resulting in excessive respiratory artifacts in scan, which were not reportable.

IMAGING PARAMETERS

All scans were performed on a 128-slice Philips CT scanner (Amsterdam, Netherlands) with the following scan parameters: slice thickness of 1.00 mm; collimation of 128 x 1.00; pitch of 0.95; 160 mAs; 120 kVp.

METHODOLOGY

CT scans were performed with a Philips Ingenuity 128-slice CT machine with the above-mentioned imaging parameters. Contrast and non contrast CT scans studies were included in the present study. Volumetric data of HRCT were reconstructed in multiple planes in high-resolution lung windows and soft tissue windows. For assessment of pulmonary embolism after taking proper consent of patients, IV bolus injection of contrast material (70 ml non ionic) was administered at

Table 1 : HRCT patterns observed in patients

Sr. No	HRCT patterns observed	Total number
1	Ground glass opacity with interstitial septal thickening	37
2	Consolidation	24
3	Pleural effusion • Bilateral : 17 (25.7%)% • Unilateral : 6 (9%) 1. Right: 4 2. Left: 2	23
4	Signs of right cardiac strain and pulmonary hypertension	12
5	Peri bronchial cuffing with mucus plugging	12
6	Pneumothorax • Bilateral: 3 (4.5%)% • Unilateral: 7 (10.6%) 1. Right: 4 2. Left: 3	10
7	Pulmonary contusion	8
8	Atelectasis (collapse) • Complete left lower lobe: 2% • Complete right lower lobe: 1% • Posterior segment of right upper lobe: 1% • Posterobasal segments of both lower lobes: 1	5
9	Pulmonary embolism% • Saddle embolism (both main pulmonary arteries): 2% • Segmental branch of apical segment of right upper lobe: 1% • Segmental branch of posterobasal segments of both lower lobes: 1	4
10	Extensive emphysematous changes	3
11	Subcutaneous emphysema	2
12	Pneumomediastinum	1

Table 2: Distribution of the HRCT patterns in different disease

Sr no	Disease	Ground glass opacity	Consolidation	Pleural effusion	cardio megaly with PAH	Peri bronchial cuffing with mucus plugging	Pneumothorax	Pulmonary Contusion	Atelectasis	Extensive emphysematous changes	Subcutaneous emphysema	Pneumomediastinum	Filling defect in CTPA
1	Pulmonary edema	9	8	10	1	0	0	0	0	0	0	0	0
2	Pneumonia	14	7	6	4	0	0	0	2	0	0	0	0
3	Aspiration pneumonitis	7	8	3	0	10	0	0	3	0	0	0	0
4	RTA	1	1	2	0	0	9	8	0	1	2	0	0
5	Barotrauma	0	0	0	0	0	0	0	0	0	1	1	0
6	Congestive heart failure	5	0	2	5	0	0	0	0	0	0	0	0
7	A/E of COPD	0	0	0	0	2	1	0	0	2	0	0	0
8	Pulmonary embolism	0	0	0	2	0	0	0	0	0	0	0	4
9	Diffuse pulmonary haemorrhage	1	0	0	0	0	0	0	0	0	0	0	0

a rate of 4 ml/s through an 18 gauge needle. All the patients also underwent a chest x-ray. The data were collected retrospectively from the picture archiving and communication system (PACS) and hospital information system (HIS). Patients were diagnosed on the bases of clinical presentation like breathlessness on rest, cough, dyspnea, gabharaman and some had preceding history of trauma followed by respiratory distress. Various HRCT patterns were correlated with clinical findings which include bilateral ground glass opacities, consolidation, pleural effusion, pneumothorax, pneumomediastinum, pulmonary embolism and cardiac abnormalities.

RESULTS

Among the study population, 42 subjects were male and 24 subjects were female. The clinical symptoms were acute onset dyspnea, which was the most common (31, 44.3%), fever (17, 24.2%) chest pain with excessive cough (9, 12.8%), and history of RTA (9, 12.8%) and dyspnea in known case of COPD (4, 5.7%).

Out of 66 patients studied, the most common pathological findings in lung parenchyma include ground glass opacities 37(26.2% of cases) and consolidation 24 (17.0%). Furthermore includes pleural effusion (23; 16.3%) [bilateral > unilateral], signs of right ventricular strain and pulmonary hypertension (12; 8.5%), peribronchial cuffing with mucus plugging (12; 8.5%), pneumothorax (10; 7.1%) [unilateral > bilateral], pulmonary contusion (8; 5.7%), atelectasis (5; 3.5%), pulmonary embolism (4; 2.8%), extensive emphysematous changes (3; 2.1%), subcutaneous emphysema (2; 1.4%), pneumomediastinum (1; 0.7%).

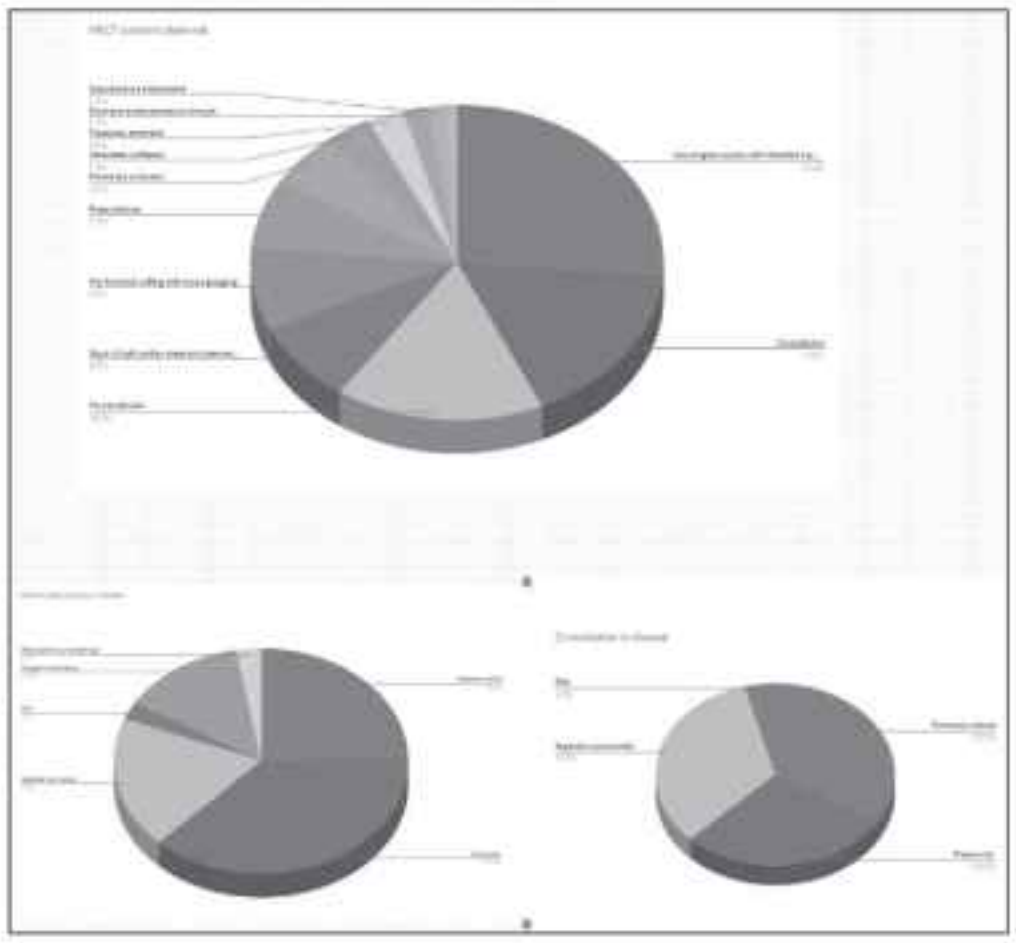
DISCUSSION

Chest X-rays are readily available, cheap and have the advantage of portability. But the diagnostic yield in terms of sensitivity and specificity is very low. The HRCT chest can very aptly fill this lacuna because of its superior sensitivity and specificity in detection and characterization of disease patterns in these patients.

GGO is a nonspecific finding; however, the correlation with any of the associated CT findings (nodular lesions, consolidation, septal thickening, fibrosis, air trapping), and clinical data is helpful in narrowing the range of diagnostic possibilities, or even in suggesting a specific diagnosis.(2)

On HRCT, pulmonary edema occurring with ARDS is generally associated with ground glass opacity or consolidation. Opacities can be diffuse or patchy and

Figure I : Graphical representation of the above mentioned results



depending on the etiology it may predominate in peripheral and subpleural regions or perihilar region with sparing the lung periphery. Unilateral or bilateral pleural effusion may be seen in association. The most common findings in our study was non cardiogenic pulmonary edema.

Bilateral diffuse ground glass opacities and consolidation were found in viral pneumonitis in our study. These patients turned out to be Covid 19 or H1N1 infection positive. The diagnosis of pneumonia is often based on culture of pathogenic organisms, mostly gram negative bacteria such as pseudomonas and klebsiella are responsible. On CT, pneumonias show lobar consolidation with/without pleural effusion. Often, many patients had a combination of HRCT patterns, like the pleural effusion is associated with pulmonary edema and pneumonia in our study. CT-scan can improve the diagnosis reclassification of 8–18% of patients in study of Garin N et al (3). In our study, the rate of diagnosis of pneumonia was around 21%.

In patients with a history of trauma, the findings were pneumothorax [unilateral > bilateral], pulmonary contusions, interstitial emphysema and associated rib fractures and subcutaneous emphysematous changes were observed.

Localized area of consolidation with volume loss and mucus plugging in small bronchi were the most common findings with active atelectasis and passive atelectasis seen in association with underlying pleural effusion & pneumothorax.

Pulmonary parenchymal hemorrhage occurs in anticoagulated patients, patients with bleeding diathesis and vasculitis. In our study, 1 case of diffuse pulmonary hemorrhage was observed showing bilateral diffuse ground glass opacities with interstitial septal thickening giving a crazy pavement like pattern in the known case of systemic lupus erythematosus.

Bedridden comatose and intubated or patients with nasogastric tubes are at highest risk for microaspiration of gastric contents that causes inflammatory changes in lung parenchyma in the form of ground glass opacity with consolidation in dependent position of lungs (aspiration pneumonitis). Diagnosis of pulmonary embolism primarily rests with spiral CT and high clinical suspicion. Mechanical ventilation is fundamental treatment of acute respiratory distress. Despite this, it can result in serious complications like barotrauma due to high ventilatory pressure or volumes. In barotrauma the information yielded by CT directed the choice of treatment: thoracostomy tubes were positioned in the cases of pneumothorax undetected by chest films. (4) HRCT thorax was also found helpful in detection of proper position of tubes (endotracheal and chest drain tube).

In patients with known case of COPD, the CT scan findings were extensive emphysematous changes with bulla formations and additional pneumothorax was seen in one case.

Pulmonary arterial hypertension was found in 14 patients (21.2%), cardiomegaly with PAH in 12 patients (18.1%) and smoking was an associated factor in 7 patients (10.6%).

The HRCT findings of different disease are as depicted below:

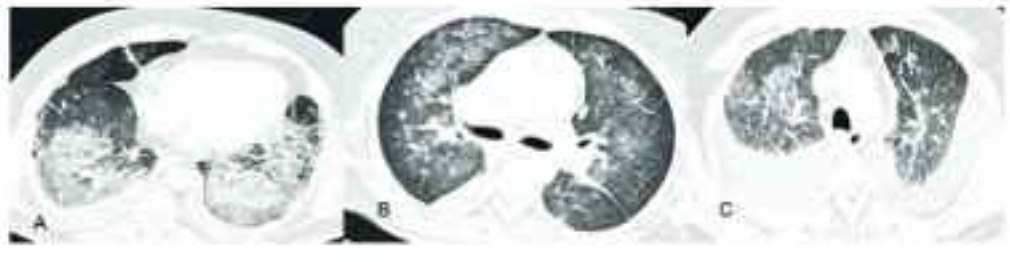


Figure II: Axial non contrast lung window shows A,B,C) bilateral ground glass opacities with pleural effusions on both sides, suggests non cardiogenic pulmonary edema.

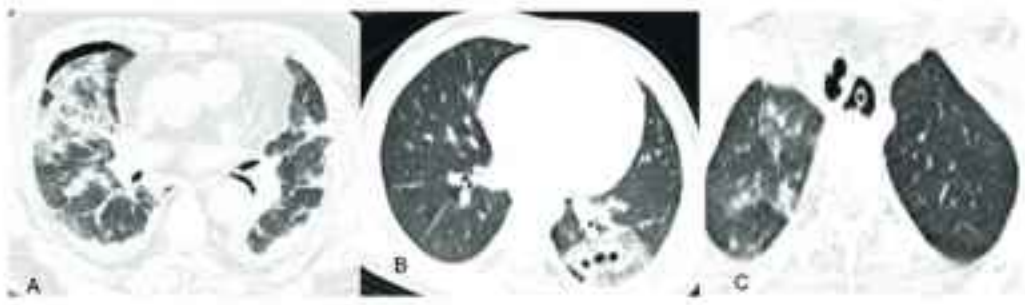


Figure III: In case of trauma, Axial non contrast lung window shows A) Right sided pneumothorax and increased area of attenuation (pulmonary contusion) B) Interstitial emphysema with pulmonary contusion in superior segment of left lower lobe C) Pulmonary contusion in apical segment of right upper lobe.

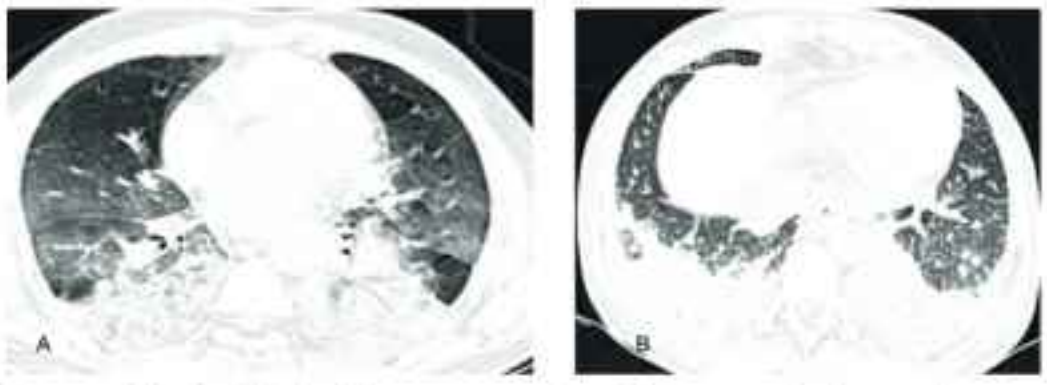


Figure IV: A,B) Axial non contrast lung window shows bilateral basal consolidation with few nodular infiltrates, suggestive of aspiration pneumonia.

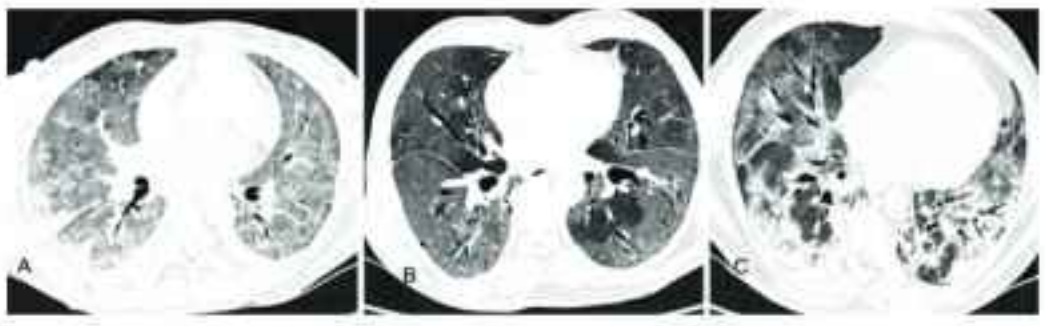


Figure V: Axial non contrast lung window shows A) Ground glass opacity with interstitial septal thickening and pleural effusion- severe COVID 19 infection. B) Diffuse ground glass opacity-COVID 19 Positive. C)Ground glass opacity with interstitial septal thickening and patchy area of consolidation- positive for H1N1 infection.

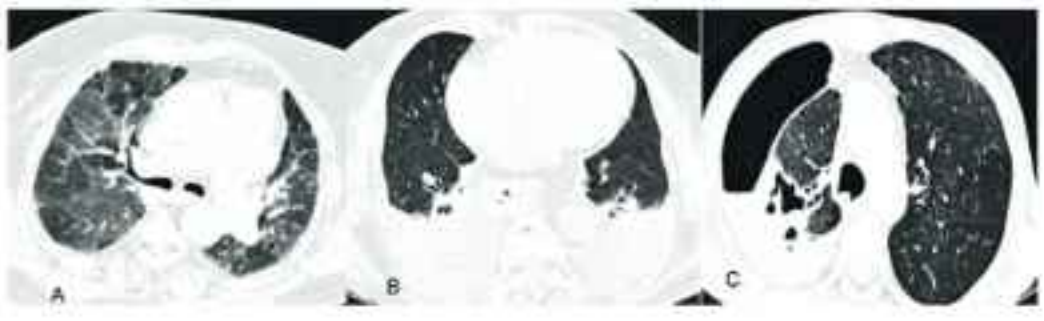


Figure VI: Axial non contrast lung window shows A) Cardiomegaly with bilateral ground glass opacity and interstitial septal thickening B) Cardiomegaly with bilateral pleural effusion-congestive cardiac changes. C) Right sided hydropneumothorax in history of trauma.

