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CONTENTS

Editorial

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Robot and Robotics in Medical World

Robot comes from the check word 'Robota' which means "forced work or labour." We use the word robot to mean any man made machine that can perform work or other actions normally performed by human, either automatically or by remote control. Robotics is the science and study of robots. The repetitive works done by humans for months and years are better done by robots; when these types of works are considered to be dengerous for humans. They are used in factories to built things like candy bars and electronics. Robots are now used in medical world, for military tactics, for finding objects under water and to explore other planets. Robotic technology has helped people who have lost arms or legs. Robots are a great tool to help mankind.

History :

In reality evidence suggests that automations were created for everything from toys to parts for religious ceremony in greece and Rome. Leonerdo da Vinchi sketched plans for a humanoid robote in late 1400s. Jackues de Vancason was famous in the 18th Century for his automated human figure that played the flute and for a duck that could flap its wings. Many such are documented in the history; those were created largely for entertainment purpose. Fiction writers found great success in writing in robots in all sorts of situations which meant that the robot was the part of daily conversation and imagination. In 1956 George Devol and Joseph Engleberger formed the worlds' first Robot company. By 1960 s robots were introduced into the General Motors Automobile plant in New Jersy for moving car parts around. Robots continued to develop; now it can be found in homes as toys, vaccum cleaner and as programmable pets etc. Today robots are the part of many aspects of industry, medicine, food pakaging and are used to perform surgery.

Parts of a Robot :

Robots are made of variety of materials including metals and plastics. Most robots are composed of 3 parts:

(i) The controller — These are called the 'brains' which is run by a computer programme.

(ii) Mechanical Parts — Motors, pistons, gripper, wheels and gears that make up robot move, grab, turn and lift. These parts an usully powered by air, water or electricity.

(iii) Sensors — It is to tell the robots about its surroundings. Sensor allows robot to determine size, shape and space between objects, directions and other relations and properties of substances. Many robot can even identify the amount of pressure necessary to apply to grab an item without crushing it.

Medical Uses :

The de Vinci system has been successfully used in fallowing proceduses :-

(i) Radical prostatectomy, pyleroplasty, cystectomy, nephrectomy, and unilateral ramiplantation.

(ii) Hysterectomy, myomectomy and sacrocolpoplexy.

(iii) Hiatus hernia repair.

(iv) Spleen sparing distal pancreactomy, cholecystectomy, heller myotomy, gastric by pass, donor nephrectomy, adrenalectomy, spleenectomy and bowel resection.

(v) Internal mannary artery mobilisation and cardiac tissue ablation.

(vi) Mitral value repair and endoscopic atrial septal detect closure.

(vii) Mammary to left anterior descending coronary entery anastomosis for cardiac revas cularisation with adjunctive mediastinotomy.

(viii) Transoral resection of tumors of upper aerodigestive tract – (tonsil, tongue base, larynx) and transaxillary thyroidectomy.

(ix) Resection of spindlecell tumors originating in the lung.

(x) Total knee replacement, total hip replacement etc.

Top application of robots in medicine includes telepresence, surgical assistance, rehabilitation, medical transportation, sanitation and disinfection and dispensing prescriptions. Robot specializing in human treatment include surgical robots and rehabilitation robots.

Five recently developed robots currently being inplemented in hospitals and treatment centres to improve quality care patients outcomes.

(1) The de Vinci @ surgical Robot,
(2) The Xenex – germ zapping Robot,
(3) The PARO Therapeutic Robot,
(4) The cyber knife. and
(5) The TUG

In 1990 the AESOP system produced by computer motion / action became first system approved by the Food and drug Administration (FDA) for endoscopic surgical procedure. In 2000 the de Vinci surgery system broke new ground for becoming the first robotic surgery system approved by FDA for general laprosopic surgery.

The first documented use a robots assisted surgical procedure occured in 1985 when the PUMA 560 robotic surgical arm was used in a delicate nonsurgical biopsy, a non laporoscopic surgery. This leads to a first laparscopic procedure by robotic system – a cholecystectomy in 1987. In 1992 PROBOT developed in Imperial College, London was used to perform prostatic surgery.

Who Created de Vinci Robot ?

This was created by American company Intuitive Surgical, approved by FDA. It is designed to perform complex surgery using a minimally invsive approach and it is controlled by a surgeon from a console. It is commonly used for prostatectomy, cardiac valve repair and gynecological surgical procedures. The name is given as a token to respect to Leoncndo da Vinci who studied the human anatomy in detail.

Robots contain virtually unlimitted knowledge and have microscopical precision. Robotic systems are of two types (1) autonomus and (2) haptic (or surgeon guided). Passive surgery system, which represent a third type of technology has been adopted by orthopaedicians.

Robot surgery offers many benifits to patients compared to open surgery. (1) shorter hospitalisation, (2) Faster recovery and early return to normal activities. (3) Smaller incision hence lesser chance of infection, (4) Reduced pain and discomfort (5) reduced blood loss and fluid transfusion and (6) Minimum scarring.

Orthopedic surgery began to incorporate robotic technology in 1992, after the introduction ROBODEC for planning and performance of total hip replacement. Now a days the total knee prosthesis and even unicompartment knee arthroplasty is being done with heightest precision.

Some Complications to Enumerate :

(1) Longer operation and anaesthesia time.

(2) Device malfunction or falure leading to serious injury and requiring alternate surgical approach,

(3) Increase in complications may lead to another surgical approach and

(4) Bleeding.

Robotic Surgery in India :

1st robotic surgery held in India a radical prostatectomy in AIMS, New Delhi in July 2006. Since then more than 2000 robotic radical prostatectomy has been successfully done. 1st ever robotic assisted surgery was successfully performed at Lokmanya Hospital in Pune using blue belt technologies' Navio Robotis system a proven technology in U.S. This follows the first ever unicompartmental knee orthroplasty in India in the same institution in 2017.

Salient features of robotic assisted knee replacement :

1. Precision of surgery.
2. Preserves natural knee structure of the bone, ligament and knee cup etc.
3. Rapid recovery.
4. Minimum blood loss.
5. Minimum pain.

By robotic tool the surgeon can

(i) Map the diseased cartilage,

(ii) Prepare a three dimentional visual replica of the knee joint on the computer screen on which the prosthesis virtually placed and aligned.

(iii) Final executioin of surgery by precise placement of the implant as per the three dimentional plan.

This completely eliminates human error to active perfect accuracy and alignment of implant thus enhancng the life of prosthesis. It's no secret that technology is advancing at a rapid pace. This is specially true in health care industry. Operations, treatments and discoveries that were once deemed to be impossible in medical science have come every day realities. Although exiting, these advancements may leave many people wandering what's to come.