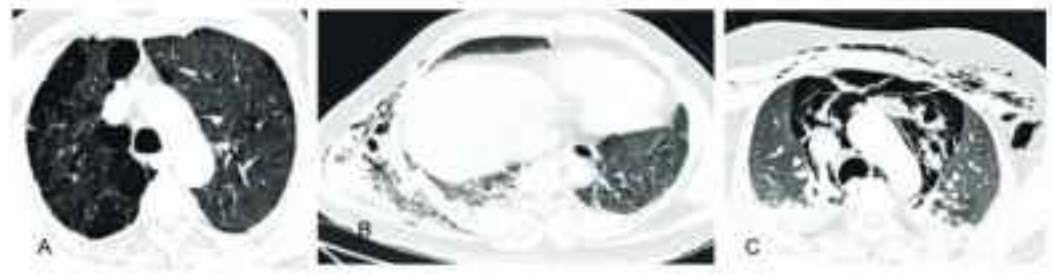


Figure VII: Axial non contrast lung window shows A) Extensive emphysematous changes with bulla formation and minimal pneumothorax-acute exacerbation of COPD. B) Subcutaneous and inter-intra muscular emphysematous changes in history of trauma. C) Pneumomediastinum with subcutaneous emphysema-Barotrauma.

Figure VIII: Axial non contrast lung window shows A) bilateral diffuse ground glass opacities in k/c/o SLE- pulmonary parenchymal hemorrhage B) left lower lobe collapse C) right lower lobe collapse with elevated right dome of diaphragm.

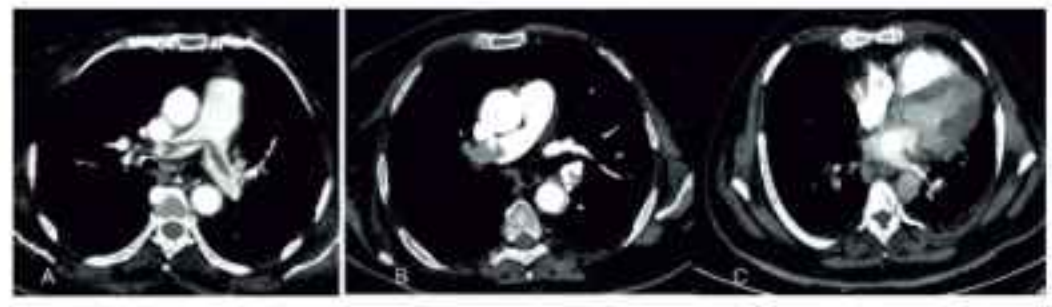


Figure IX: A,B) Axial contrast mediastinal window shows saddle shaped pulmonary embolism in bifurcation of main pulmonary artery in A and in right main pulmonary artery and left descending artery in B and branch of posterobasal segment of right lower lobe in C.

Acute respiratory distress syndrome (ARDS) is a severe clinical process that occurs as a result of acute lung damage. ARDS was first described in 1967 by Asbaugh et al. (5) as a syndrome of severe respiratory failure with widespread infiltrations seen on the pulmonary radiograph, reduced compliance and hypoxaemia unresponsive to oxygen treatment.

ARDS has many risk factors. Besides pulmonary infection or aspiration, extra-pulmonary sources include sepsis, trauma, massive transfusion, drowning, drug overdose, fat embolism, inhalation of toxic fumes and pancreatitis. These extra-thoracic

illnesses and/or injuries trigger an inflammatory cascade culminating in pulmonary injury.

In the study of LR Goodman et al., ground glass opacity and consolidation were equally prevalent in ARDS due to pulmonary disease and whereas ground glass opacity was dominant in ARDS due to extra pulmonary disease. (6) In line with the statement, in our study similar observations of ground glass opacity and consolidation were seen.

Various aspects, such as underlying diagnostic yield, bedside availability, radiation exposure and inter observer variability need to be taken into consideration for each case and setting to select the most appropriate imaging modality. (7) Chest CT scans have the advantage of comprehensive approach for evaluation of lung parenchyma, pleural space, cardiac, thoracic vessels and position of tubes.

Some methodological limitations in our study results from potential biases introduced by the retrospective study design.

CONCLUSION

HRCT chest is an excellent modality in the diagnostic work-up of patients with respiratory distress admitted in intensive care units, allowing early detection and characterization of abnormalities in lung parenchyma, pleural space, cardiac, soft tissue, mediastinum and thoracic vessels.

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Original Article

Evaluation of the quality of life among patients with atopic dermatitis

Nandan M. Shah*, Nihar Y. Gami, Simoni D. Shah***

*Department of Medicine, Narendra Modi Medical College, LG Hospital, Maninagar, Ahmedabad.

**Department of Medicine, GCS Medical College, Ahmedabad.

KEY WORDS : Atopic dermatitis, Children, Dermatology Life Quality Index, Quality of life

ABSTRACT

Background: Atopic dermatitis (AD), which primarily affects children, is a chronically relapsing inflammatory pruritic skin disorder.Health-related quality of life (HRQoL) can be significantly affected in children with AD, especially due to itchiness and scratching, negative emotions, and sleeping difficulties.

Methods : After receiving ethical approval from the Institutional Review Board, an observational, cross-sectional study including patients with atopic dermatitis was carried out at the Department of Dermatology at a tertiary care teaching hospital.After obtaining the patient's informed consent, the case record sheets of the patients were evaluated, and all pertinent data were collected.Assessment of the quality of life among patients was carried out using the Dermatology Life Quality Index" (DLQI), and the "World Health Organization Quality of Life Brief Version" (WHOQOL-BREF).

Results : A total of 273 patients diagnosed with atopic dermatitis during the study period were included in the study.The majority of the study's participants were between the ages of 11 and 20. The average score of the overall quality of life was 49.01, and it ranged from 38 to 59 (WHOQOL-BREF). The environmental health and social relationship domains had the highest and lowest scores across all four domains as per WHOQOL-BREF. Total DLQI score ranged from 0 - 30. As per DLQI, the maximum mean score among adults and children was observed with the question of "symptoms" (itchy, sore, painful, or stinging skin) and it was 2.40.

Conclusions : The key quality of life parameters that are impacted by atopic dermatitis are social relationships and psychological health. An effective AD evaluation should take into consideration both clinical severity and QoL measurements.

INTRODUCTION

Atopic dermatitis (AD), which primarily affects children but can also affect adults, is a chronically relapsing inflammatory pruritic skin disorder.[1] It causes erythema, scaly and oozing plaques, and intense pruritis on the hands, face, neck, and flexural areas.[2] One of the most common types of eczema is AD, which includes many different subtypes.[3] It is among the most prevalent skin conditions in young children and infants. In a few cases, the disease persists, but generally, it resolves by the time children reach adulthood. Males' are significantly more likely to be affected by atopic dermatitis than females, though this difference hasn't consistently existed. AD affects all racial and geographic groups. However, it appears that developed countries have a greater incidence of AD.[4]

The etiology of AD is not clear. Several studies have suggested that genetic factors play a role in the development of AD. The most frequent genetic changes linked to AD are mutations in the filaggrin gene.[5]

In children with AD, Health-related quality of life (HRQoL) can be markedly impaired, particularly because of the itchiness and scratching, negative emotions, and sleeping issues.[6] Because they cannot engage in all activities, children frequently feel socially isolated. Anxiety, depression, autism, conduct disorder, and other mental health comorbidities are more prevalent in children with AD, and their

Correspondence Address : **Dr. Nandan M. Shah**
Department of Medicine,
Narendra Modi Medical College, LG Hospital,Maninagar, Ahmedabad-380008.
Email : nandanmshah@gmail.com

prevalence rises with the severity of AD.[7] The quality of life of parents of children with AD can also be affected by chronic illness. The child wakes up more frequently than usual, which interferes with the sleep of parents resulting in daytime tiredness, and parents may also feel emotionally distressed.[8,9] Because of the importance of psychological consequences, assessment of the quality of life of atopic dermatitis patients by physicians is highly advisable.

Keeping this into consideration, a study was performed to evaluate the quality of life among patients with atopic dermatitis.

METHODS

This was an observational, cross-sectional study. The study was conducted at the Department of Dermatology of a tertiary care teaching hospital in Gujarat, India. Patients of either gender visiting the dermatology OPD of the study site and diagnosed with atopic dermatitis using the Revised Hanifin and Rajka diagnostic criteria were approached and those who gave written informed consent were only included in the study. Patients with dermatological conditions other than atopic dermatitis were excluded.

The study was conducted over two years, from September 2020 to August 2022. A total of 273 patients with atopic dermatitis satisfying all the inclusion criteria were included in the study.

The study was initiated after obtaining approval from the Institutional Review Board. Dermatology OPD of the study site was visited, and eligible study participants were approached. Study participants were briefed about the aims and objectives of the study in their vernacular languages. The written informed consent was obtained from each patient in their vernacular languages. The case record sheets of the patients were assessed and all the relevant data were collected. Study participants were assured of the privacy and confidentiality of their data.

Assessment of the quality of life was carried out usingDermatology Life Quality Index" (DLQI), and the "World Health Organization Quality of Life Brief Version" (WHOQOL-BREF). Both the questionnaires were translated into Gujarati, in addition to English and Hindi, for patients' convenience. For the patients who were unable to read and write, the investigator filled the questionnaire on their behalf with their consent.

All the collected data were entered into a GraphPad. Statistical Package for the Social Sciences (SPSS) software, version 20.0 was used to carry out appropriate statistical analysis.

RESULTS

In our study, a total of 273 patients attending the dermatology outpatient department and diagnosed with atopic dermatitis during the study period were enrolled.

The mean ± SD age (Years) of study participants was 21.79 ± 15.94. The median (IQR) age (Years) was 17.00 (9-32.5). The age (Years) of the study participants ranged from 3 to 57. The majority of study participants were from the age group of 11-20 years. Around, 28.2% of the participants had ages: ≤10 years, 30.8% of the participants had ages: 11-20 years, 12.8% of the participants had ages: 21-30 years, 10.3% of the participants had ages: 31-40 years, 10.3% of the participants had ages: 41-50 years and 7.7% of the participants had ages: 51-60 years.

Male preponderance was observed in our study. About 53.8% (n=147) of the participants had Gender: Male, while, 46.2% (n=126) of the participants had Gender: Female (95% CI: 37.4% - 69.6% and 30.4% - 62.6%, respectively). The Male: Female ratio was 1.16.

Table1: Mean quality of life score of various domains of the WHOQOL-BREF scale among atopic dermatitis patients

Domains	Mean ± SD	Range Minimum	Maximum
Physical health (35)	15.20 ± 1.72	13	18
Psychological health (30)	12.28 ± 2.06	9	14
Social relationship (15)	6.05 ± 1.82	4	8
Environmental health (40)	15.48 ± 3.88	12	19
The overall quality of life (120)	49.01 ± 9.48	38	59

Table 2: Mean score of WHOQOL-BREF items among atopic dermatitis patients

WHOQOL-BREF items	Direction of scaling	Mean ± SD raw item score
Domain 1: Physical Health		
Physical pain (Q3)	Negative	2.45 ± 0.79
Dependence medication (Q4)	Negative	2.18 ± 0.68
Energy (Q10)	Positive	3.01 ± 0.83
Mobility (Q15)	Positive	3.12 ± 0.52
Sleep and rest (Q16)	Positive	2.08 ± 0.66
Activities of daily living (Q17)	Positive	2.74 ± 0.80
Working capacity (Q18)	Positive	2.61 ± 0.96
Domain 2: Psychological Health		
Life enjoyment (Q5)	Positive	3.68 ± 0.72
Meaningfulness of life (Q6)	Positive	2.84 ± 0.65
Concentration (Q7)	Positive	3.72 ± 0.74
Body appearance (Q11)	Positive	2.76 ± 0.67
Self-esteem (Q19)	Positive	2.97 ± 0.34
Negative feelings (Q26)	Negative	2.69 ± 0.23
Domain 3: Social Relationships		
Personal relationship (Q20)	Positive	3.13 ± 0.56
Sexual activity (Q21)	Positive	2.71 ± 0.66
Social support (Q22)	Positive	3.49 ± 0.43
Domain 4: Environmental Health		
Safety (Q8)	Positive	3.58 ± 0.68
Physical environment (Q9)	Positive	2.52 ± 0.97
Financial resources (Q12)	Positive	2.44 ± 0.81
Daily information (Q13)	Positive	2.71 ± 0.77
Leisure (Q14)	Positive	2.31 ± 0.45
Home environment (Q23)	Positive	2.66 ± 0.56
Access to health care (Q24)	Positive	2.36 ± 0.92
Transport (Q25)	Positive	2.75 ± 0.23
Overall QOL (Q1)	Positive	1.99 ± 0.77
General health (Q2)	Positive	1.91 ± 0.69

Table 1 displays the mean ± SD values for the four "raw domain scores" of the WHOQOL-BREF questionnaire. A higher score indicates a higher quality of life. The average score of the overall quality of life was 49.01, and it ranged from 38 to 59. The environmental health and social relationship domains had the highest and lowest scores across all four domains, respectively.

Table 2 shows the mean ± SD raw item score for each item of the WHOQOL-BREF scale. Q1 and Q2 indicated overall QOL and general health, while the remaining questions were divided into four domains. Average overall QOL and general health scores were 1.99 and 1.91 respectively, which shows the poor quality of life. Q3, Q4, and Q26 were three reverse scoring items. The environmental health and social relationship domains were significantly affected in these patients, while the physical health domain was least affected. The highest and lowest mean score observed in these patients were concentration (3.72) and sleep and rest (2.08), respectively.

The mean score of each item of DLQI, CDLQI, and IDLQI are depicted infigure 1 (1A, 1B, 1C). The mean ± SD DLQI score of all 273 patients was 12.28 ± 3.01. Total DLQI score ranged from 0 - 30. A higher score indicates greater impairment of life. The maximum mean score among adults and children was observed

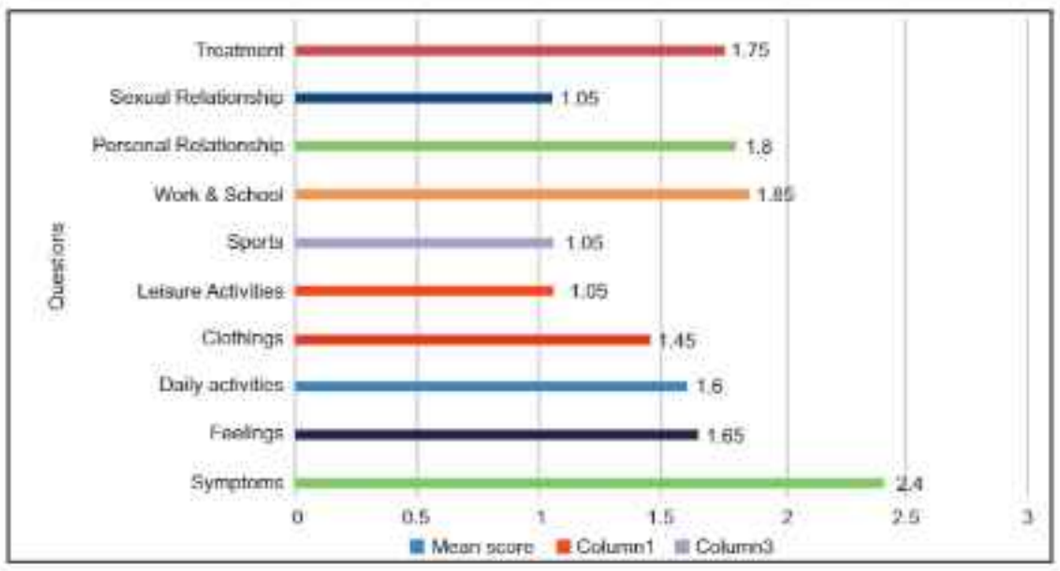

Figure 1A: Mean score of each item from the Dermatology life quality index (DLQI)

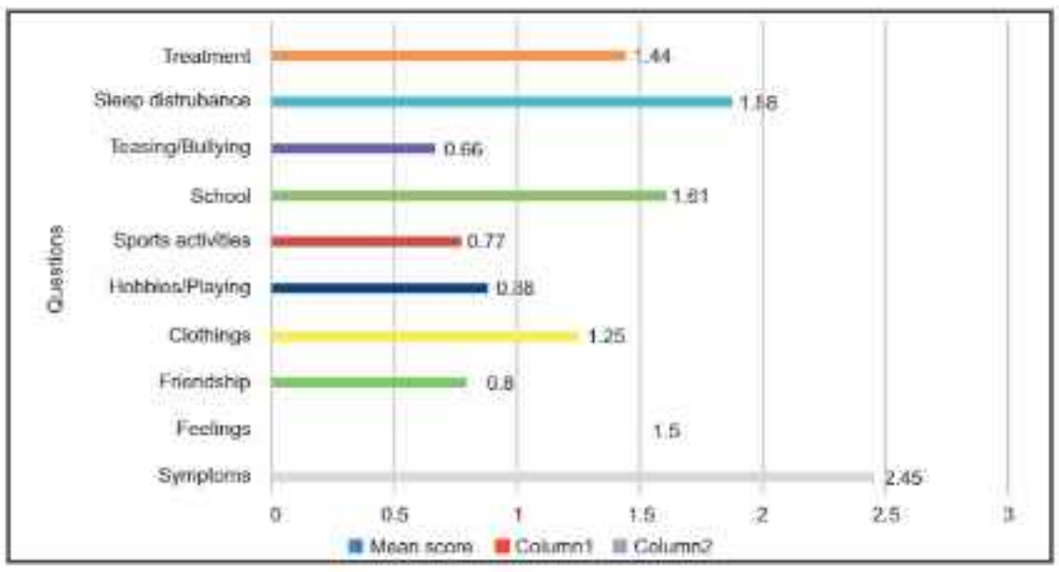

Figure 1B: Mean score of each item from Children's dermatology life quality index (CDLQI)

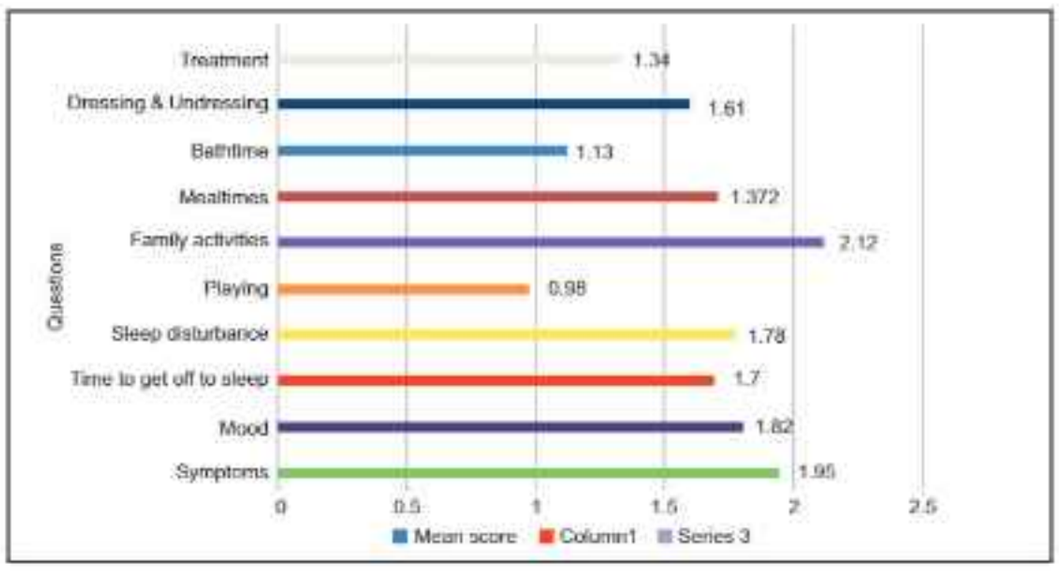

Figure 1C: Mean score of each item from the Infant's Dermatology life quality index (IDLQI)

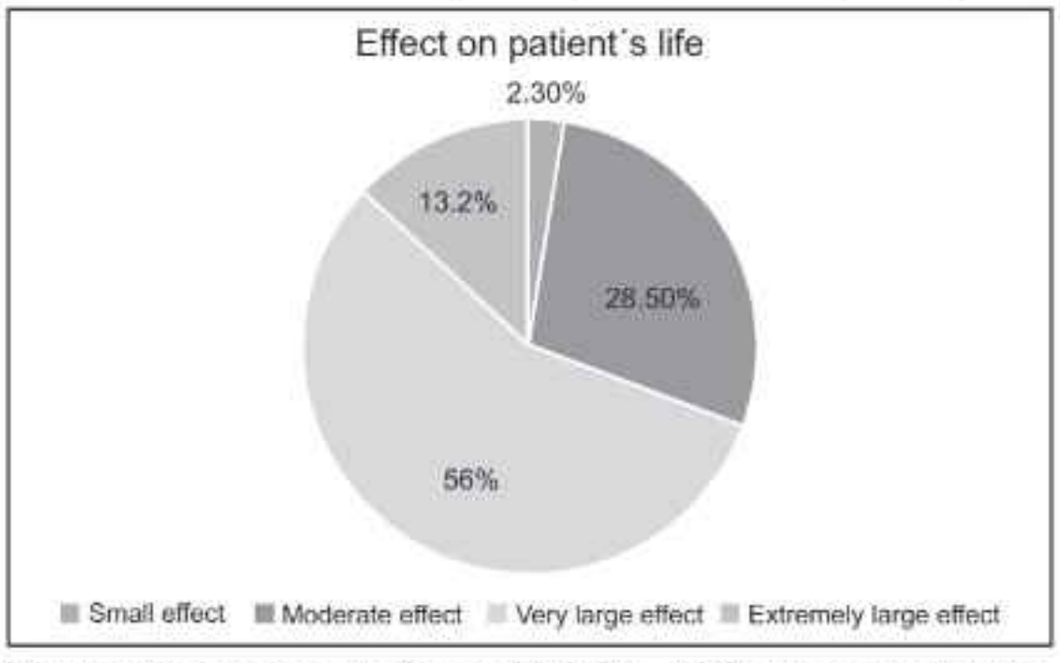

Figure 2: Interpretation of DLQI – Effect on patient's life (N=273)

with the question of "symptoms" (itchy, sore, painful, or stinging skin) and it was 2.40 and 2.45 respectively followed by the question of work & school among adults (1.85) and sleep disturbance among children (1.88). The items with the lowest scores weresexual relationships, teasing/bullying, and playing among adults, children, and infants, respectively.

The effect on the patients life using DLQI is shown infigure 2. Nearly half (56%) of the patients demonstrated a very large effect (Score range: 11-20) on their life due to atopic dermatitis as per DLQI score, while an extremely large effect (Score range: 21-30) was observed in around 28.5% of the patients.

DISCUSSION

The study participants ranged from 3 to 57 years, with most of them (30.8%) being in the age group of 11-20 years. And 12.8% of the participants had ages: 21-30 years. In a retrospective study conducted by Tay et al.[10], it was shown that 20.9% of patients had atopic dermatitis while they were teenagers or young adults, whereas 61.2% of patients had symptoms in the first 10 years of life. However, it started to manifest in 6.1% of cases after the age of 31. Similar results were obtained by Scaria et al.[11], wherein in their study, the majority of the patients belonged to the age group of 3-10 years (43.3%). The present study showed a male preponderance, with 53.8% of the participants being male. The male: female ratio was 1.16:1. Although the gender ratios between the research have significantly varied, Sarkar and Kanwar[12] noted a male predominance of 2.25:1 for infants while on the other hand, Vemuri and Nayak[13] and Scaria et al.[11] revealed a female predominance with a male: female ration of 1:1.63.

When test time is limited, the World Health Organization Quality of Life Brief Version (WHOQOL-BREF) of the WHOQOL-100 questionnaire is employed. It has 26 questions in total, including 2 questions from the overall quality of life and general health facets, in addition to the 24 questions from the original questionnaire.[14] In the current study, an average score of 49.01 ± 9.48 was noted. The environmental health (15.48 ± 3.88) and social relationship (6.05 ± 1.82) domains were significantly

affected in these patients, while the physical health domain (15.20 ± 1.72) was least affected. Coghi et al.[15] determined atopic dermatitis has the greatest impact on a patient's mental well-being, whereas Mozaffari et al.[16] found in their study that physical health is significantly affected.

Females showed significant deterioration compared with male patients in the psychological and social relationship domain, indicating that females were relatively less satisfied with respect to their personal relationships and sexual activity. Poor QOL was seen in patients residing in rural areas. With regards to occupation, laborers had a significant worsening of QOL in the physical domain than patients with other occupations, but it was not statistically significant. With regards to the duration of the disease, one with chronic atopic dermatitis had poor QOL, although the difference was not statistically significant.

[redacted] mean ± SD DLQI score in the current study was 12.28 ± 3.01. These values were slightly higher than those obtained by Holm et al.[18] wherein a DLQI value of 9.16 ± 5.9 was noted. Vakharia et al.[19] and Sanchez-Perez et al.[20], found a mean DLQI score of 10.7 and 7.8 respectively. The maximum mean score among adults and children was observed with the question of "symptoms" (itchy, sore, painful, or stinging skin) and it was 2.40 and 2.45 respectively followed by the question of work & school among adults (1.85) and sleep disturbance among children (1.88). The items with the lowest scores were sexual relationship, teasing/bullying, and playing among adults, children, and infants, respectively.

Furthermore, Holm et al.[18] compared 101 atopic dermatitis patients with 30 controls and concluded that, rather than the physical parts of life, AD patients were more likely to experience psychological effects. In the current study, 56% demonstrated a very large effect on their life due to atopic dermatitis as per DLQI score. A moderate to extremely large impact on quality of life is reported by more than half of adult patients who have AD. Many people say that their AD affects their choice of clothing and causes them pain, stinging, and shame. With growing illness severity, the burden grows.

CONCLUSION

The current study concludes that atopic dermatitis has an impact mainly on social relationships and psychological health parameters of quality of life. Clinical severity and QoL measurements should both be included in an efficient AD evaluation. The long-term effects of treatment will be improved by multidisciplinary approaches for AD management.

ACKNOWLEDGEMENTS

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DECLARATIONS

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Conflict of interest: None declared

Ethical approval: Ethical clearance was obtained from Institutional Review Board

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Original Article

"Spectrum of MRI findings in Pediatric Patients with Epilepsy"

Dr. Ujas Dhakan*, Dr. Avni M. Patel, Dr. Krati S Mundhra***, Dr. Tushar A. Teraiya*, Dr. Ekamjot Singh******

*3rd year resident; **Assistant Professor; ***Associate Professor; **Assistant Professor; *3rd year resident;
******2nd year resident, Department of Radio-diagnosis, SVP Hospital, Smt. NHL Municipal Medical College, Ahmedabad.

KEY WORDS : Epilepsy, Focal cortical Dysplasia, Pachy Polymicrogyria, Grey Matter Heterotopia

ABSTRACT

INTRODUCTION: Epilepsy is the major cause of disability in the pediatric population in both developing and developed countries. Majority of the epilepsy attacks are idiopathic. However the differentiation between medically treated and refractory causes helps in the management of the case and helps in improvement of the quality of life. Majority of the cases are medically responsive, however the imaging can promptly diagnose the medically refractory cases of epilepsy and guides the management. CT was the only modality before the era of MRI. MRI has been the gold standard for identifying the underlying etiology in pediatric epilepsy, because of its high spatial resolution, excellent inherent soft tissue contrast, multiplanar imaging capability, lack of ionizing radiation and helps in prognosis and to guide the management of the patient.

METHODS: A retrospective observational study was done in 60 pediatric patients <18 years over a course of 1 year from February 2022 to March 2023 at the Department of Radio-Diagnosis, SVP hospital, Ahmedabad with 3T SIEMENS MAGNETOM-SKYRA MRI machine

RESULTS: Out of 60 patients having epilepsy symptoms, 32 showed abnormal finding/ pathology in MRI scan. The most commonly observed abnormality was developmental malformation followed by white matter demyelinating pathology.

CONCLUSIONS: MRI has been the gold standard for identifying the underlying pathology in pediatric epilepsy, because of its high spatial resolution, excellent inherent soft tissue contrast, multiplanar imaging capability and lack of ionizing radiation. It could be the investigation of choice in epileptic syndrome and developmental cortical malformations due to its ability in identifying subtle lesions and characterizing the lesions.

AIMS &OBJECTIVES

1. To study the etiological factors for epilepsy and associated structural abnormalities in the brain in pediatric patients.
2. To study the spectrum of MRI findings in pediatric patients with epilepsy to aid in the clinical diagnosis and management.

INTRODUCTION

Epilepsy is the major cause of disability in the pediatric population in both developing and developed countries. Majority of the epilepsy attacks are idiopathic. However the differentiation between medically treated and refractory causes helps in the management of the case and helps in improvement of the quality of life.

Majority of the cases are medically responsive, however the imaging can promptly diagnose the medically refractory cases of epilepsy and guides the management.

Most common types of epilepsy in children include generalized tonic clonic seizures and absence seizures.

Various causes of epilepsy in pediatric population include:

Infections - Tuberculosis, Neurocysticercosis, Cytomegalovirus, Herpes, Meningitis, Encephalitis, Cerebritis.

Correspondence Address : **Dr. Avni M. Patel**
SVP Hospital, Smt. NHL Municipal Medical College, Ahmedabad-380009.
Email : sns3191@gmail.com

Tumors - Dysembryoblastic neuroepithelial tumor, Pleomorphic xanthoastrocytoma, Ganglioglioma, Cavernoma.

Congenital conditions like Tuberous sclerosis, Sturge Weber syndrome.

Others like mesial temporal sclerosis, leukodystrophies, focal cortical dysplasia etc.

METHODS

A retrospective observational study was done in the Department of Radio-Diagnosis, SVP hospital, Ahmedabad with 3T SIEMENS MAGNETOM-SKYRA MRI machine.

Totally 60 cases with clinical symptoms and signs of epilepsy were studied from February 2022 to March 2023. The data collected was from PACS of SVPIMSR.

INCLUSION CRITERIA

- All pediatric patients < 18 years, irrespective of sex having epilepsy & referred for MRI brain study were selected based on clinical data.

EXCLUSION CRITERIA

- Contraindications to MRI studies, such as patients with pacemakers, metallic implants, aneurysmal clips, etc.
- Claustrophobia or anxiety disorders exacerbated by MRI.
- Patient with psychological disease and pseudoseizure

STATISTICAL ANALYSIS

Data depicted in form of tables & charts.

PATIENT PREPARATION

The patients selected for the study were clinically diagnosed cases of epilepsy as per the criteria laid down by the ILAE 1981.

Informed consent from the guardian with a brief history of clinical presentation of the patient was taken. The procedure was explained to the patient including the risks of contrast examination.

SPECIAL INVESTIGATIONS

- MRI scan brain (Plain /contrast)

RESULTS

TABLE 1: AGE & GENDER WISE DISTRIBUTION

Age	Male	Female	Total	Percentage
< 1 month	3	3	6	10
>1 month- <12 year	12	8	20	33.3
12-18 years	20	14	34	56.6
Total	**35**	**25**	**60**	**100**

Maximum number of patients were in the age group of 12-18 years. (56.6%).

Sex ratio : M:F – 1.4 : 1

Male predominance is noted.

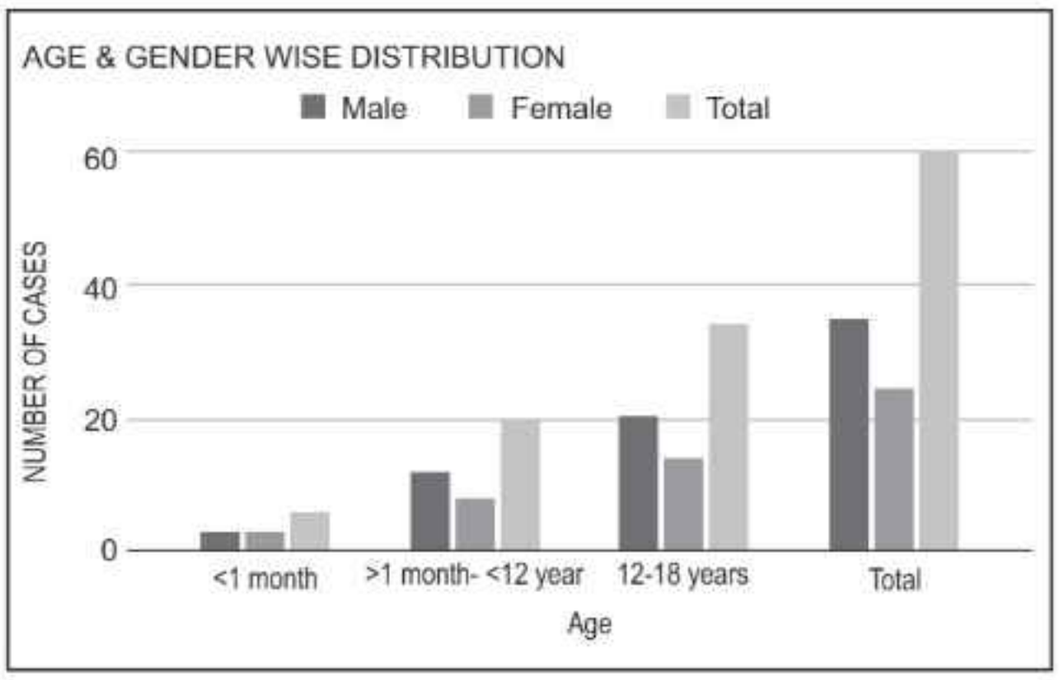


TABLE 2: DISTRIBUTION OF PATIENTS BASED ON MR DIAGNOSIS

Cause	No. of patients	Percentage
Normal study	28	46.7
Infective	6	10
Hippocampal	4	6.7
White matter demyelinating	6	10
Developmental malformations	11	18.3
Tumor	3	5
Others	2	3.3

The most common abnormality observed was developmental malformations followed by white matter demyelinating pathology and infective causes