Original Article

Clinical profile of hyponatremia in tertiary care center in India : retrospective hospital based observational study

Akash Thomas Oommen[1], VS Srikanth[2], Senthilvel Vasudevan[3], Ranjitha[4]

Hyponatremia is the most common electrolyte abnormality seen in clinical practice and is associated with altered sensorium, seizures, falls and cognitive dysfunction. Even mild hyponatremia could lead to severe complications and prolonged hospital stays. Understanding the emerging trends in manifestations of hyponatremia will help in efficient management of hyponatremia and its allied co morbidities. This study conducted on 904 patients admitted in AIMS, Kochi. They were categorized, based on serum sodium level under 3 groups (Mild, Moderate and Severe). The data collected were analyzed for Clinical presentations, Severity and Etiology of hyponatremia. Hyponatremia predominantly observed in age group >70 years (37.3%), with male predominance (63%). Altered sensorium is the most common presentation of hyponatremia. Disorientation was observed majorly in moderate hyponatremia (64%) compared to severe hyponatremia (20%). Syndrome of inappropriate Antidiuretic hormone secretion (SIADH) was indicated as main cause of Hyponatremia. Respiratory causes like, pneumonia, asthma, Obstructive Airway Disease (OAD) were the predominant causes of SIADH, Lung and genitourinary cancer were the main causes of SIADH among various carcinoma types. The infections associated with hyponatremia were Urinary tract infection (UTI) (68%), Chest Infection (15%) and Cellulitis (14%). In 42.0% population with hyponatremia had Diabetes Mellitus, of which 64% had peripheral neuropathy and 10% had diabetic foot and necrotizing fasciitis. This study summarizes various presentations of hyponatremia, its causes and co-morbidities which will provide better understanding on hyponatremia and aid physicians in diagnosing the precise cause of hyponatremia and its management.

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Key words **: Hospital based study, Hyponatremia, SIADH, UTI.**

Hyponatremia, defined as serum sodium concentration of <135 mmol/L, often develops as a consequence of elevated levels of Arginine Vaso Pressin (AVP) hormone. AVP elevation can occur in a number of common clinical conditions, including SIADH, volume depletion, postoperative states, heart failure, cirrhosis, neuroendocrine disorders and trauma. Hyponatremia is the most common electrolyte abnormality seen in clinical practice. Severe hyponatremia can be symptomatic and life threatening[1]. Sodium as a major extra cellular ion is of primary importance in reflecting changes of water and electrolytes status in the body[2]. This retrospective study was conducted in our hospital to get the clinical overview of hyponatremia in hospitalized patients and distribution of various symptomatic presentations of Hyponatremia. Symptoms of hyponatremia depend on its severity and the rate of sodium decline. Polydipsia, muscle cramps, headaches, falls, confusion, altered mental status, obtundation, coma, and seizures may indicate the need for acute intervention[3]. Most patients with hyponatremia are asymptomatic, and hyponatremia is noted incidentally. Understanding the emerging trends in manifestations of hyponatremia will help in efficient management of hyponatremia and its allied co morbidities

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Materials and Methods

This retrospective observational study was conducted in Amrita Institute of Medical Sciences, Kochi, in the Department of General Medicine. The study included a total of 904 patients who were admitted during January 2016 till June 2017.

Clinical Assessment — This included history of symptoms of hyponatremia, predisposing factors and pre-existing illnesses if present. The definition of symptomatic hyponatremia was based on a clinical assessment of symptomatology including the presence of altered sensorium, lethargy and seizures. Categorization of study population is done based on age, gender, and severity of sodium level, symptoms and causes of hyponatremia.

Lab Investigations — Patients Lab Investigations were studied retrospectively. Serum Sodium levels, Serum Osmolarity, Urinary sodium excretion were studied and based on this categorization is done as below :

- Mild hyponatremia (130-135mg/dl).
- Moderate hyponatremia (120-130mg/dl)
- Severe hyponatremia (<120mg/dl)

Data collection — For all the patients clinical and demographic detail and other details of symptom and various presentations, as mentioned above were recorded in a standard data collection sheet as per the study pro-forma and later transferred to a Microsoft Excel spreadsheet for analysis.

Inclusion criteria —

- Patients aged more than 20 years who were admitted in AIMS with Serum Sodium level less than 135mEq/l

Exclusion criteria —

- Patients aged less than 20 years and admitted in the ward with Sodium level greater than 135mEq/l.
- Pregnant or breast-feeding women

Data and Statistical Analysis — Data were collected and recorded on a pre-designed proforma and complied using Microsoft Excel 2010. Data was systematically analyzed by SPSS 20.0 version. In the statistical analysis, p–value <0.05 was considered as statistically significant.

Results

Out of the total population, 63.3% were males and 36.6% were females. Gender wise presentation of hyponatremia showed male predominance. The prevalence was higher in the age group of above 70 years (37.3%) and lower in the age group of less than 30 years (1.5%) as shown in Table 1. In our study, the population was categorized based on the sodium level (mild, moderate and severe). The moderate category showed higher presence (64%), followed by severe category (20%) and 17% were categorized as mild, as shown in Fig 1.

Table 1 — *Hyponatremia age wise prevalence in study population*

Age group	No of Patients	Percentage
≤ 30	14	1.5%
30 - 40	18	2.0%
41 - 50	45	5.0%
51 - 60	173	19.1%
61 - 70	317	35.1%
>70	337	37.3%

Clinical manifestations of Hyponatremia :

Altered sensorium is the most common presentation indicated, followed by seizures and drowsiness, also 3% of the study group reported restlessness as showed in Fig 2.The serum sodium level severity and seizure incidence irrespective of gender as shown in Table 2.

Severity of hyponatremia in relation to sensorium :

The severity of sodium level influencing the altered sensorium and drowsiness is more prevalent in moderate and mild group as compared to the severe category of hyponatremia group as shown in Fig 3.

Results indicated that the cause of hyponatremia can be any of the following condition as shown in Fig 4.

Fig 1 — Distribution of hyponatremia in the study population based on severity

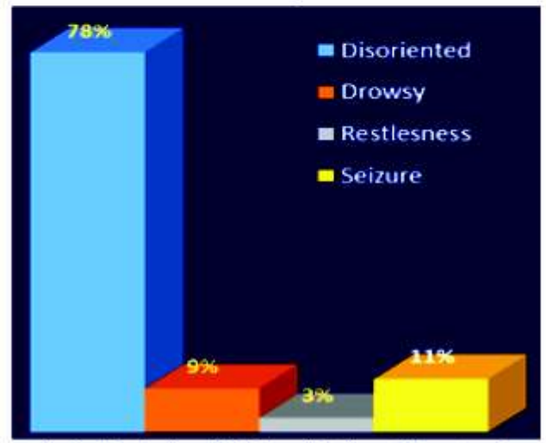

Fig 2 — Distribution of Clinical manifestations of Hyponatremia

Table 2 — *Seizure Incidence across the different Severity conditions of Hyponatremia*

Hyponatremia Severity	Frequency of Seizure Incidence Gender	
	Male n (%)	Female n (%)
Mild	3 (42.9)	4 (57.1)
Moderate	17 (81.0)	4 (19.0)
Severe	2 (50.0)	2 (50.0)

Distribution : Chi-Square = 4.29; df = 2; p = 0.117 (>0.05) : Statistically Not Significant

- Depletion Hyponatremia : Renal failure, diuretics (except Mannitol), pancreatitis
- Dilutional Hyponatremia : Coronary Artery Disease (CAD),Chronic Kidney Disease (CKD), Chronic Liver Disease (CLD), Nephrotic syndrome
- Diuretics usage and SIADH
- Other causes: Mannitol (diuretics),Cancer, Injury, hypothyroidism, surgery Transurethral resection of the prostate (TURP)etc,

Effect of diuretics on Hyponatremia :

It is indicated that Hyponatremia is caused by diuretics usage.

- Furosemide
- Hydrochlorothiazides are major contributors.

Causes of SIADH :

SIADH is caused by various systemic influences as

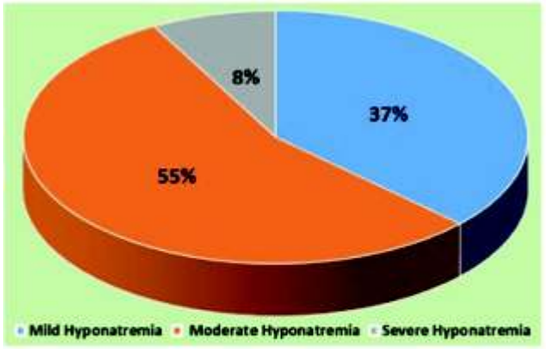

Fig 3 — Altered sensorium presentations in the study population

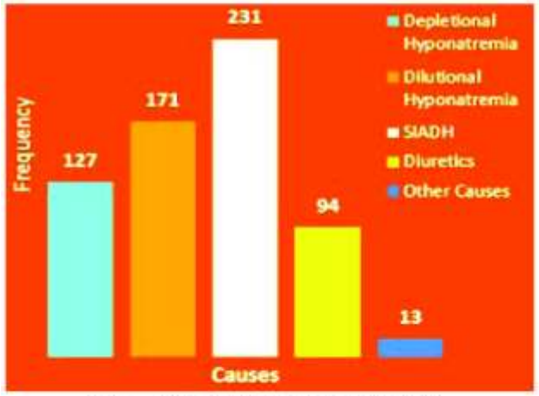

Fig 4 — Distribution of causes of Hyponatremia

follows – The distribution of various causes among the population as observed is shown in Fig 5.

- o Central Nervous System
- o Meningitis
- o Encephalitis (Including encephalopathy)
- o Capsular bleed
- o Carcinomas
  - Lung cancers (small-cell lung cancer and mesothelioma)
  - Gastrointestinal cancers (stomach, duodenum, pancreas)
  - Genitourinary cancers (bladder, urethral, prostate, endometrial)
  - Lymphoma
  - Sarcomas
- o Respiratory System
  - Lung infections - all Pneumonia
  - Asthma
  - COPD (Chronic obstructive pulmonary disease)
- o Renal System
- o Drug Induced

Observation showed drugs referred here have high potential to cause hyponatremia-SIADH. Drug categories

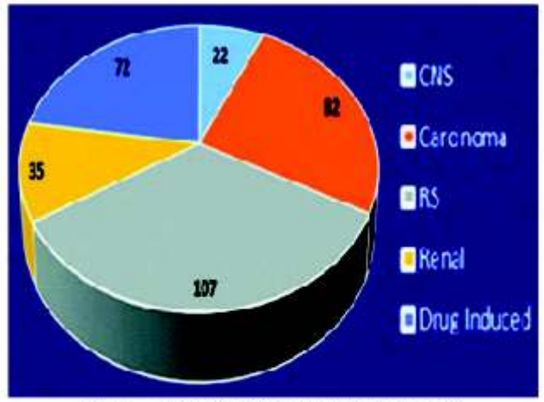

Fig 5 — Distribution of causes of SIADH (N=318)

listed here found to cause drug induced SIADH.

- ANTIEPILEPIC : Carbamazepine, Oxcarbemazepine, Phenobarbitone
- ANTIBIOTIC : Moxifloxacin,
- NSAID : Aceclofenac
- OPIOD : Morphine
- IMMUNOSUPRESSANT : Cisplatin, Melphalan, Cyclophosphamide

Our study results indicated various carcinomas being causative for manifestation of SIADH. Lung cancer and genitourinary cancer (Prostrate and Ovary) had major representation in our sample population as shown in Fig 6.

Common Co-Morbidity in Hyponatremia :

In 42% of the study population had Diabetes Mellitus. Out of them 64% had Peripheral neuropathy and 10% had Diabetic foot or Necrotizing fasciitis leading to severe complications. Other co-morbidities presented include Diabetic Retinopathy 28%, Diabetic Nephropathy 13% and 55% of the population had hypertension .The most common infection associated with hyponatremia patients was Urinary tract Infection (68%), other infectious conditions included Chest Infection (15%) and Cellulitis (14%). Moderate hyponatremia patients were more prone to infections as compared to Mild or Severe hyponatremia patients.

Discussion

Hyponatremia is the most common electrolyte disturbance seen in hospital practice. In previous studies, incidence of hyponatremia in hospitalized patients was found to be about 1% to 6%[3,4]. Hyponatremia has been associated with considerable morbidity and mortality in many chronic diseases[5,6]. Hyponatremia leads to increased health care cost due to extension of their hospital stays though they were not admitted specifically for hyponatremia[7,8].

Incidence of hyponatremia has been shown to have direct correlation with age in few earlier studies. Our study indicated 37.3% of the patients who had hyponatremia were