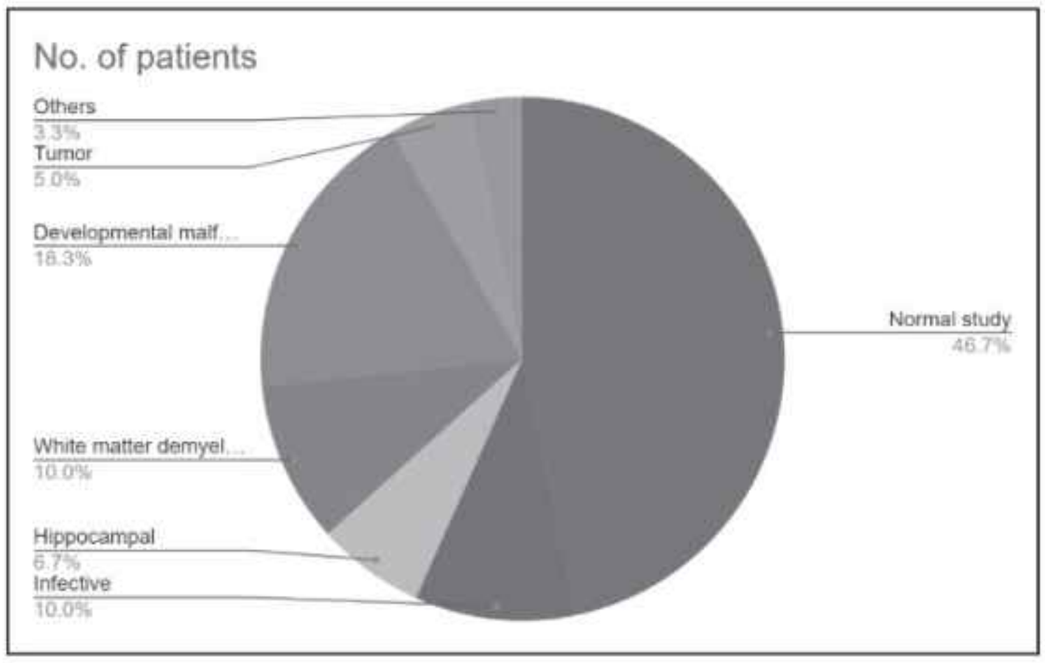
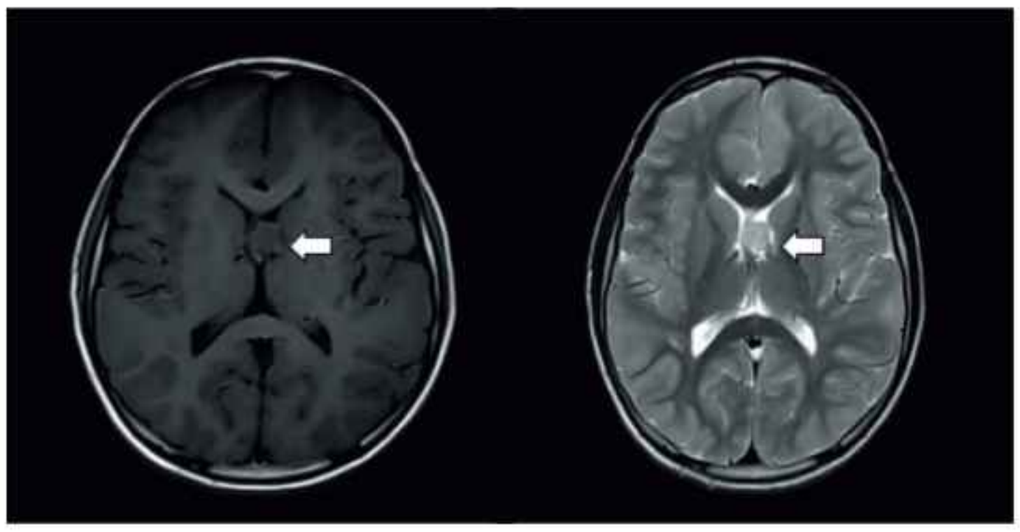
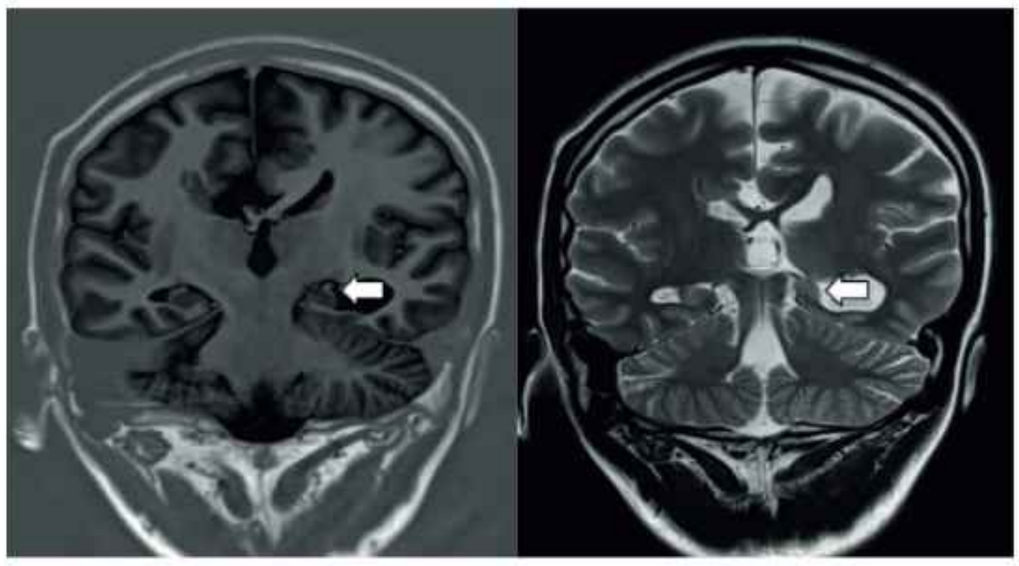


Fig1 : Tuberous sclerosis -Subependymal giant cell astrocytoma



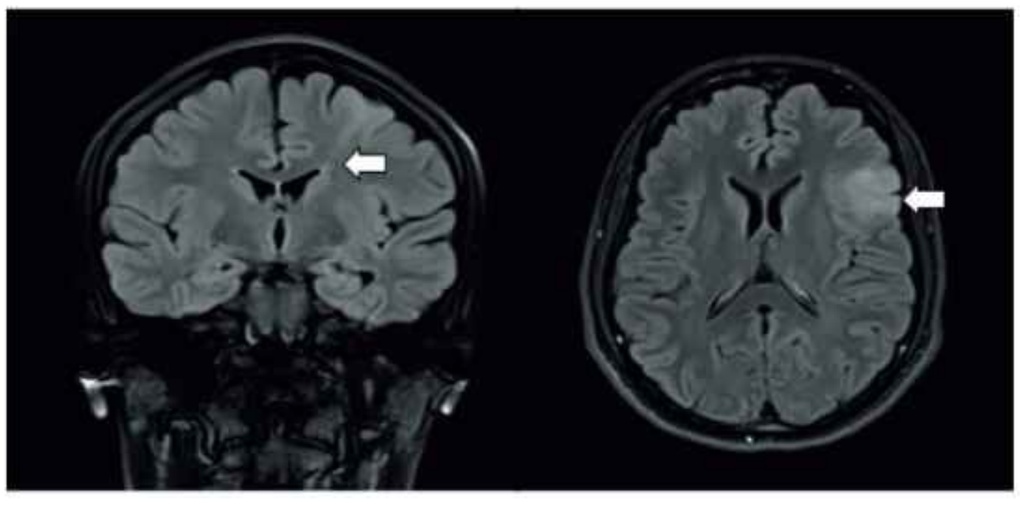
T1WI (axial) T2WI (axial)

Fig 2 : Hippocampal developmental anomaly (vertically oriented hippocampus).



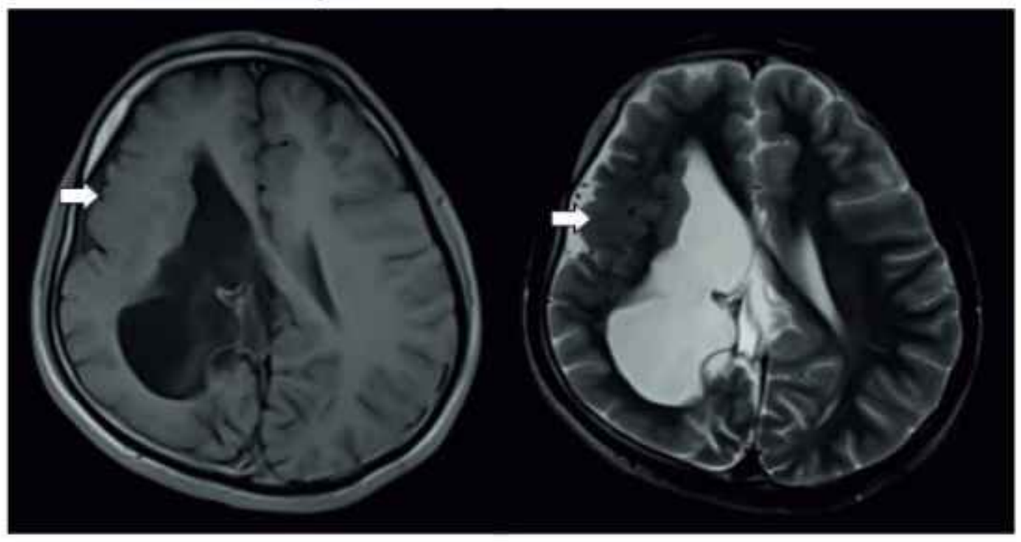
T1WI(oblique coronal) T2WI (oblique coronal)

Fig 3 : Focal cortical dysplasia



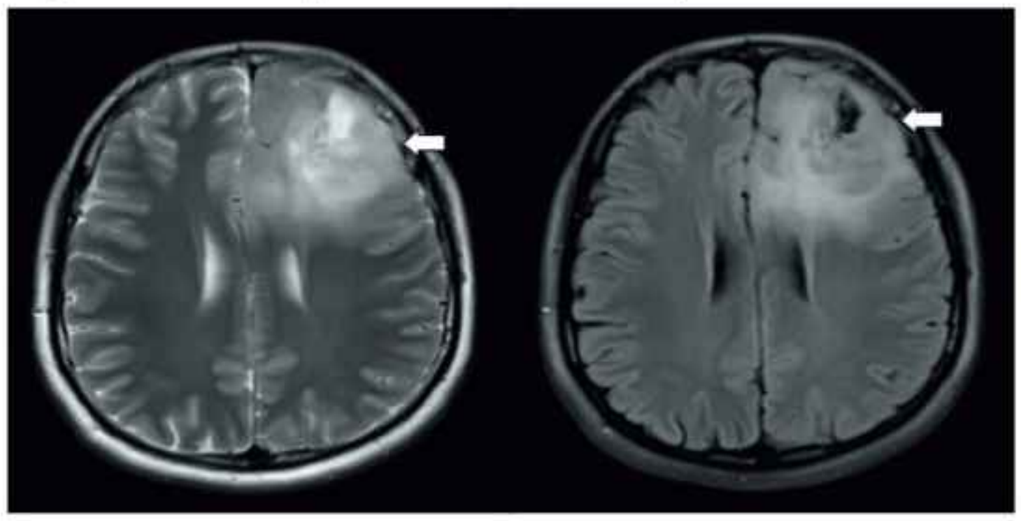
FLAIR (coronal and axial)

Fig 4 : Pachy Polymicrogyria with gray matter heterotopia

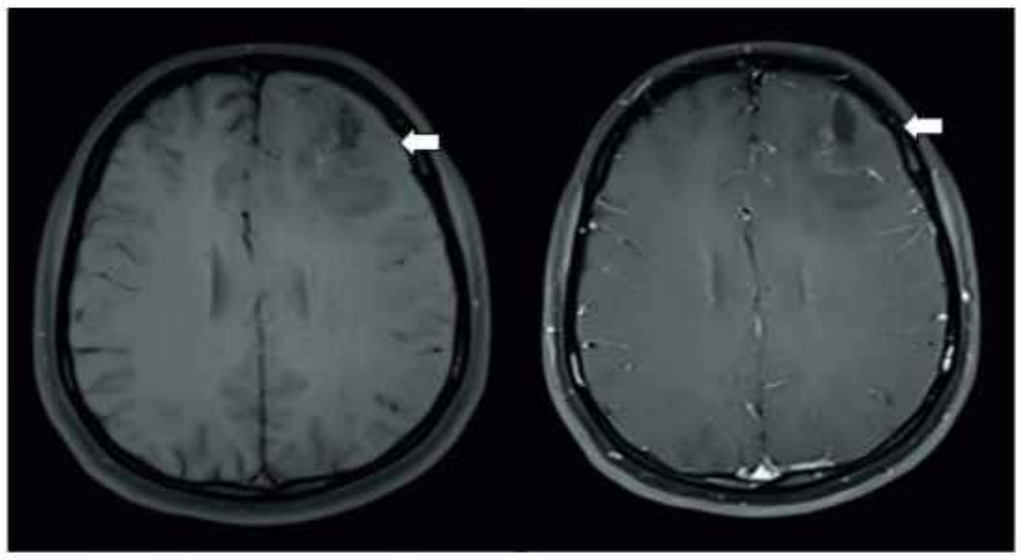


T1WI (axial) T2WI (axial)

Fig 5 : Pleomorphic xanthoastrocytoma

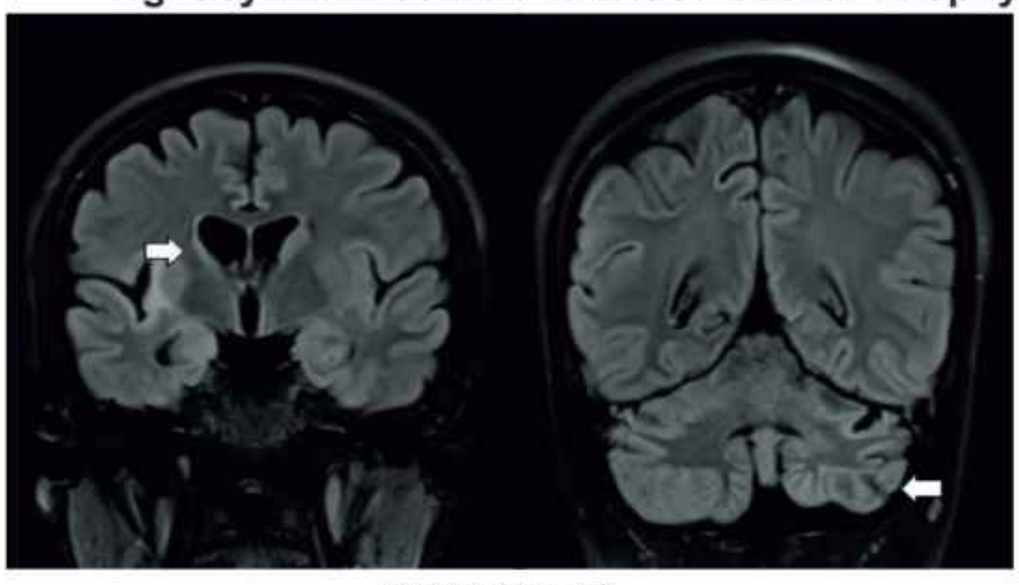


T2WI (axial) FLAIR(axial)



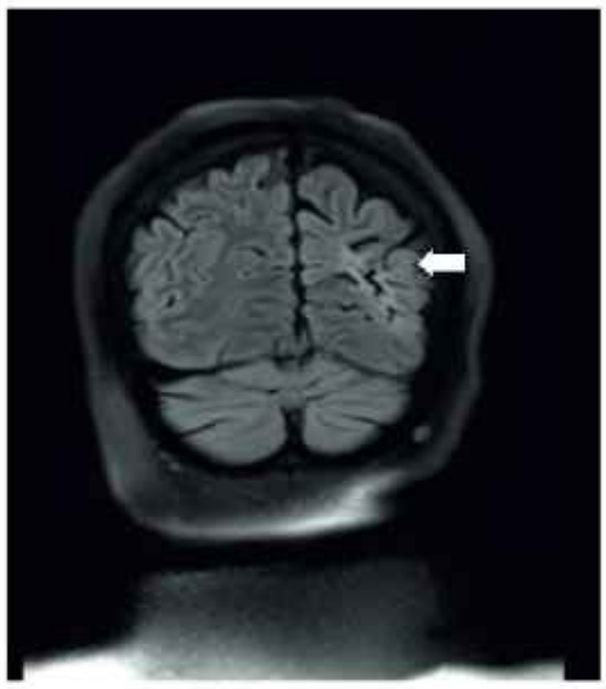
T1WI (precontrast-axial) T1WI (postcontrast-axial)

Fig 6 : Rasmussen encephalitis with crossed cerebellar diaschisis and post ictal edema Atrophy of right caudate nucleus with mild cerebral atrophy on right side, prominent right sylvian fissure and left cerebellar atrophy.



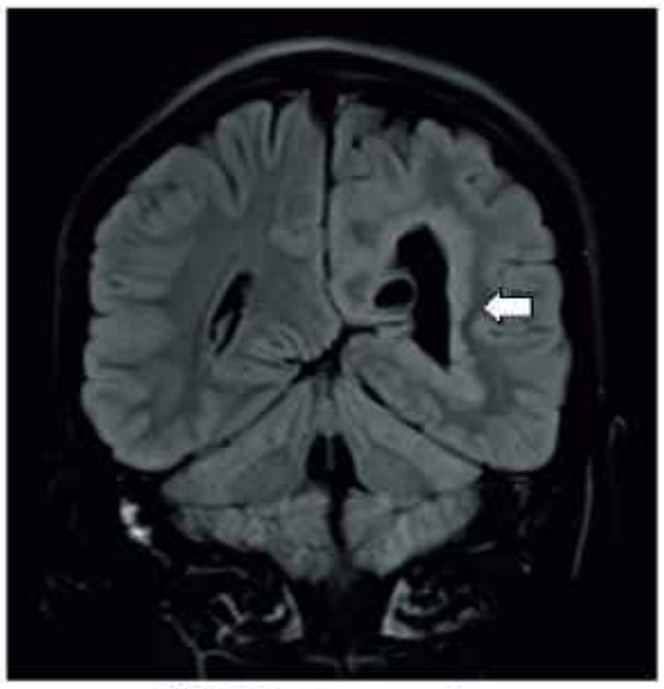
FLAIR (coronal)

Fig 7 : Ulegyria



FLAIR (coronal)

Fig 8 : Closed lip schizencephaly with subependymal gray matter heterotopia



FLAIR (coronal)

DISCUSSION

Patients presenting with symptoms of epilepsy can have a wide range of MR imaging abnormalities depending upon the etiology. MRI is a valuable tool for identifying site, type of pathology and characterization of the lesion so that further management can be planned accordingly.

The clinical history of each patient was recorded.MRI scan was carried out with 3 Tesla SIEMENS Magnetom - Skyra MRI scanner.

MRI positivity

The MR examination revealed pathological findings in 32 out of 60 patients (53.3%) which includes developmental malformations (18.3 %), white matter demyelination (10%), infective (10%), hippocampal abnormalities pathologies (6.7%) and tumors (5%) MRI shows excellent anatomy and is valuable method for imaging.

DEVELOPMENTAL MALFORMATIONS

Out of 11 patients, 5 patients revealed changes of focal cortical dysplasia, 3 patients revealed changes of pachy polymicrogyria with gray matter heterotopia, 1 patient revealed changes of ulegyria, 1 patient revealed changes of closed lip schizencephaly and 1 patient revealed corpus callosal dysgenesis.

WHITE MATTER DEMYELINATING

Out of 6 patients, 4 patients revealed changes of metachromatic leukodystrophy, 2 patients revealed changes of periventricular leukomalacia possibly due to neonatal hypoxic insult.

INFECTIVE

Out of 6 patients, 3 patients revealed changes of tuberculomas with tubercular meningitis and 2 patients revealed changes of neurocysticercosis, 1 patient revealed changes of dengue

encephalitis.

HIPPOCAMPAL ABNORMALITIES

Out of 4 patients, 3 patients revealed changes of mesial temporal sclerosis, 1 patient revealed changes of hippocampal developmental abnormality with vertically oriented hippocampus.

TUMORS

Out of 3 patients, 1 patient revealed pleomorphic xanthoastrocytoma, 1 patient revealed changes of ganglioglioma and another patient revealed cavernoma.

OTHERS

Out of 2 patients, 1 patient revealed changes of rasmussen encephalitis with crossed cerebellar diaschisis and another patient revealed changes of tuberous sclerosis- subependymal giant cell astrocytoma with cortical tubers.

CONCLUSION

MRI has been the gold standard for identifying the underlying etiology in pediatric epilepsy, because of its

high spatial resolution, excellent inherent soft tissue contrast, multiplanar imaging capability and lack of ionizing radiation. It could be the first investigation of choice in epileptic syndrome and developmental cortical malformations due to its ability in identifying subtle lesions, extent of the lesions and guide the management.

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Review Article

Heart Rate Variability in High Risk Infant

Kaushal Bhatt*, Dr Chinmay Shah, Dr Raju Parasher***, Dr Jayesh Soalnki******

*Phd Scholar, Department of Physiology, GMC, Bhavnagar

**Phd Guide & HOD, Dept of Physiology, GMC, Bhavangar, India

***Phd Co-Guide, Senior Consultant, Physiotherapy Department, Venkateshwara Hospital, New Delhi

****Assistant Professor, Dept of Physiology, GMC, Bhavangar, India

KEY WORDS : Heart Rate, High Risk Infant, Variability

With the advent of sophisticated technology in perinatal care and an increased understanding of neonatal pathophysiology, there has been an increase in the survival rate of neonates and or the high-risk infant (89% survival of pre-term, and 70% survival of very low birth weight babies). Thus, rate of children developing neurodevelopmental disorders and delayed milestones, such as cerebral palsy remains high at 4.5-10%. In addition, there is an increase in children being born with neuro-sensorimotor impairments, cognitive deficits, learning disabilities, and behavioral problems.

A "high-risk infant" is broadly defined as one who requires extensive monitoring and care following an extended period in the neonatal intensive care unit. Thus, infants born pre- or post-term, those with inappropriate growth for gestational age, those that manifest with signs and symptoms of systemic illnesses, metabolic abnormalities, and or congenital malformations, requiring early and ongoing assessment, and treatment are considered as "high-risk infants." An important determinant of risk categorization is the overall medical and developmental condition of the infant, which often requires continuous monitoring, specialized tests and treatments. [1] Infants with a significant lesion of the brain, with a severity of at least grade II, or perinatal stroke, certainly deserve early intervention as they are at very high risk of developing neurodevelopmental disorders. [2]

The growth of an infant's neurological system, and its ability to reorganize, is the most prolific during its early years, due to the brain's plasticity. It is suggested that addressing perinatal deficits, their timely detection with proper screening methods, and early intervention will help reduce disability and consequently, it's the impact on the functional status of the child, and subsequently his/her child burden on the family, and community. Moreover once a disability develops in a child, the magnitude of the problem achieves greater proportions across all the dimensions of health: medical, psychological, social and economic. But much of this burden can be lessened if we intervene early, as a third of most disabilities are manageable. Moreover, if we can identify factors that lead to neonatal brain damage as soon as possible, following birth, much of their impact on neuro-developmental growth can be minimized. [3]

High risk infants develop a broad spectrum of neuro developmental problems, which are assessed, and or monitored on an ongoing basis to avoid deficits and complications of disability as the child matures. An important dimension of neonatal development is the integrity of the Cardiac autonomic nervous system that is the balance between the sympathetic and parasympathetic divisions of it. Evidence suggests that the link and interplay between the cardiovascular and autonomic nervous system is significantly associated with neurological, emotional, and behavioral functions in children. [4]

More recently, heart rate variability (HRV) has been considered as valuable non-invasive, objective test

Correspondence Address : **Dr Chinmay Shah**
Guide & HOD, Dept of Physiology,
Government Medical College, Bhavangar.

that has been used to investigate the impact of the autonomic nervous system on cardiac activity with allostasis being considered as sign of healthy heart. It significance in infant or neonates ensues as it relates to problems in infants with and without neurodevelopmental problems. This is based on the fact that the spatial and temporal variations in heart rate (RR interval of ECG), reflect changes of sympathetic and vagal activity, following postural changes and or physical activity in neonates. Importantly, evidence suggests that the neurocardiac mechanism in high risk infants with neurological damage are less efficient, and less adaptive to exercise, postural change, and physical activity, compared to infants with less or no damage.[5] An association between decreased values of HRV and brain impairment has been reported in infants from the perinatal period to early adolescence, although data are still limited[6,7,8] Considering this association, HRV has been suggested as a possible marker of brain damage, neurodevelopmental dysfunction, and improvement following exercises, activities, and therapeutic physiotherapeutic interventions. Thus, parameters related to HRV have been used as physiological markers reflective of motoric control, function, and neuromotor developmental level, and milestones.

Heart is not a metronome and two consecutive heart beats exhibit variation in duration in healthy status.Heart Rate Variability is fluctuation of consecutive R-R intervals of ECG which is result of varying tone of Sympathetic & Parasympathetic part of Autonomic Nervous System. HRV analysis is used in infants to in investigation of Brain injuries & to assess physiological maturation in Preterm infant.[10] HRV analysis can be done by three different methods – Time Domain, Frequency Domain & Geometric . In 1996, the Task Force of the European Society ofCardiology and the North American Society of PacingandElectrophysiology published specific guidelines forprocessing of HRV indices in adults which became thegoldstandard but there are no specific guidelines available for Neonates & Infants. Infants with Spontaneous Hypertonia shows significant decrease in Frequency domain parameters especially Low frequency & High Frequency of HRV parameters along with few time domain parameters. [11]This study shows that infant with delay development & hypertonia have autonomic dysfunction as evident by HRV analysis.

HRV can be used as a predictor of Neurological injury in neonates with Hypoxic Noenatal Encephalopathy (HIE). Study shows that lower Low Frequency power (LF) when neonates are having moderate or severe injury on MRI. [12]DiPietro *et al.* (2007) hypothesized that slower HR and higher HRV would be reflected in more advanced development of functions in early childhood. They found that fetuses exhibiting slower and more variable heart rates had at age of 2 years significantly higher Mental and Psychomotor Development Indices and they had better speech development than those with faster HR and reduced HRV.[13] Early diagnosis through HRV analysis what is very sensitive (but non-specific) tool could help to diagnose the onset of a disease/disorder or even the threat of this onset. HRV changes have been rarely studied prior the clinical manifestation of the disease. Griffin and Moorman found that in *neonatal sepsis* the HRV reduction was observable as early as 24 h before the clinical symptoms.[14]

It is purported that the early diagnosis of high-risk infants, and the subsequent institution of an early intervention program consisting of structured exercises will help limit the impact of disability on neuromotor development as the child matures. And same can be studied in terms of HRV being used as a monitoring tool. This scope needs to be explored by studies on same.

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Case Report

A Rare Case of Bilateral Multiple Ovarian Dermoid Cysts

Dr. Parimal Panchal, Dr. Samir Mehta, Dr. Ankita Patel, Dr. Supriya Borole

Department of Obstetrics and Gynecology, ESIC Model Hospital, Ahmedabad

KEY WORDS : Dermoid cyst, Teratoma

ABSTRACT

A Dermoid cyst (also called as "mature teratoma") is a type of germcell tumor comprising of well differentiated tissues and three germ celllayers such as skin, hair, fluid, teeth or skin glands. In some cases, especially in ovary it also contains thyroid or brain tissue. The majority of dermoid cysts are unilateral with equal frequency in both ovaries; moreover, bilateral tumors are found approximately in 10-12% of cases which is a rare entity.

We hereby present a case of bilateral multiple ovarian dermoid cysts which were operated at our hospital.

INTRODUCTION

Dermoid cyst is a type of germ cell tumor comprising of well differentiated tissues and three germ cell layers, known as mature cystic teratoma.[1]

Peak incidence in females aged 20-40 years, comprises 10-20% of all ovarian neoplasm.[2]

The majority of ovarian cysts are asymptomatic, in some case present with acute abdominal pain, discomfort, abdominal bloating and anorexia or any other sign of gastrointestinal disturbance due to torsion, infection or rupture.[3]

Mature teratomas are usually benign but malignant transformation is seen in around 0.1%-0.2% of cases.[4,5] The majority being unilateral, 10-12% cases are bilateral.[6]

CASE REPORT

A 36-year-old female came to the Out-Patient Department of ourhospital (ESIC Model Hospital, Ahmadabad) with complaints of abdominal pain on and off since last 6 months, which gradually increased in the last month. It was associated with heaviness in abdomen, not associated with vomiting, menstrual compliant and weight loss.

She had two normal vaginal deliveries which were uneventful. No medical or surgical co- morbidities were noted. No similar complaint in the family was noted.

On examination patient was conscious, cooperative and oriented; averagely built and nourished. There was no lymphadenopathy or pedal edema.On abdominal examination, A 26-28-week large mass was felt more on the right side, with bilateral flank fullness. On per speculum examination, cervix was normal. On per vaginal examination, uterus was ante-verted, bulky to 6weeks size and mobile. There was right fornix fullness with mild tenderness and left fornix fullness. A 20 weeks mass was felt more towards right side with restricted mobility.

Ca 125 and CA 19-9 were16.3 and 1.41, respectively. Rest all the tumor markers were within normal limits.

MRI was advised, suggestinglarge ovarian dermoid cyst of 98 X 55X 225 mm size on right adnexa with right hemorrhagic cyst 22 X 16 mm in size with right cornual fibroid of 18 X 12 mm.

Patient and relatives were counseled about the available treatment modalities and decision of abdominal Hysterectomy with bilateral salphingo-oopherectomy was taken.

Intra operatively, right ovarian dermoid cyst of 150 X 100 mm in size and left ovarian dermoid cyst of 60 X 70 mm size was noted. Both the specimen sent for histopathological examination.

Histopathological report was suggestive presence of all three germ layers derivatives. Like cyst wall lined by squamous epithelium with presence of adnexal structure consist of sebaceous glands and hair follicles. There are dilated blood vessels, calcifications and cartilage.

Correspondence Address : **Dr. Ankita Patel**
ESIC Model Hospital, Khodiyar Mandir, Chanora Shekhar Azad Road,
Bapunagar, Ahmedabad-380024.
Email : oigmita295@gmail.com

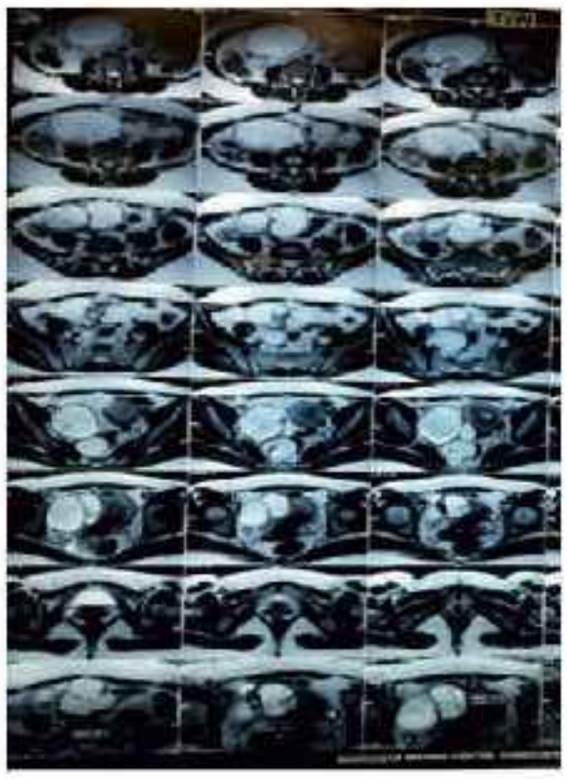

Fig. 1 MRI image: large ovarian dermoid cyst of 98 X 55X 225 mm size on right adnexa with right hemorrhagic cyst 22 X 16 mm in size with right cornual fibroid of 18 X 12 mm

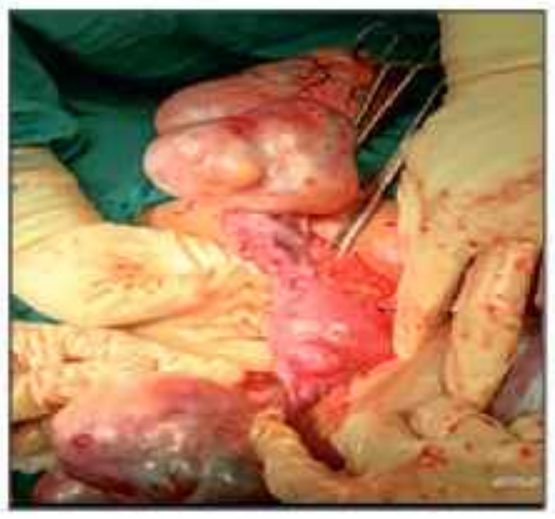

Fig. 2: Intraoperative view

Fig. 3 Gross specimen No.1 with its cut section:18-20 cm mass with outer yellowish nodular surface, with its cut section showing cheesy necrotic materials.

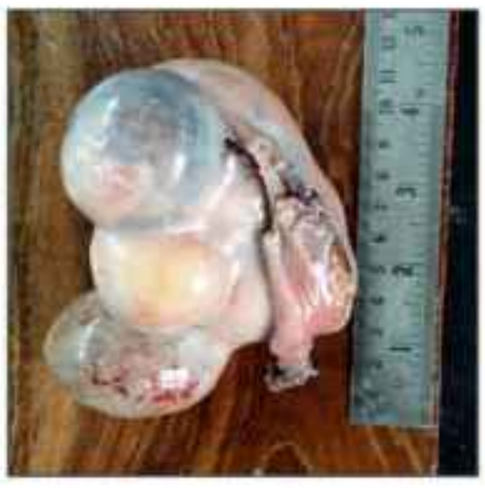

Fig.4: Grossspecimen No 2. with its cross section:10-11 cm multi lobulated mass with its cut section showing cystic and solid structure like hair and cartilage.

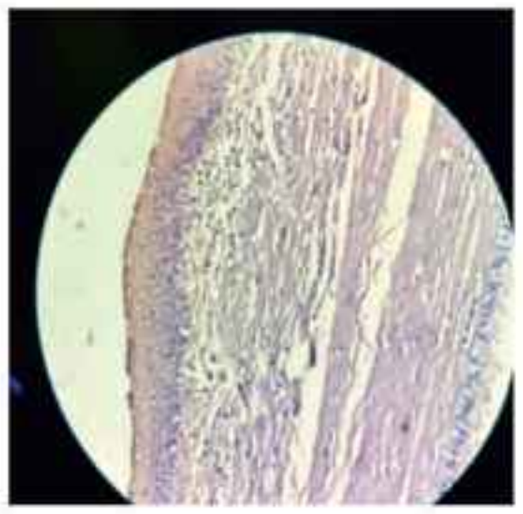

Fig. No. 5 Squamous epithelium with keratinization

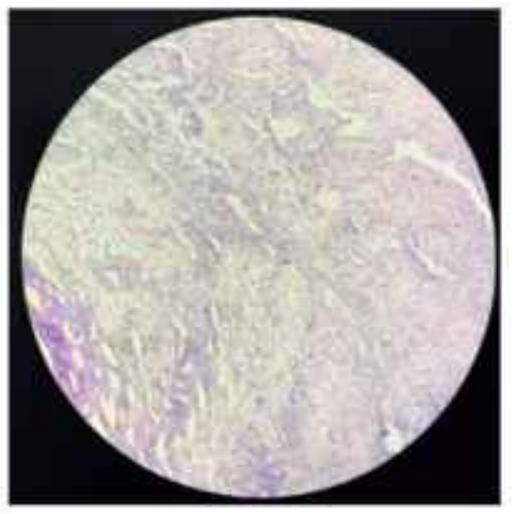

Fig. No. 6 Muscular cells

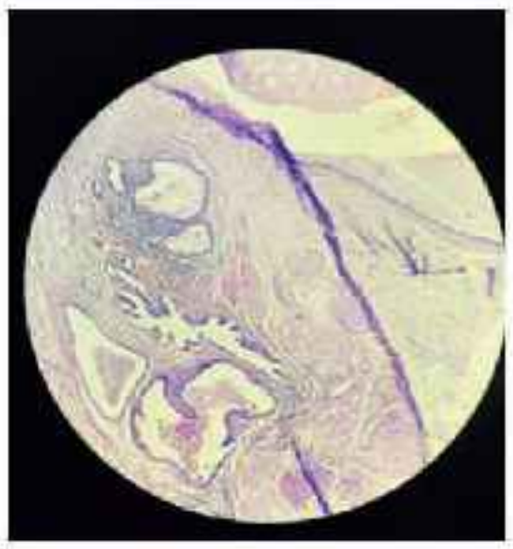

Fig. No. 7 Cystic glandular structures.