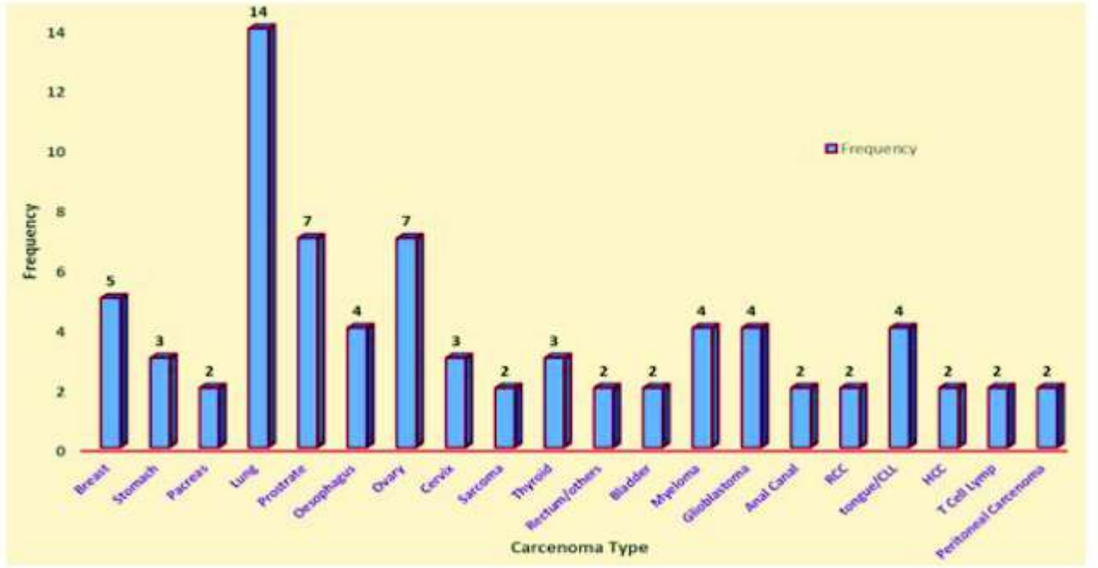

Fig 6 — Distribution of Carcinoma triggering SIADH

in the age group of more than 70 years. The presentation was as low as 1.5% in the age group of less than 30 years. It showed 8 times high in age group of 70 + years. This differs from the study by Hawkins *et al*, that noted that increasing age, after adjusting for sex, was independently associated with both hyponatremia at presentation and hospital-acquired hyponatremia[9]. In the present study prevalence of hyponatremia was more in male patients with male: female ratio of 1.7:1.The male predominance of hyponatremia prevalence is clearly indicated with 63% of hyponatremia cases being male. This observation is markedly different from previous studies by Nidhi Kaeley[10] which showed female predominance of 56% and another study by Amay Parkin & Sumit Mohan showed female predominance of hyponatremia by 2% more than male population[6,11,12]. In our study presentation of hyponatremia in male population is more than in female population by 30%.

Out of various manifestations that are associated with Hyponatremia, Altered Sensorium is the most common presentation (78% of population)[13]. The frequency of altered sensorium observed in our study is almost double as compared to the study by Clayton *et al*[14], in a study of severe hyponatremia in Queen's Medical Centre, UK, which showed only 36.2% patients had neurological symptoms attributable to the hyponatremia. High presentation of this correlation in our analysis reinforces that altered sensorium is most common indicator for hyponatremia. In addition, it is observed that altered sensorium was most commonly seen in patients with Mild and Moderate hyponatremia[3]. The distribution showed more than half of the population with altered sensorium being in Moderate hyponatremia group (55%) as compared to patients in Mild hyponatremia (37%) and in severe (8%) hyponatremia groups.

Drowsiness (11%) and Seizures (9%) observed as major presentations associated with hyponatremia in our study. In further analysis of presentation of Seizures in hyponatremia revealed that Seizure incidence is majorly observed in the population with serum sodium level in the range of 121mM–130mM (Moderate category) as compared to Severe & Mild hyponatremia category .This result is interestingly deviating from the findings in the study by Imad *et al*[15]. which was indicating Seizure presentation was reported mainly from Severe hyponatremia (<115mM of serum sodium level) and only one incidence was reported from Moderate hyponatremia (Serum sodium level 121mM-130mM). In addition, it is observed that 62% of the patients presented with seizure events were "oriented" and seizure episode was associated with hyponatremia more in male patients as compared to female study population similar in lines with study results by Sherlock[16]. Normally Cutaneous loss of sodium occurs due to excessive sweating in Indian climatic condition. Further addition of diuretics as a part of treatment protocol in patients will contribute to further loss of sodium, eventually causing hyponatremia. Diuretics are recommended as first-line anti-hypertensive treatment in elderly patients. Although attention is usually paid to prevent hypokalemia with diuretic therapy, risk of hyponatremia is often ignored.

In the our study, diuretics was found to cause 12.4% of hyponatremia of which, 54.25% diuretic induced hyponatremia was due to loop diuretics and 22.34% diuretic induced hyponatremia was due to thiazide diuretics. This

revelation in our study is quite different from other previous studies where Thiazide diuretics influenced hyponatremia was on high percentage of presentation[17-19]. In our study loop diuretics usage is the leading factor and showed as higher percentage of trigger for hyponatremia presentation. According to study, Sonnenblick *et al*[20]. Thiazides were responsible for severe diuretic-induced hyponatremia in 94 percent of 129 cases reported in the literature. In another study by Sunderam SG[21,22], 53% patients on thiazide diuretics developed hyponatremia compared to 21% patients who were on loop diuretics. Our study indicate loop diuretics should also be used with caution while considering a long term maintenance therapy by regular monitoring of electrolyte levels to avoid hyponatremia. While analyzing the causes for hyponatremia, based on our study results SIADH is found to be prime cause standing at 42% followed by Dilutional hyponatremia 22%. Other significant cause factors are from Depletional hyponatremia 16% and Drug induced (12%) and this trend is reflective of the results from a study by Sandez *et al*[11,23].

SIADH being the foremost leading cause of hyponatremia in our study. This study revealed us "Pulmonary "causes were prime triggering incidences for hyponatremia 34% of the population. This is substantiated by results from study by Mansoor *et al*[24]. Next immediate causative factor for SIADH in our study is "Carcinoma", out of the different carcinomas presented in our population, carcinoma of Lung is found be the major contributor. Third line of cause next to Carcinoma for SIADH is found to be Drug induced SIADH. Similar observation was noted in a study by Irish National Neurosciences Centre M Sherlock *et al*[18]. The most common class of drug that induced SIADH being antiepileptic[25], and followed by Opioid, NASID and Osmotic agents[26]. Analysis of the data related to Diabetes Mellitus in our study, revealed that 42% of the population with hyponatremia had Diabetes Mellitus. Out of them 64% had Peripheral Neuropathy and 10% of them had Diabetic foot, Gangrene of the lower limb and necrotizing fasciitis. Our study indicated of high possibility of hyponatremia coexisting with Diabetes and its associated complication like peripheral neuropathy which is similar to the results indicated from another study by McNair *et al*[27].

In our study, 51% of the population had Hypertension. Results from a study (Prevalence of Hyponatremia and Association with Mortality) by Sumit Mohan *et al*[11], - conducted over 14,697 adults indicated that hyponatremia was found to be common in subjects with hypertension, diabetes, CAD, infections, cancer and just 1.04% had no co-morbidities. Our observations about Infection associated with hyponatremia showed UTI (68%), Chest Infection and Cellulitis (14%) as major cause, in similar lines to other studies[28,29]. There is indication of strong correlation between UTI and hyponatremia but further studies need to be conducted to confirm the degree of correlation. Results showed Chest infection is associated with Moderate hyponatremia cases in higher percentage (72%) as compared to Severe hyponatremia (16%) whereas Thomas *et al*[30] and Kennedy *et al*[31,32] found that chest infection was caused in severe hyponatremia cases only in their study.