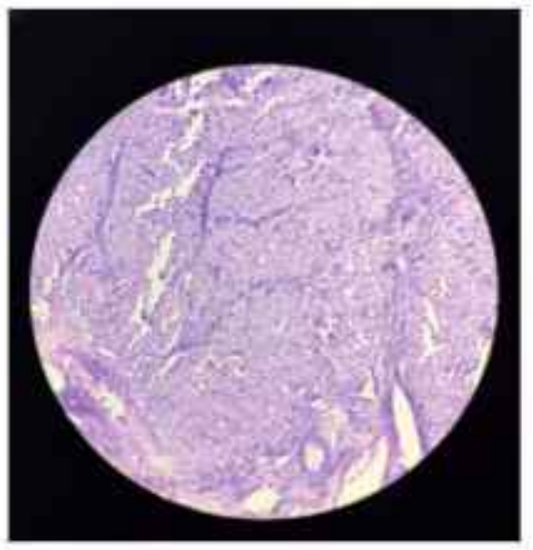

Fig. No. 8 Soft tissue

Post-operative period was uneventful and patient was discharged on 6th day. Patient followed up after 7 days of discharge in OPD.

DISCUSSION

Mature cystic teratoma (MCT) is the most common neoplasm of the ovary and form 20% of all ovarian tumours.[7] It is the most prevalent ovarian tumor diagnosed in women in their 20s and 30s.[9] Majority of the cases are unilateral occurring more frequently on right side. (72.2%)[8] Bilaterally seen in 12% of the cases.10Most of these cases (64.5%) cases are asymptomatic.[11] The majority of ovarian cysts are asymptomatic, in some case present with acute abdominal pain, discomfort, abdominal bloating and anorexia or any other sign of gastrointestinal disturbance due to torsion, infection, or rupture.[3]

While one hypothesis postulates that a teratoma arises by pathogenesis from a single oocyte, another one states that a teratoma is the product of fusion of the second polar body with an oocyte.[12] Surti et al postulate five mechanisms of origin: error of meiosis I, error of meiosis II, end reduplication of a haploid ovum, mitotic division of a pre-meiotic germ cell, and fusion of two ova.[13]

Ovarian teratoma diagnosis relies on a thorough history,examination and imaging.Ultrasonography and tumor markers such as CA-125 and alpha fetoprotein are common tools used for earlydetection and characterization of ovarian masses, suchas mature or immature teratomas. Ultrasonography isan excellent, non-invasivemost commonly used investigative procedure to diagnose matureteratoma.[14] Most teratomas show nonspecific findings onimaging.

Clinically, serum CA-125 is used to distinguished between the benign and malignant pelvic masses.[15] However, serum CA 19-9 is the mostreliable biomarker of ovarian mature cyst teratoma; higher level of serum CA 19-9 correlates with largetumor size. However, the diagnostic value with CA19-9 in patient with mature cyst teratoma is low when used alone.[16] In a retrospective study done at the Department of Obstetrics & Gynecology at the Third Affiliated Hospital of Suzhou University, Changzhou (China), five serum biomarkers(CA 19-9, cancer antigen (CA) 125, alpha fetoprote in (AFP), carcinoembryonic antigen (CEA), and CA 153)were analyzed in 312 patients who were diagnosed with ovarian teratomas.[17] It was found that CA 19-9 was elevated in 45.83% of the cases, compared to 6.09% for CA 125.8 It was also found that bilateral torsion–associated or multi-loculerteratomas have higher levels of CA 19-9.17It was also shown that CA 19-9may be used as a marker of recurrence.[17]

The reported incidence of post surgical recurrence on the same ovary is 3-4%.[18] Other studies sugges that an elevated level of CA 19-9, associated with a low CA 125, is a useful marker in differentiating between ovarianteratoma and carcinoma.[19,20]

Laparoscopic surgery is the gold standard approach for the removal of mature cystic teratomas. Laparotomy may be considered in the presence of a large mass (usually >10 cm).

CONCLUSION

Ovarian tumors usually present with non-specificsymptoms. Early recognition and intervention arenecessary to avoid potential complications. Routine inspection of the contralateral side isnecessary during preoperative and intraoperative examinationto minimize surgical re-interventions. In addition, conservative management to preserve fertility and rule out malignancy is recommended. Bilateral ovarian cyst teratomas are quite rare. At the time of enucleation of dermoid cysts both ovaries s houldbe thoroughly examined to ensure that all the dermoidcysts have been removed.

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Case Report

Familial Hemophagocytic Lymphohistiocytosis

Dr. Aashka A Parekh*, Dr. Sheena Sivanandan, Dr. Baldev S Prajapati*****

*Resident Doctor, **Assistant Professor, Professor and Head of department

Department of Pediatrics, GCS Medicle college, Hospital and research centre, Ahmedabad.

KEY WORDS : Hemophagocytic Lymphohistiocytosis, Hepatosplenomegaly, Pancytopenia

ABSTRACT

Secondary Hemophagocytic Lymphohistiocytosis (HLH) is common following infections like Dengue fever, Entericfever, Tuberculosis and Rheumatological conditions. Primary or Familial HLH is not common worldwide. We had a case of genetically confirmed familial HLH which is hereby reported.

INTRODUCTION

Two types of Hemophagocytic lymphohistiocytosis (HLH) are known, Familial and secondary HLH. They have remarkably similar presentations. Familial HLH usually presents in children younger than 2 years of age and secondary HLH may present at an older age but both forms can occur at any age. They most often present with fever, weightloss, hepatosplenomegaly, lymphadenopathy, petechial rashes or typical CNS features. It can occur as familial or can be associated with inflammatory disorders or infections. Familial HLH is an autosomal recessive disorder characterized by severe immunodeficiency, representing 25% of HLH cases. It is characterized by excessive accumulation of antigen presenting cells, CD 8 +T lymphocytes, macrophages with uncontrolled hemophagocytosis and hypercytokinemia. Hemophagocytic cells are macrophages ingesting various blood cells positive for CD 163[1].CD 163 is a scavenger receptor expressed on bone marrow macrophages and macrophages involved in erythroblastic islands. As HLH occurs due to dysregulated immune outburst, it can be fatal if not treated early[2].

CASE REPORT

A 6 Year 3 month old female child, second born of non-consanguineous marriage, presented with complaints of high grade fever for 1 month, followed by generalized abdominal distension and bilateral pedal oedema and petechia over extremities. There was family history of 2 spontaneous abortions and death of one sibling at 3 months of age. Physical examination showed fever, hepatosplenomegaly, abdominal distension and bilateral pedal oedema. Blood investigations showed anemia, leucopenia, thrombocytopenia, elevated ferritin and triglyceride and decreased fibrinogen. USG Abdomen showed hepatosplenomegaly (liver-13 cm, spleen-14 cm) with bilateral mild pleural effusion and liver enzymes were no rmal. Bone marrow and genetic molecular study confirmed the diagnosis of familial HLH. Child was

Table-1 Blood investigations result

Blood investigations	Result
Hemoglobin	6.5 gm/dl
Total WBC count	2900 cells/mm^3
Absolute neutrophilic count	1218 cells/mm^3
Platelet count	75000 cells/ml
MCV	78.5 fl
MCH	24.8 pg
MCHC	31.77 gm/dl
Serum ferritin	10400 ng/ml
Serum Triglyceride	903 mg/dl
Serum fibrinogen	63 mg/dl
SGPT	24.10 mg/dl
SGOT	52.20 mg/dl
Serum Na+	128 mEq/litre
Anti-nucleic acid profile	Negative
Cryptococcal antigen	Negative
Ebstein Bar virus antigen	Negative
Brucella titre	Negative
Sputum CBNAAT	Negative

Correspondence Address : **Dr. Aashka A. Parekh**
Resident Doctor, Department of Pediatrics,
"Satyam"-4, Vaishlinagar, Raiya Road, Rajkot-360007.
Email : ashkaparekh50@gmail.com

treated with immunomodulators, antibiotics and steroids initially(HLH 2004 criteria). In spite of treatment, the condition of the child continued to deteriorate and child died within 4 days of diagnosis and treatment.

PERIPHERAL SMEAR REPORT

RBC-Normocytic hypochromic with microcytic hypochromic

Target cells, Elliptocytes, few tear drop cells WBC-Leucopenia,Atypical lymphocytes Occasional monocytes with lymphocyte engulfment Platelets-Reduced on smear

BONE MARROW STUDY

(Bone marrow aspirate and bone marrow biopsy)

Bone marrow study was suggestive of Reticulo endothelial cells showing engulfment of erythroid cells, myeloid cells and platelets. And erythroid and megakaryocytic hyperplasia with maturation arrest. There was presence of few histiocytes. Impression correlating with clinical history and probability of HLH. (Figure 1-2)

Bone marrow biopsy showed altered architecture and dilated

sinusoids with occasional phagocytosis of erythrocytic precursors and leucocytes.

DISCUSSION

Familial HLH is fatal, so early diagnosis and treatment is crucial for better prognosis. For HLH diagnosis, molecular testing or 5 out of 8 criteria (formulated by histiocyte society) are used. Molecular diagnosis can have any of FHLH mutations-FHLH 1, FHLH 2, FHLH

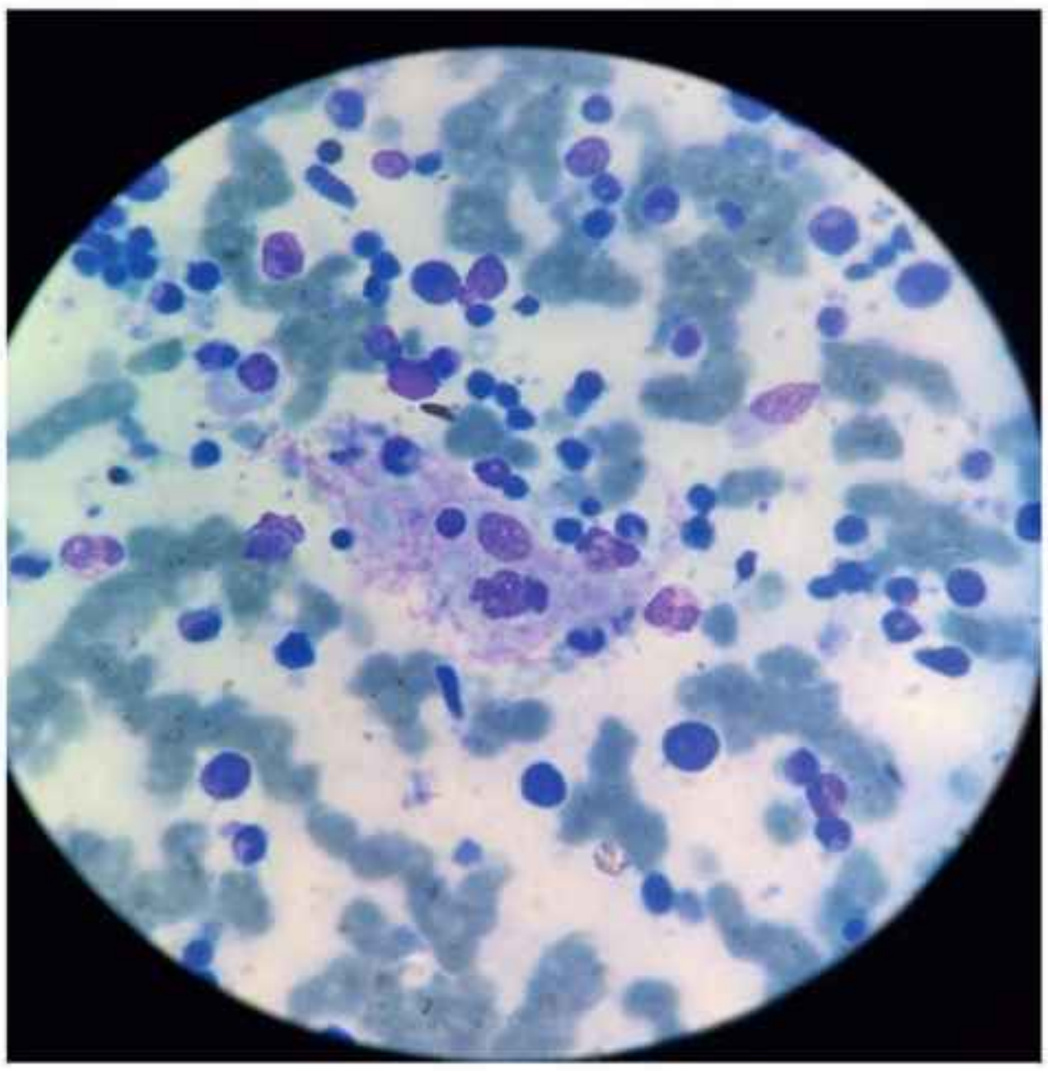

Fig 1. Bone marrow study showing reticuloendothelial cells With hemophagocytic activity with engulfment of erythroid cell and myeloid cells.(Black arrow):

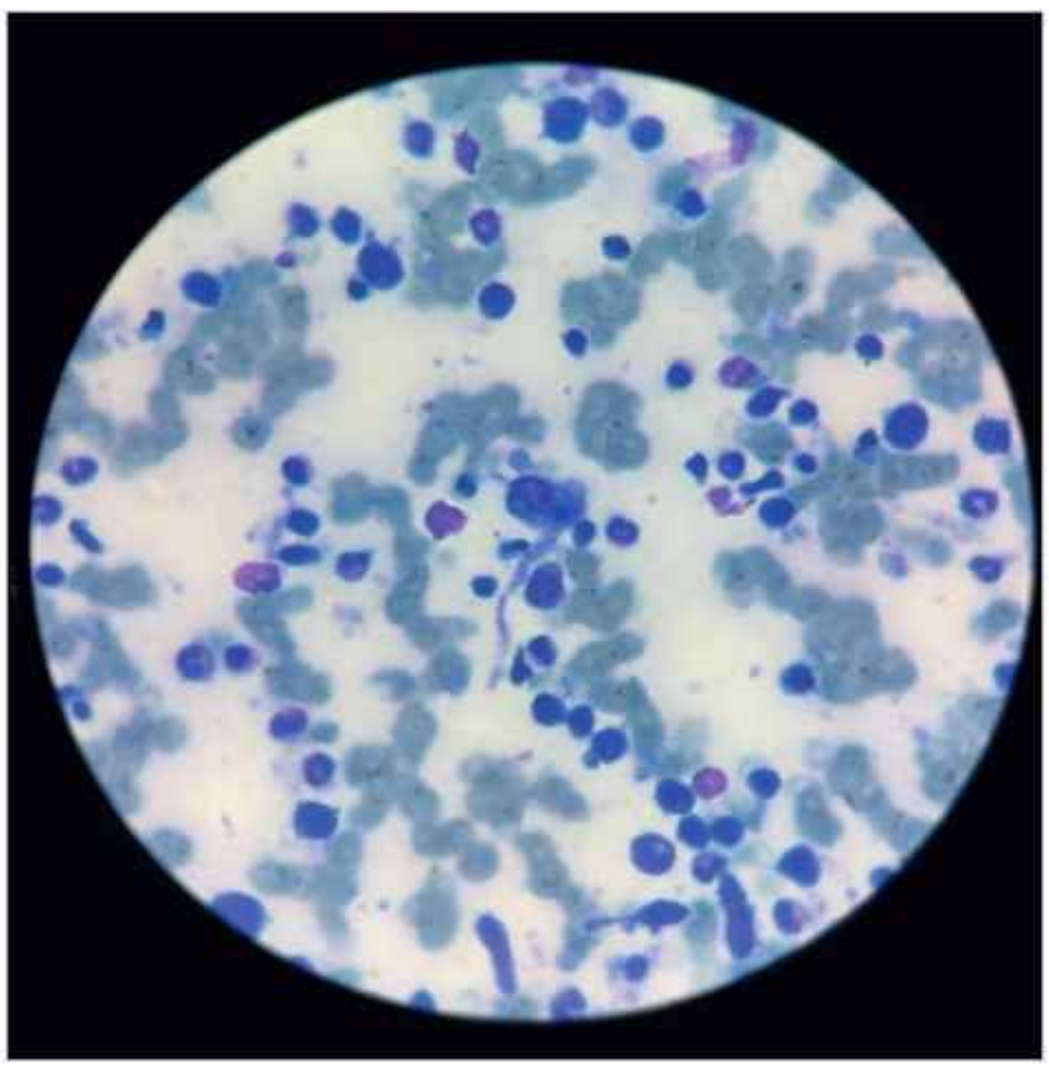

Fig 2. Bone marrow study with evidence of phagocytosis of myeloid cells and platelets. (Black arrow)

Table -2 Molecular Diagnosis report

Gene	Location	Variant	Zygosity	Disease	Inheritence	classification
STX 11	Exon 2	c.772C>T	Homozygous	Familial HLH -4	Autosomal recessive	Likely Pathogenic

3, FHLH 4, FHLH 5 (table 3). Genes that can be mutated are PRF1, Munc 13.4, STX 11,STX BP2. These gene mutations affect ability of T Lymphocytes and natural killer cells to form and release perforin, which reduces cytotoxic granules formation. Bone marrow examination in Familial HLH shows hemophagocytic cells, which are CD163 positive macrophages responsible for phagocytosis with immature myeloid and erythroid cells.Perl's stain

Table 3 : Defective genes in familial HLH[1]

HLH subtype	Defective Gene With locus	Percentage of FHLH
FHLH-1	Unknown -9p21.3-locus 6	
FHLH-2	PRF1- 10q11-12	In 20-33% cases, mainly in African descent
FHLH-3	Munc13-4-UNC13D	In 20-33% cases
FHLH-4	STX11- 6q24	<5% cases
FHLH-5	STXBP2- 19p13	5-20% cases

shows marrow macrophages with phagocytosis3.In this patient,homozygous variety of familial HLH type 4 was detected with STX 11 gene (Syntaxin 11) mutation,located on 6q24 variant: c.772C>T. This stop gained c.772C>T variant in STX 11 gene has not been reported till now as pathogenic or benign variant. This variant causes loss of normal protein function through protein truncation[4].

Diagnostic Guidelines for Hemophagocytic Lymphohistiocytosis

The diagnosis can be established by fulfilling one of the following two criteria[1]:

Molecular diagnosis consistent with HLH

Or

5 out of 8 following criteria

1. Fever>38.5^{0}C
2. Splenomegaly
3. Cytopenia (affecting >2 of 3 lineages: hemoglobin- <9 gm/dl, platelets <1,00,000/ml- in peripheral blood)
4. Hypertriglyceridemia (>265 mg/dl) and/ or Hypofibrinogenemia (<150 mg/dl)
5. Hemophagocytosis in bone marrow or spleen or lymph nodes; without evidence of malignancy
6. Low or absent natural killer cell activity
7. Hyperferritinemia (>500 ng/ml)
8. Increased soluble CD25>2400 U/ml[3]

Familial HLH is ultimately fatal and relapses are often. Stem cell transplantation has an important role in therapy. According to HLH 2004 protocols, 8 weeks of therapy can be given for secondary non genetic disease[3].

CONCLUSIONS

In case of fever and pancytopenia, clinicians should suspect HLH as early diagnosis is crucial for outcome. Treatment for familial HLH consists of etoposide, corticosteroids, cyclosporine and intrathecal methotrexate. Stem cell transplantation has proven to be effective to cure greater than 60% cases.

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Case Report

Trichophyton Tonsurans

Dr. Parul Patel, Dr. Kiran Patel, Dr. Neeta khokhar, Dr. Bhaumik Patel, Dr. Neha Makwana.
Dr. Gaurishanker Shrimali
(Head of Department) GMERS Medical College, Gandhinagar.

INTRODUCTION

Dermatophytoses is a group of superficial cutaneous fungal infections affecting skin, hair, and nails. There are about forty-two species of dermatophytes known to be pathogenic to human beings. They are broadly classified into three main genera (Trichophyton, Microsporum and Epidermophyton) based on differences in microscopic morphology[1].

Tinea corporis due to Trichophyton tonsurans may be more common and is transmitted primarily by sharing of combs, beddings, hats, linen, towels and other materials[1]

CASE REPORT

A 25 year old male patient visited at Skin OPD on 2nd Dec 2023 with complain of scaly lesion with crusts all over body, itching since 3 years. No h/o DM, HTN. H/o taken corticosteroid since 2 years for scaly itchy lesion. H/o Oral ulcers and bloody vomitus 2 days back.

LABORATORY INVESTIGATIONS:

Sample collection: Skin scraping from scaly lesions.

Microscopy with 10% KOH: Thin septate hyphae are seen.

Culture on SDA: After 5 days of incubation at 25℃ vegetative fungal growth is seen.

Colony Morphology: Initially flat off white to yellow cottony colony, later on velvety & powdery in texture. The reverse on SDA is yellow-brown in color.

LPCB Mount: Thin septate hyaline hyphae with ballooning at the end of some hyphae. Numerous Microconidia (clavate & elongated), Septum in few microconidia are seen.No Macroconidia, No spiral hyphae seen.

CONCLUSION

We conclude from our study that clinical examination alone is unreliable in establishing the diagnosis in case of non-healing skin lesions.[1]Microscopic examination and culture should be an integral part of the investigation of such lesions.[1] Moreover, in case of the lesions which are non-healing or progressive in nature, the dermatologist must keep suspicion of fungal

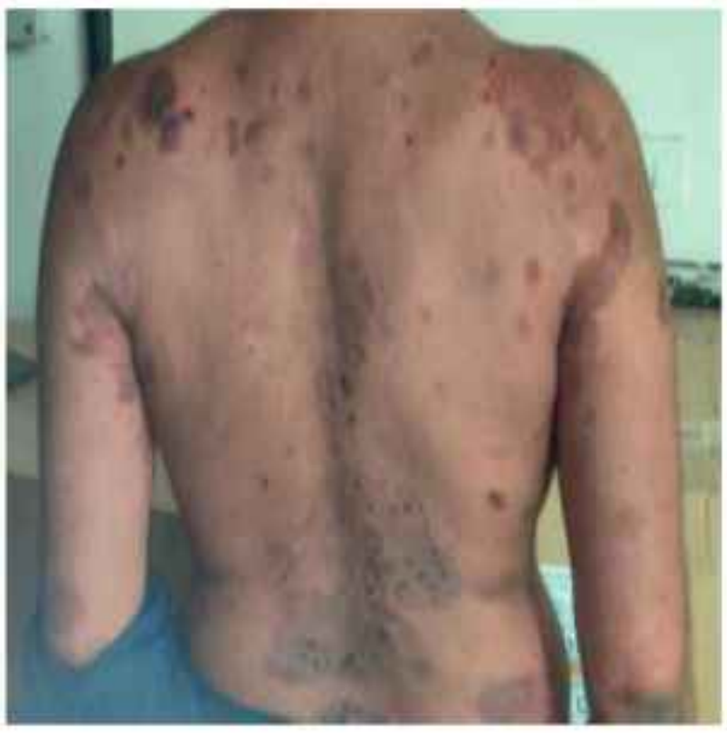

Figure: 1 Clinical presentation of patient On examination shows erythematous infiltrated lesions with scales and crusts were located all most all the surfaces of body and showed partial erosion with reddish crust attached.

infection and should send skin samples for fungal culture.[1] This case report provides recourse for clinicians to recognize dermatophytes as potent etiological agent for chronic non-healing skin lesions.[1] Timely and appropriate diagnosis results in improved treatment and lesser morbidity.[1]

DISCUSSION

Clinical features of Tinea corporis depend on the anatomical sites of eruption, host immunological reactions and the species of the dermatophytes. Specifically the symptoms of the T. tonsurans infection are mainly Tinea capitis and Tinea corporis.[2] The symptoms may vary among the patients, some are

Correspondence Address : **Dr. Palak Patel**
(Head of Department)
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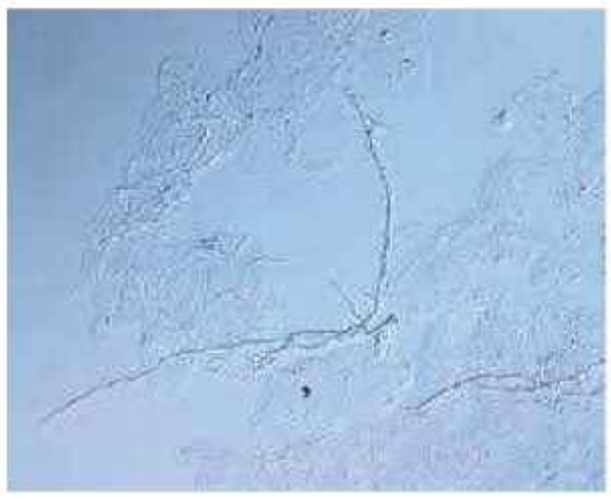

Figure:2 (10x) Microscopy with 10% KOH

Figure:3 Fungal growth on SDA slant

Figure: 4 Fungal growth on SDA plate (front and back side).

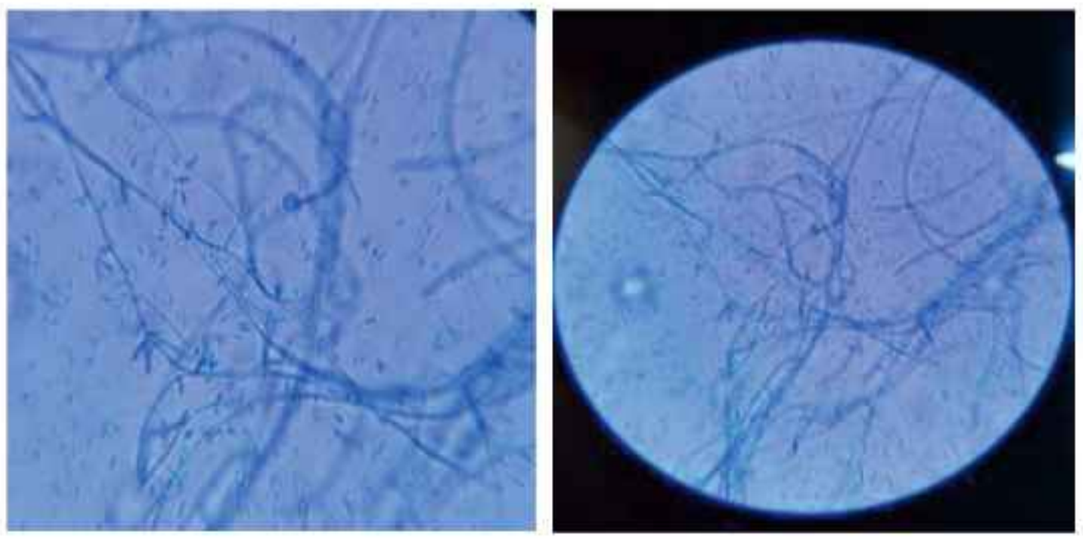

Figure: 5 (40x) & (10x) LPCB Mount

showing strong inflammatory manifestations while others remaining as asymptomatic carriers[2]

In early stage of the disease is misdiagnosed as eczema and thus overlooked. More problematic is the fact that eruptions can spontaneously heal without care, and patients carry the fungus on their body surfaces.[2]

ACKNOWLEDGEMENT

I would like to thank professor and head of department Dr. Gaurishanker Shrimali And my guide Dr. Parul Patel & Dr.Bhaumik Patel & All other faculty members of Department Of Microbiology GMERS medical college Gandhinagar for their guidance.

A special thanksto kajal ben (technician) who is helping me a lot.

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Case Report

Unexpected Challenge: Flexible Endoscope Guided Esophageal Intubation Complicated by Grave Consequence of Gastric Perforation- A case study

Vrinda Oza, Mayureshkumar Pareek, Vandana Parmar, Deesha Javia, Magesh R, Kalrav Rawal, Prashanthi Ballepu, Ruchikakumari Singh.

Department of Anaesthesiology, P.D.U. Government Medical College, Rajkot,Gujarat, India.

Fibreoptic guided intubation has established its place in difficult airway management, and is now widely accepted as the "gold standard" for performing endotracheal intubations3. However, success is largely dependent on the technical skill and expertise of the anaesthesiologist.

Misidentification of the larynx and unrecognized or delayed recognition of esophageal intubation are, though rare, responsible for catastrophic consequences like regurgitation, aspiration, gastric perforation, and severe hypoxemia leading to anoxic brain injury and even death2. In this case report, we present our experience with an accidental fibreoptic guided esophageal intubation resulting in subsequent gastric perforation.

A 40-year-old, 62kg female patient with left angle of mandible fracture was planned electively for open reduction and internal fixation under general anaesthesia. Patient had no co-morbidities, or significant past medical and surgical history. On airway examination, patient had a score of Mallampati Grade 4 with 1-finger mouth opening; thyromental distance of more than 6.5cm;and sterno-mental distance of 14.5cm. Systemic examination and haematological investigations were within normal limits. Patient was planned for awake fibreoptic guided nasal intubation after taking informed consent.

Airway was topicalized with local anaesthetic agents. Inside OT, standard monitors were attached and transtracheal block was given. Patient was pre-medicated with intravenous glycopyrrolate 0.2 mg, ondansetron 4mg, fentanyl 60 ug, and dexmedetomidine 50ug infusion. After achieving Ramsay Sedation score of 3, the procedure of awake flexible endoscopic guided(AmbuaScopeTMBroncho Regular) nasal intubation started. Upon visualizing the vocal cords, fiberscope was advanced further until both openings of main bronchi were identified. Then, flexo-metallic endotracheal tube 6.5mm was railroaded. During tube insertion, however, the patient coughed vigorously and the view was hampered by secretions and bleeding. On seeing inadequate chest rise, absent breath sounds, and irregular EtCO2 curve, the flexo-metallic tube was removed and mask ventilation with 100% oxygen was given. Re-attempt for intubation followed with administration of intravenous propofol 80mg for check laryngoscopy and 75mg succinylcholine. Conventional nasal intubation with 6.5 size flexo-metallic endotracheal tube was done; bilateral air entry was checked and tube was fixed.

While painting and draping the patient, we accidentally noticed that the abdomen was very tense and distended. The patient's vitals were PR- 126 bpm; BP- 90/52 mm Hg; RS- bilateral equal air entry; SpO2- 100% on VCV mode of ventilation; abdominal circumference was noted to be 86cm. Ryles tube aspiration was done, and found to be negative with persistent distension. Plastic surgeons were informed and decision of deferring the surgery till further evaluation of the cause for persistent distention of abdomen was done. On return of spontaneous respiration reversal was given and patient was extubated and shifted to recovery on venturi mask at 5L/min O2 flow.

In recovery room after half an hour, the patient was irritable with severe pain and discomfort in her abdomen followed by sudden fall in blood pressure, tachycardia, and drop in oxygen saturation. Emergency oral intubation was done and ionotropic support was started according to standard protocol. Urgent bedside chest X-ray, abdominal erect X-ray, and abdomen with pelvis USG were taken. All these investigations were suggestive of air under diaphragm implicating likely gastric perforation. Ionotropic

Correspondence Address : **Dr. Mayureshkumar Pareek**
Resident Doctor, Department of Pediatrics,
B-3,Ankur Apartment,Adarsh Society, Racecourse-Ring Road,Rajkot 360001.
Email : mayureshkumarpareek@gmail.com

support was slowly tapered off. Bedside surgical opinion was taken, and the patient was taken for emergency exploratory laparotomy after taking informed consent from relatives. From the surgical perspective, midline vertical laparotomy incision was given and approximately 2x2 cm size vertical oval perforation was found on the anterior border of lesser curvature of stomach 3-4 cm below the esophagogastric junction. Patient was hemodynamically stable throughout the surgical procedure and in the postoperative period.

Accidental esophageal intubation can be catastrophic and early identification and management is of prime importance. The main reasons for occurrence of esophageal intubation can be misidentification of the larynx, delivery issues due to improper instrumentation, or movement after successful tracheal placement. Mistaking the esophagus for the larynx is a rare phenomenon for a skilled anaesthetist; however, compromised laryngeal view due to secretions, distorted glottic anatomy, or glottic impersonation, misidentification can happen1. Blind intubations without clear vision and displaced tube or introducer during railroading are also technical issues to keep in mind. Even after successful tracheal placement, movement during withdrawal of bougies or fiberscope or stylet airway instrumentation, patient movement, or a poorly secured tube can lead to accidental esophageal intubation1.

Failure to recognize esophageal intubation leads to serious consequences. This mishap could be due to unavailability of functioning ETCO2 detection, misinterpretation of the monitoring display, or failure of acknowledgement due to cognitive bias, knowledge deficit or communication deficit within the working team 1. Immediate actions on recognition include: placing a guide through the tube and extubating or attempting re-intubation into the trachea; extubating and either ventilating through a mask; placing a laryngeal mask; placing an esophageal obturator (combitube); resorting to failed intubation drill1.

Sometimes, saturation can be preserved despite esophageal intubation. This is due to extended safe apnea time, presence of spontaneous ventilatory efforts, cuff leak, or existence of trachea-esophageal fistula1.These misinterpretations can extend the time to recognize failed intubation further leading the patient to precipitously deteriorate.

This incident taught us that mishaps due to any cause can occur at any time during the intubation process, but ability to recognize the mistake and take quick and timely action is more important. In our situation though we advanced the fiberscope after clearly visualizing the vocal cords, the patient's vigorous movement might have caused slippage of the tube into the esophagus. Therefore, this case report helps to highlight the importance of vigilance in an anaesthesiologist's practice.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported to the journal. The patient understands that his names and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

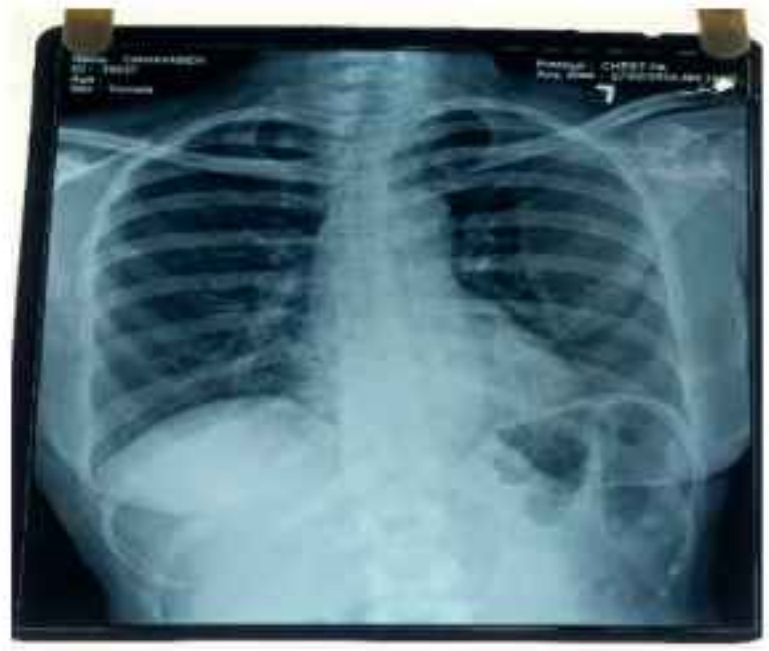
Financial support and sponsorship

Nil

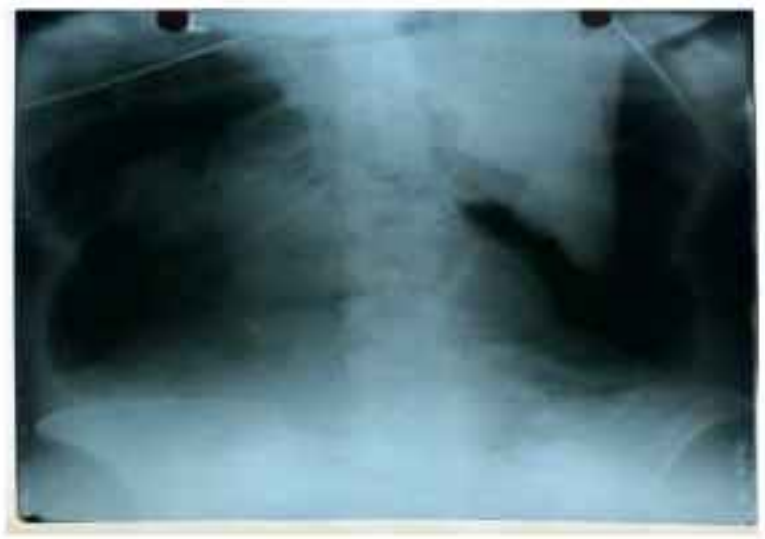
Conflict of Interest

There are no conflicts of interest.