Conclusion

Elderly Males were majorly affected and presented with altered sensorium in the range of mild-moderate hyponatremia. Seizures could also be a manifestation even in mild and moderate hyponatremia. Loop diuretics should be cautiously prescribed as it was the major class of diuretic which induced hyponatremia. Hyponatremia should be ruled out as primary electrolyte imbalance in diabetic and hypertension patients. Among patients reported with hyponatremia, when respiratory system is involved SIADH should be ruled out first as cause of hyponatremia. There is a correlation between hyponatremia and urinary tract infection and cellulitis as noted in our study. Hyponatremia is common electrolyte imbalance but may lead to serious complications if not identified at an early stage and promptly managed.

Conflict of Interest : None

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Original Article

A study on the effect of systemic hypertension on retinal nerve fibre layer thickness in West Bengal

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Retina is the innermost layer of the eyeball. The Retinal nerve fibre layer (RNFL) also known as the Stratum Opticum essentially consists of nonmyelinated axons of Ganglion cells, which in turn form the second order neurons of the visual pathway. It is to be noted in this regard that Glaucoma, a form of optic neuropathy, is characterized by optic nerve damage as evidenced by retinal nerve fibre layer defects. Several studies conducted worldwide have identified certain risk factors for glaucoma, systemic hypertension being one of them. Whether this factor decreases the retinal Nerve Fibre Layer Thickness in apparently normal individuals is yet to be established. The present work aims to study various aspects of this presumed determinant, that is, systemic hypertension on the retinal nerve fibre layer thickness in middle aged and elderly subjects of West Bengal and related risks of visual impairment associated with this factor. An observational and cross-sectional study was undertaken to achieve the above objectives. Both eyes of 380 subjects of both sexes and aged above 40 years were examined and the results were recorded. Systemic blood pressure in all of them was recorded. Stratus Optical Coherence Tomograph (OCT) was used for Peripapillary Fast Retinal Nerve Fibre Layer thickness assessment of both eyes. Our study revealed that there is statistically significant reduction of Retinal Nerve Fibre Layer Thickness in hypertensives. [*J Indian Med Assoc* 2019; **117**: 14-7]

Key words **: Retina, RNFL, OCT.**

Retina is the innermost layer of the eyeball. It is a thin, delicate and transparent membrane.It is the most highly developed tissue of the eye[1]. The Retinal nerve fibre layer (RNFL) also known as the Stratum Opticum essentially consists of nonmyelinated axons of Ganglion cells which converge at the Optic nerve head, pass through the lamina cribrosa and is ensheathed by myelin posterior to the lamina. It is to be noted here that the ganglion cells form the second order neurons of the visual pathway. In addition to the axons of ganglion cells, the RNFL also contains the following :

- Centrifugal nerve fibres of unsettled origin and termination.
- Processes of Muller's cells (from the inner nuclear layer) which interweave with the axons of ganglion cells.
- Neuroglial cells.
- Retinal vessels in the form of a superficial capillary network.

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A healthy status of the RNFL is essential for proper maintenance of functional vision. Loss of this RNFL is essentially loss of ganglion cells of the retina resulting in drastic and irreversible effects on vision. It is to be noted in this regard that in Glaucoma, a form of optic neuropathy, there occurs optic nerve damage as evidenced by retinal nerve fibre layer defects. In West Bengal a population based study result showed the prevalence of glaucoma in above 50 year age group was found to be 3.4%[2]. Several studies conducted worldwide have identified certain risk factors for glaucoma[3-7], systemic hypertension being one of them. Whether this factor decreases the retinal Nerve Fibre Layer Thickness in apparently normal individuals is yet to be established. The present work aims to study various aspects of this presumed determinant, ie, systemic hypertension on the Retinal nerve fibre layer thickness in middle aged and elderly subjects of West Bengal and related risks of visual impairment associated with this factor.

Materials and Methods

Study Area :

Department of Anatomy, RG Kar Medical College and Hospital Kolkata and Regional Institute of Ophthalmology (RIO), Medical College, Kolkata 700073

Study Population :

Patients attending RIO out patients department with no posterior segment disorder and having a clear ocular media were selected for the study.

Study Period :

One and half years approximately.

Sample Size :

Both eyes of 380 subjects of both sexes and aged above 40 years were examined and the results were recorded.

Sample Design :

In 380 Adults of both sexes and of various age groups, minimum age being above 40 years were chosen. It was made sure after careful evaluation that all of them were having a clear ocular media and none were having any posterior segment pathology. Systemic blood pressure in all of them was recorded and they were categorized as normotensives (less than 140/90 mm of Hg) or hypertensives (greater than 140/90 mm of Hg. Hypertensives were further categorized as Mild (SBP-140-159 mm Hg, DBP-90-99 mm Hg), Moderate (SBP-160-179 mmHg, DBP-100-109 mm Hg) and Severe (SBP>180 mm Hg DBP>110 mmHg) hypertensives..

Study Design :

Based on the above sample design, findings were recorded and a randomized Observational and cross-sectional study was undertaken to achieve the above objectives.

Parameters Studied :

(a) Peripapillary Fast RNFL thickness of both eyes.
(b) Systemic blood pressure.

Study Tools :

(a) Slit lamp biomicroscope, Direct and Indirect Ophthalmoscope for complete ophthalmic examinationwith dilated pupils to rule out any posterior segment pathology andexclude presenceof hazy media (eg corneal opacity, lenticular opacity, vitreous opacity etc).

(b) Goldmann Applanation Tonometer to record intraocular pressure.'

(c) Goldmann gonioscopic mirror to visualize the anterior chamber angles of both eyes.

(d) Humphrey visual field analyzer.

(e) Stratus Optical Coherence Tomograph (OCT)[8,9] for RNFL thickness assessment.

Study Techniques :

Complete ocular examination with dilated pupils was undertaken to rule out posterior segment pathology and media opaciy. Assessment of refractive error was done. Intraocular pressure (IOP) was measured with Goldmann Applanation Tonometer on three successive occasions. Visual field analysis with Humphrey's visual field analyzer 30-2 program was recorded. Venous blood was sent for Post prandial blood sugar estimation. Peripapillary fast RNFL thickness scan (3.4) was done on both eyes with Stratus OCT machine. The data thus collected in Regional Institute of Ophthalmology (RIO), Medical College, Kolkata was carefully studied and analysed in the department of Anatomy RG Kar Medical College, Kolkata to arrive at conclusions.

Inclusion Criteria :

- Best corrected visual acuity better than 6/9 for distance and N8 for near
- Vertical cup disc ratio (VCDR) ≤0.4
- IOP on three successive occasions less than 21 mm of Hg
- Anterior chamber angle open. (more than SHAFFER'S GRADE III)
- Visual field within normal limits. (By Humphrey's Visual Field analyser)
- Both normotensive and hypertensive subjects.

Exclusion Criteria :

- Best corrected visual acuity worse than 6/9 for distance and N8 for near
- Ocular media opacity.
- History of ocular surgery.
- Posterior segment pathology.
- Vertical cup disc ratio (VCDR) greater than 0.4
- IOP on three successive occasions greater than 21 mm of Hg .
- Anterior chamber angle closed.(Less than SHAFFER'S GRADE III)
- Diabetic (Postprandial blood sugar greater than 200 mg/dl)

Statistical Analysis :

The data thus collected was analysed statistically by using unpaired t test and correlation. SPSS V. 13.0 computer program was used for statistical analysis.

Observations

Results at a Glance :

- In the study population 57.89% were males and 42.11% were females .
- The age of the population was from 40 years to 81 years. Mean age of the study population was 54.89 years.
- The systolic blood pressure of the study population was 134.64±16.53 mm of Hg (Range-114 mm of Hg - 184 mm of Hg).
- The diastolic blood pressure of the study population was 85.95±9.39 mm of Hg (Range-70 mm of Hg-114 mm of Hg).
- Mean RNFL thickness of the study population was 101.62 ±10.42 μ
- Pearson correlation coefficient for the variation of systolic blood pressure *versus* RNFLthickness = -0.400, p<0.0001
- Pearson correlation coefficient for the variation of diastolic blood pressure *versus* RNFL thickness = -0.312, p<0.0001.

Blood Pressure Distribution of the Study Population :

Total study population : 380

Normotensives : 283

Hypertensives : 97 (25.52% of the study population. This is in accordance with the latest WHO Health statistics which states that 23.1% of adult males and 22.6 % of adult females are hypertensive in India.)[10] (Fig 3.1).

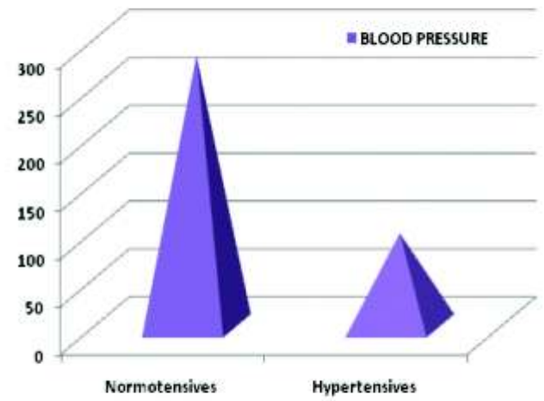

Fig 3.1 — Blood Pressure

Grades of Hypertension :

Grade	SBP (mm of Hg) (Systolic blood pressure)	DBP (mm of Hg) (Diastolic blood pressure)
Mild	140-159	90-99
Moderate	160-179	100-109
Severe	=180	=110
ISH*	>140	<90
*Isolated systolic hypertension		

Unpaired t test results to evaluate the statistical difference in RNFL thickness between Hypertensives versus Nonhypertensives

P value and statistical significance :

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval :

The mean of Rnfl in Hypertensives minus Rnfl in Normotensives equals – 6.2337. 95% confidence interval(CI) of this difference: From -7.8790 to -4.5884.

Review of Data :

Group	RNFL in Hypertensives	RNFL in Normotensives
Mean	96.9797	103.2134
SD	7.4323	10.8197
SEM	0.5336	0.4548
N	194	566

Linear regression analysis of correlation between Systolic blood pressure *versus* RNFL Thickness In The Study Population

Pearson correlation coefficient = -0.40

statistical significance of r = -0.40 against 0

t= -12.01586; df= 758;

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant (Fig 3.2).

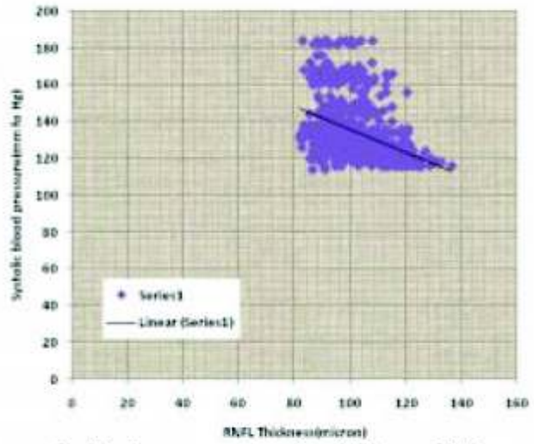

Fig 3.2 — Linear regression analysis of SBP versus RNFL

Linear regression analysis of correlation betweenDiastolic blood pressure Versus RNFL Thickness In The Study Population

Pearson correlation coefficient = -0.312

statistical significance of r= -0.312 against 0

t= -9.04124; df= 758; The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant (Fig 3.3).

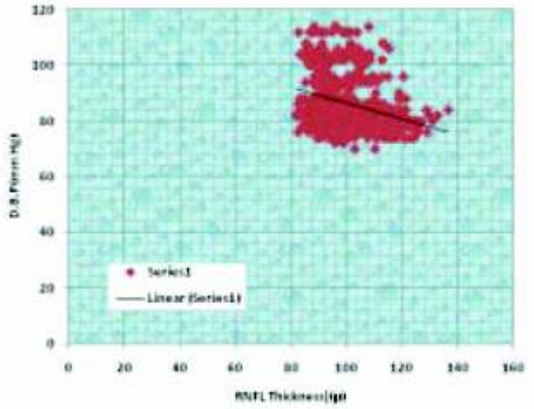

Fig 3.3 — Linear regression analysis of DBP versus RNFL

Discussion

Sony P, Sihota R, Tewari HK, *et al*[11], conducted a study to quantitatively assess the normative values for peripapillary retinal nerve fibre layer (RNFL) thickness with Optical Coherence Tomography (OCT 3) in Indian subjects. Parikh RS, *et al*[12], performed a similar study to determine the normal age-related loss of retinal nerve fiber layer thickness (RNFLT) as measured on Stratus optical coherence tomography in an Asian Indian population. R Ramakrishnan, *et al*[13], conducted a study to obtain retinal nerve fibre layer thickness measurements by optical coherence tomography (OCT) in normal Indian population. All these studies however did not evaluate systemic correlates on RNFL thickness. The Blue Mountains eye study[14] by Mitchell P, Lee AJ, *et al,* concluded that, hypertension was significantly associated with POAG, after adjustment for POAG risk factors, including IOP with an odds ratio (OR) 1.56 and 95% confidence interval (CI) 1.01–2.40. This relation was strongest in subjects with poorly controlled hypertension (POAG prevalence 5.4%), compared with normotensive subjects (POAG prevalence 1.9%), independent of IOP (OR 1.88, CI 1.09–3.25). The population-attributable risk for hypertension (20.4%) was higher than for other identified POAG risk factors.. Hypertension, particularly if poorly controlled, appears related to a modest, increased risk of POAG, independent of the effect of BP on IOP and other glaucoma risk factors. Bhojwani Krishna *et al*[15] conducted a study on central Indians,with the aim to determine the systemic correlates of RNFL thickness.They concluded that systolic blood pressure was negatively correlated with RNFL thickness (r -0.107 p<0.001). This study however showed no statistically significant relation between diastolic blood pressure and RNFL thickness.