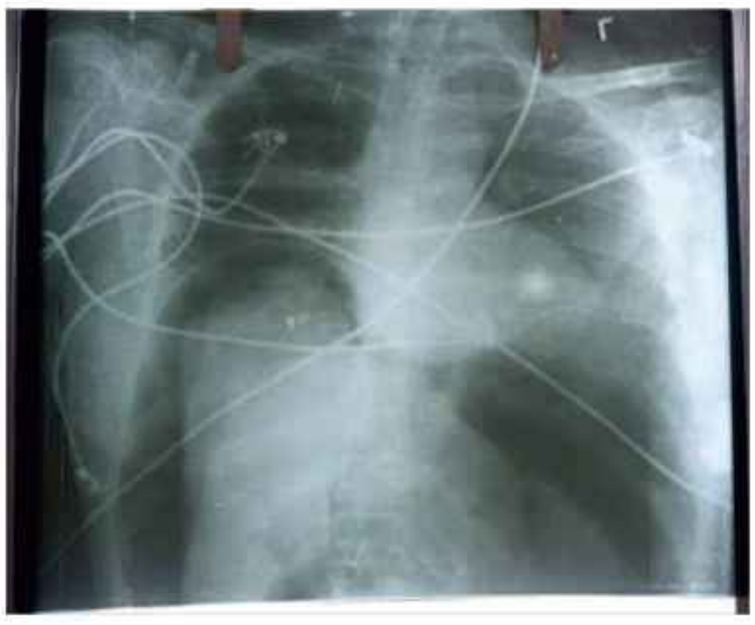
Figure: 1 Chest X-rays of the patient :



(a) Pre-injury, during pre-anaesthetic checkup.

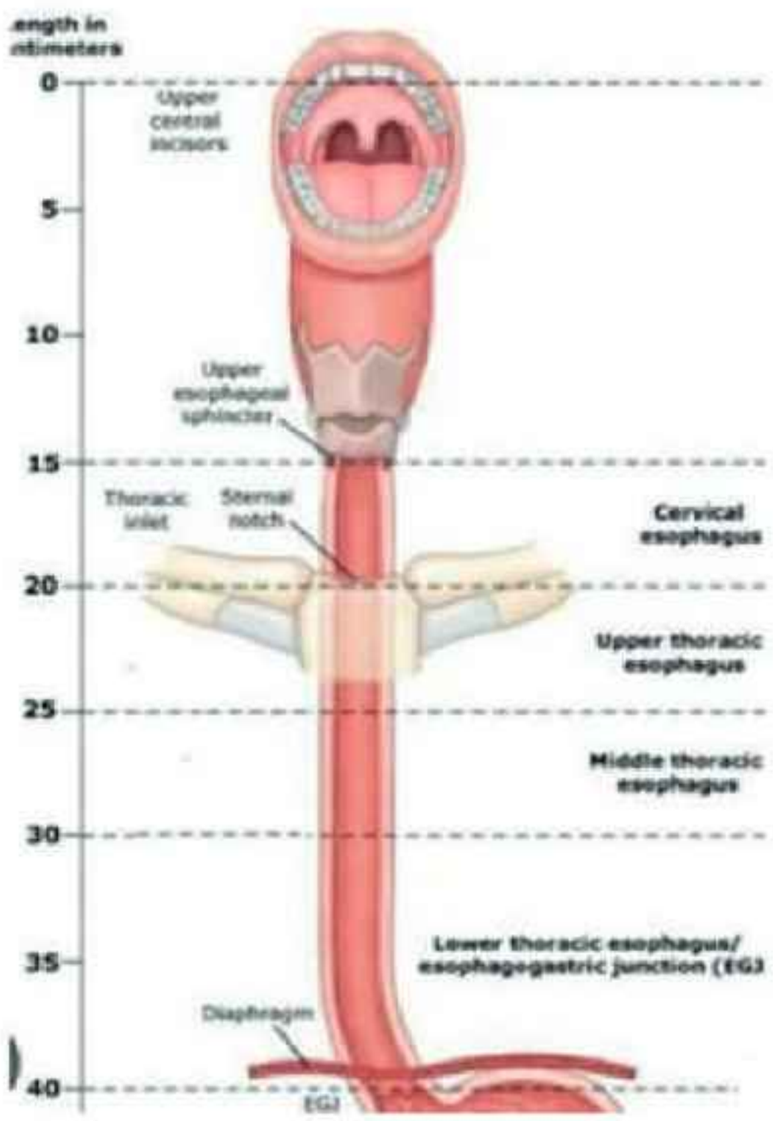


(b) Post-Injury taken in the recovery room.



(c) Post-laparotomy taken in SICU.

(d) Length of green fiberoptic channel approx. 55cm.



(e) Normal distance from incisor teeth to the esophagostric junction (range of 32-50cm)

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HOW I DO - Transfusion of Blood Products PART – 2

Dr. Chirag A. Shah
M.D. Oncology/Hematology (USA)
Diplomate of American Board of Oncology and Hematology,
CBCC/Apollo Hospital, Ahmedabad.
98243 12144; 98988 68503

(All the articles published in past are available at www.shyamhemoncclinic.com/blog/)

Question: In last part, we started a series about common hematology issues. First part was very relevant to current season i.e. dengue and thrombocytopenia. I was very surprised to know that **SDP AND RDP ARE EQUAL** IN TERMS OF RESPONSE. We also learned 1. **Manual platelet count should not** be used. It has extremely limited value in whole field of medicine. And no value in Dengue fever. 2. Once a day CBC is sufficient in large majority of hospitalized patients. 3. Clinical variety of dengue patients and that most do not bleed. And do not need platelet transfusion unless platelet is below about 10,000.

Does the same principle apply to SDP and RDP in non dengue conditions as well?

Answer: Yes. In almost all conditions practically, **SDP and RDP are equal**. Only in aplastic anemia, or patients likely to need transplant, we prefer SDP. Here the reason is to reduce exposure to number of donors. Response is not different. But more donors means more HLA antigens, and risk of more antibodies. These antibodies may lead to rejection of hematopoietic stem cell transplant (earlier known as Bone Marrow Transplant). This is a much smaller group of patients. Hence for all practical purposes, for any non hematologist, SDP and RDP are equal.

It is important to give the right dose of RDP however. For an average adult, **4-6 units of RDP** are required in most cases. If you use lower number, response may be suboptimal.

Que: Thank you. Any other important points that we should know related to platelet transfusion?

Ans: Following are the most important practical points relevant for most practitioners:

1. Platelets are to be transfused as soon as possible, once sent from blood bank. Otherwise there is risk of microclots leading to lower response. Platelets are generally given **as free flow** i.e. average 6 units in about **30-60 minutes**. Each RDP is about 50 ml.
2. Additionally, platelets have the highest risk of leading to bacterial transmission or endotoxic shock, among all blood products. Since they are kept at room temperature. Means if there is any contamination during blood collection from donor, or during processing, bacteria can proliferate in platelet product. Other blood products are kept at very low temperature, where bacteria cannot grow. Means during or immediately after platelet transfusion, if there is any high fever, or drop in blood pressure, or other signs of sepsis, treat empirically as septic shock. Send the bag for culture and inform blood bank.
3. **Blood group does not matter** for platelet transfusion in adults. Hence patient can receive platelet from any donor.
4. Platelet response is best measured up to one hour after transfusion. Very broadly, one RDP is supposed to raise platelet count **by about 5000**. And one SDP is equal to about 6 RDPs.

Thereafter, drop can be due to several reasons other than product quality or match. Response to platelet is highly variable in individuals due to rapid utilization during bleeding, breakdown due to sepsis or HLA antibodies, and other factors. Hypersplenism also reduces response to transfusion, highly significant in most cases.

5. There are **no absolute contraindications** for platelet transfusion. I have seen hesitation for platelet transfusion in conditions like ITP, TTP, HIT diagnosed or suspected. Response to platelet transfusion in ITP is mostly poor, and you do need to plan for other therapies. But a bleeding patient with ITP or before any emergency procedure, platelet can certainly be given. "platelets add fuel to fire" means formation of more antibodies is **not** the right understanding. Same way for TTP (thrombotic thrombocytopenic purpura) – these people rarely bleed. But yes, before putting a central line for plasmapheresis for example, it is recommended in our guidelines also to give platelets if necessary. In general, we recommend against frequent use of platelet transfusions, especially when given for thrombocytopenia without bleeding. However for bleeding patients, even if no diagnosis, it is ok to give platelet transfusions once or twice while awaiting expert opinion.
6. When we say bleeding as an indication, it **does NOT mean skin bleeding** i.e. NOT for petechiae, purpura, ecchymoses/bruises. It is for mucosal bleeding or obvious major bleeding.
7. Reason for avoiding platelet transfusion indiscriminately is mainly for safety. Risk of infection, TRALI, febrile reactions, cost, formation of alloantibodies leading to poor response in future.
8. Make sure to avoid any NSAIDS, aspirin, clopidogrel, other newer antiplatelet agents and of course all anticoagulation (warfarin or newer ones) in patients with severe thrombocytopenia. For cardiac patients, one may continue antiplatelet agents till platelet count is **about 50,000.** Between **30 to 50,000** one has to weigh risk benefit ratio and discuss risks with patient. For example, in a patient with a recent cardiac event, one may continue but with knowledge that bleeding risk will be higher. Whereas with an old cardiac event, risk benefit ratio may favor stopping for a while. **Below 20-30,000** approximately, better to stop.
9. Antiplatelet agents **do NOT reduce** platelet number, only reduce their function. Means if patient is on antiplatelet agent and platelet counts reduce, they must be investigated for the etiology of low platelet.

July 14, 2024 **Dr Chirag A. Shah**; M.D. Oncology/Hematology (USA), 9998084001. Diplomate American Board of Oncology and Hematology. Ahmedabad. drchiragashah@gmail.comwww.shyamhemoncclinic.com

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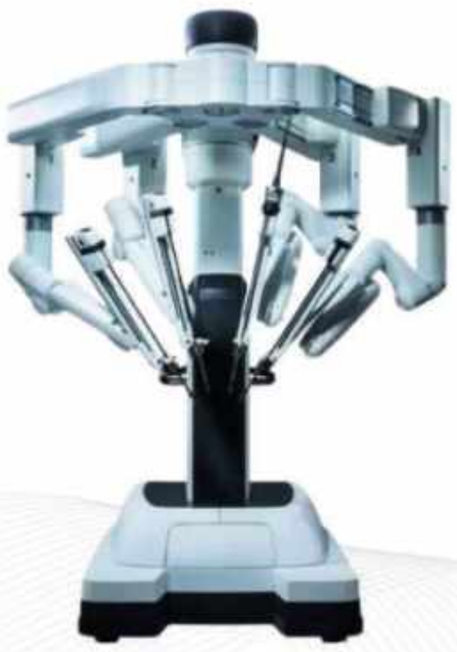

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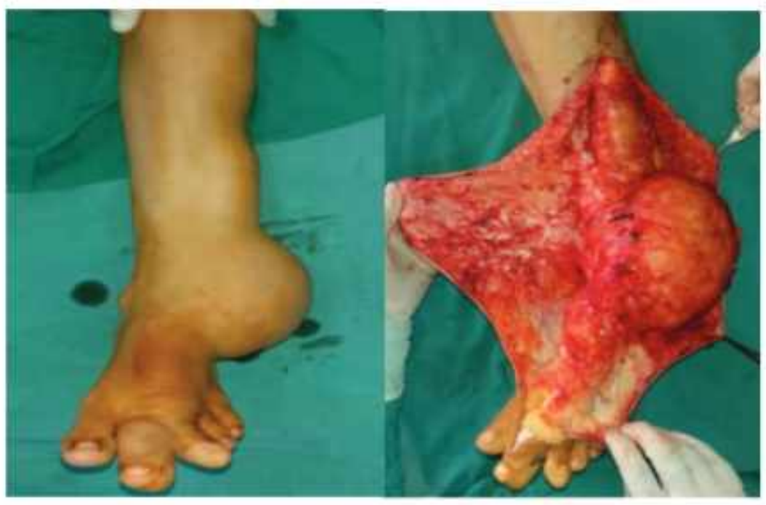
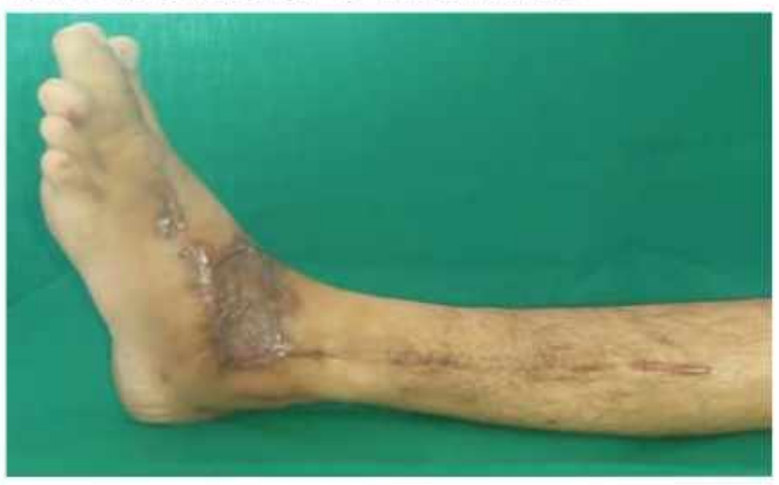


Result after 6 months



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- Less chances of infection
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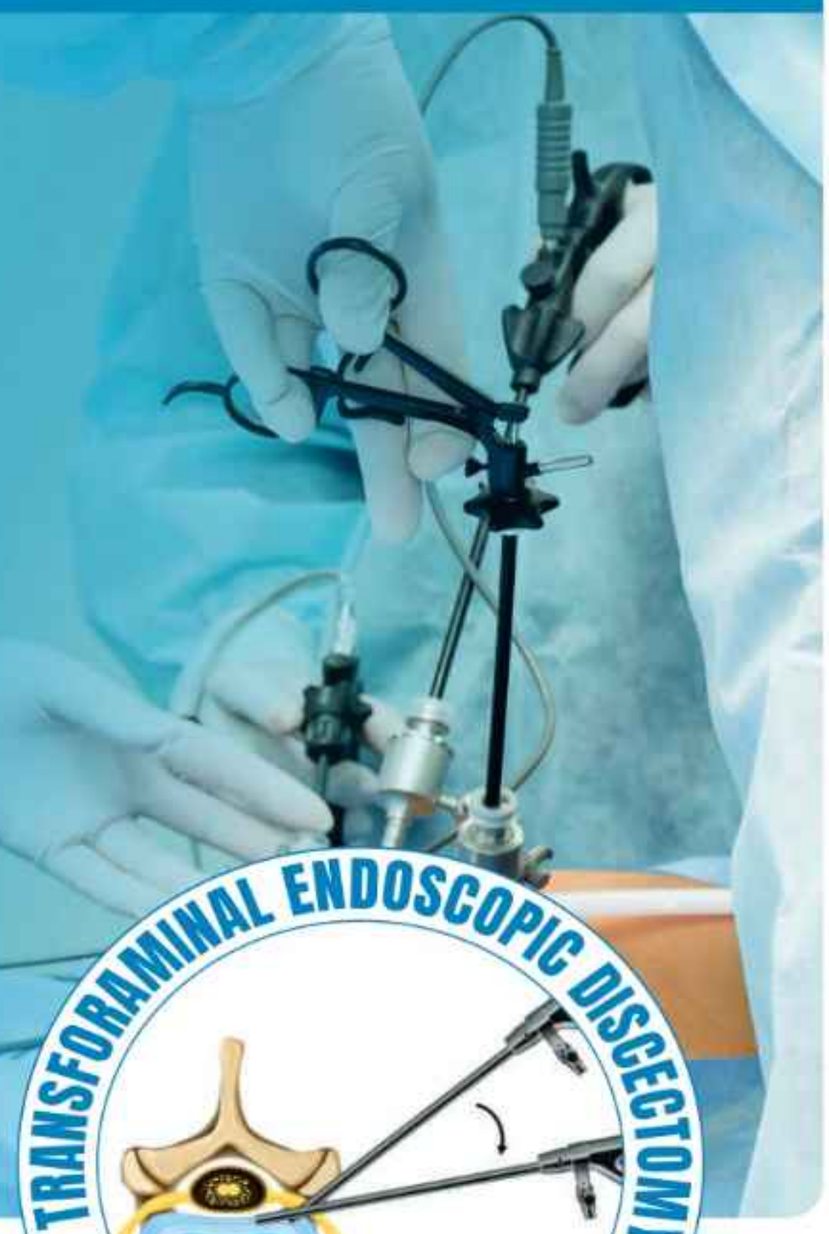

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