In this regard it can be noted that Tien Yin Wong, *et al*[16], conducted a study to describe the cross-sectional relationship between retinal arteriolar and venular diameters with age and blood pressure, retinal arteriolar diameters were found to be decreased by by 4.4 µm (95% CI, 3.8–5.0) for each 10-mm Hg increase in mean arterial BP. The association of narrowed retinal arterioles and higher BP was stronger in younger persons. For each 10-mm Hg increase in mean arterial BP, arteriolar diameters decreased by 7.0 µm in persons aged 43 to 54 years but by only 2.5 µm in persons aged 75 to 84 years. The present study results are comparable to the findings of Bhojwani Krishna, *et al*, who found a negative correlation between RNFLT and systolic blood pressure (r=-0.107 p<0.001), just like us (r=-0.400 p<0.0001) only that the correlation was stronger in our case. They did not find any statistically significant correlation between diastolic blood pressure and RNFLT (p=0.407) but the present study found a statistically significant correlation (r=-0.312 p<0.0001). Hence it can be stated with some confidence that our study corroborates well with the Blue Mountain Eye Study although their studies were primarily based on glaucomatous patients and ours on normal subjects. So it is our recommendation that hypertensives, specially moderate to severe ones should have mandatory glaucoma evaluation and workout, more so if they are in the middle aged or elderly age group , irrespective of their gender.

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Original Article

A cross-sectional study of coagulation parameters in normal and high risk pregnancy

JB Sharma[1], Subhadra Sharma[2], Usha BR[3], Rupali Awale[4], Ashish Gupta[4], Sunesh Kumar[5], Asok K Mukhopadhyay[6]

To asses coagulation parameters Prothrombin time, Activated Partial Thromboplastin Time, Thrombin Time, D-dimer in pregnant women. A cross sectional study of 282 patients attending antenatal outpatient department at AIIMS, New Delhi were recruited. Among the 282 subjects, 251 were pregnant and 31 were controls. Plasma was tested for coagulation parameters Prothrombin time (PT), Activated Partial Thromboplastin Time (aPTT), Thrombin Time (TT), D-dimer using Sysmex CA-1500 automated coagulation analyser. The study included 282 women of which 31 were non pregnant while 251 were pregnant. The value of PT was within the normal range (10-12 seconds) during all the three trimesters, while it was on the lower side of normal in the third trimester. The value of APTT was within the normal range (24-40 seconds) during all the three trimesters, however the value was highest during the second trimester. The value of TT was within the normal range (15-23 seconds) during first and third trimester while the second trimester showed marginal rise in the value. D-dimer was normal (<0.5microg/ml) in the second trimester while the first and third trimester showed increased value. Normal pregnancy causes an alteration in coagulation with prothrombin time, activated partial thromboplastin time, Thrombin time which asses the extrinsic, intrinsic and common coagulation pathway respectively were within the normal limits throughout pregnancy while D-dimer an assay of fibrin degradation products showed higher values during the first and the third trimester.

[*J Indian Med Assoc* 2019; **117**: 18-21]

Key words **: Coagulation, prothrombin time, activated partial thromboplastin time, thrombin time, D-dimer, pregnancy.**

Pregnancy is a normal physiological change and is associated with changes in coagulation system. This change contributes in maintaining a state of haemostasis. This haemostasis plays a major role in continuing normal pregnancy and also preventing excessive bleeding during delivery and puerperium[1,2]. While these physiological changes may be important for minimizing intrapartum-blood loss, they entail an increased risk of thromboembolism during pregnancy and the post-partum period.

There is activation of blood coagulation and a simultaneous increase in fibrinolysis without signs of organ dysfunction during normal pregnancy. These changes increase as pregnancy progresses. There are gestational age specific reference ranges for routine haemostatic assays like prothrombin time (PT), activated partial thromboplastin time (APTT), thrombin time (TT) and fibrinogen (Fib) during pregnancy which may have a bearing on clinical decisions during various pregnancy complications[3]. During delivery, there is consumption of platelets and blood coagulation factors, including fibrinogen. Fibrinolysis improves and increases fast following childbirth and expulsion of the placenta, resulting in increased D-dimer levels. These changes are self-limiting at normal delivery. The hemostatic changes, noted during pregnancy, normalize after delivery within 4 to 6 weeks[4,5].

The coagulation system undergoes significant change during pregnancy. The clinician caring for the parturient must understand these changes, particularly when the parturient has a pre-existing haematological condition. Because many haematological conditions are rare, there often is limited information to guide the obstetric and anaesthetic management of these parturients.

Thus we conducted a cross sectional study on various coagulation markers like prothrombin Time (PT), activated partial thromboplastin time (aPTT), thrombin time (TT), D-dimer during pregnancy in both normal and abnormal pregnancies.

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Materials and Methods

The study is a prospective cross-sectional study conducted on 282 pregnant ladies visiting the obstetric outpatient department (OPD) for antenatal checkup in AII India Institute of Medical Sciences, New Delhi between 1st November 2012 to 31st March 2013. Criteria for inclusion was all pregnant ladies visiting the antenatal OPD. Exclusion criteria included pregnant ladies with sepsis and malignancy. Patients with co-morbid conditions like hypertension, gestational diabetes, hypothyroidism, hyperthyroidism, intrahepatic cholestasis, heart disease, anemia, coagulation disorder were included in the high risk group. The control group included 31 non pregnant healthy ladies. The study included 251 patients in the test group while 31 patients in the control group after giving participant information and taking consent. Ethical clearance was obtained from our institutional Ethics committee.

Measurement

In the morning as fasting state a total of 5ml of blood sample for the study was obtained by peripheral vein sampling. A total of 1.8 ml of peripheral venous blood was collected in sodium citrate containing vacutainer. The sample was centrifuged and the plasma thus obtained for coagulation study ie, Prothrombin Time (PT), Activated partial thromboplastin time (APTT), Thrombin time (TT) and D-Dimer assay. The coagulation markers were tested within 60 minutes of blood collection.The assay was performed on CA-1500 automated coagulation analyser (Sysmex CA-1500 YZB Japan 1419) which measures the test value using scattered light detection method.

Due to non availability of test reagents during the study period some tests could not be done in all cases.

Statistical Analysis

Descriptive measures such as mean, standard deviation, median and inter quartile range values were calculated. Since numbers of observations in each category were not adequate to apply parametric rest, non parametric Mann-Whitney "U" test was carried out. ANOVA was used to test the significance of differences between pregnant group and non pregnant women and among different trimesters of pregnancy. Further to see linear associations between two study variables bi variate correlation coefficient were computed. For all statistical rests a probability value of $p<0.05$ was considered statistically significant.

Results

The characteristic of women are shown in Table 1.

The study included 282 women of which 31 were non pregnant while 251 were pregnant.

The youngest participant was 20 years old while eldest was 40 years with the median age being 27 years.

Among the pregnant women 66(26.3%) were aged 20-24 years, 105(41.8%) 25-29 years, 65 (25.9%) 30-34 years and 15(6.0%) were more than 35 years of age.

A total of 88(35.1%) women were primigravida while 163(64.9%) women were multigravida.

A total of 71(28.3%) women were in first trimester of gestation, 76(30.3%) women were in second trimester and 104(41.4%) women were in third trimester of gestation.

Table 1— *Characteristics of patients*

No of patients :	
Total number	282
Non-pregnant women	31
Pregnant women	251
Age :	
Age range	20-40 years
Median age	27 years
Parity :	
Primigravida	88(35.1%)
Multigravida	163(64.9%)
Trimester :	
First	71(28.3%)
Second	76(30.3%)
Third	104(41.4%)

The median value of various coagulation markers in the three trimesters are shown in Table 2.

Table 2 — *Median values of various tests according to trimester in pregnant ladies*

Tests	PT (seconds)	APTT (seconds)	TT (seconds)	D-dimer (mcg/ml)
Non pregnant state	11	30	16	<0.1
First trimester	10.5	27.10	18.3	0.7750
Second trimester	10	28.45	24.8	0.5000
Third trimester	9.95	25.8	23.7	0.7500
Overall in pregnant state	10.15	27.1	22.2	0.675

The value of PT was within the normal range (10-12 seconds) during all the three trimesters, while it was on the lower side of normal in the third trimester.

The value of APTT was within the normal range (24-40 seconds) during all the three trimesters; however the value was highest during the second trimester.

The value of TT was within the normal range (15-23 seconds) during first and third trimester while the second trimester showed marginal rise in the value.

D-dimer was normal (<0.5microg/ml) in the second trimester while the first and third trimester showed increased value.

The values of D-dimer in various trimesters are shown in Table 1 and Fig 1.

In the present study 77(30.7%) pregnant ladies had high risk factor. Of the high risk group ladies 9(3.6%) had hypertension associated with pregnancy, 20(26.0%) had gestational diabetes, 9(3.6%) had hyperthyroidism, 3(3.9%) had epilepsy, 2(2.3%) had hypothyroidism, 13(16.9%) had intrahepatic cholestasis of pregnancy. 16(20.8%) had heart disease, while 9(3.6%) had coagulation disorder. The medial values of various coagulation markers in various disease conditions are shown in Table 2.

According to bivariate analysis the Pearson correlation was significant between age and PT(207). And between TT and APTT (250).

Discussion

Normal pregnancy involves many changes in maternal physiology including alterations in hematologic param-

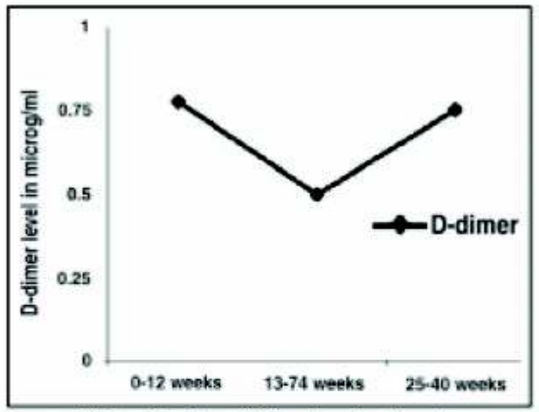

Fig 1 — The values of D-dimer in various trimesters

Table 3 — *Median values of various tests parameters along with p value in various disease conditions*

Disease condition number (%)	PT (seconds)	APTT (seconds)	TT (seconds)	D-dimer (mcg/ml)
Hypertension 9(3.6)	10.1 (p=0.527)	26.9 (p=0.991)	21.8 (p=1.000)	0.75 (p=0.847)
GDM 20(20.6)	10.1 (p=0.899)	26.9 (p=0.760)	21.7 (p=1.000)	0.75 (p=0.387)
Hyper-thyroidism 1(3.9)	10.1 (p=0.531)	26.9 (p=0.482)	21.7 (p=0.473)	0.75 (p=0.847)
Epilepsy 3(3.9)	10.1 (p=0.531)	26.9 (p=0.482)	21.8 (p=1.000)	0.75 (p=unable to compute)
Hypo-thyroidism 2(2.3)	10.1 (p=0.889)	26.9 (p=0.603)	22.4 (p=0.473)	0.75 (p=0.648)
Intrahepatic cholestasis 13(16.9)	10.1 (p=0.853)	26.9 (p=0.731)	22.4 (p=0.606)	0.74 (p=0.354)
Heart disease 16(20.8)	10.1 (p=0.597)	26.9 (p=0.727)	22.4 (p=0.605)	0.75 (p=0.735)
Coagulation disorder 9(3.6)	10.1 (p=0.346)	27.05 (p=0.450)	21.7 (p=1.000)	0.75 (p=0.123)

eters[1-3]. These changes include expansion in maternal blood and plasma volume. as well as an increase in the levels of some plasma proteins that alters the balance of coagulation and fibrinolysis[5]. During pregnancy the concentrations of coagulation factors VII, VIII, IX, X, XII and von Willebrand factor rise significantly thus making pregnancy a hypercoagulable state to prevent hemorrhage at time of childbirth. This is reflecting in various laboratory tests done to asses' coagulation[1]. Prothrombin time (PT) reflects the function of exogenous coagulative pathway while aPTT reflects the function of endogenous coagulative pathway. Thrombin time (TT) can reflect the content and structure of plasma fibrinogen to some extent[4].

In the present study the value of PT was within the normal range during all three trimesters. These results are similar to the studies of Han *et al*[4], Millar *et al*[6], Babiker *et al*[7], and found PT to be significantly prolonged during pregnancy. However, Hui *et al*[8] observed prothrombin time to be decreased in mid and late pregnancy. Srimala *et al*[9] also found decreased prothrombin time during normal pregnancy when compared with age matched control groups of non pregnancies and attributed it to changes in hemostatic balance in the direction of hypercoagulability with increased concentration of all clotting factors except factor XI and XIII.

Liu *et al*[3] found highest reference range for PT in first trimester, lowest in second and intermediate in third trimester.

The value of aPTT was within the normal range during all the three trimesters in present study. However Han *et al*[4] and Hui *et al*[8] found aPTT to be shortened in mid and late pregnancy while Babiker *et al*[7] found aPTT to be significantly prolonged during pregnancy in their study .

Liu *et al*[3] found aPTT to be highest in first trimester, lowest in second and lowest in third trimester of pregnancy.

The value of TT was within the normal range in the present study. However Han *et al*[4] found significantly higher thrombin time in pregnant subjects as compared to control subjects. This was also observed in the works of other authors. Study by Amilo *et al*[10] suggested that the increase in coagulation factors observed during pregnancy are due to increased thrombin generation.

D-dimer is a specific degradative product resulting from the hydrolysis of fibrin monomer[4]. It is considered as an indirect marker of thrombosis and fibrinolytic activity[4]. Maternal D-dimer concentrations rise progressively during pregnancy from conception to delivery with rise being more in pre-eclamptic pregnancies[4]. Murphy *et al*[11] observed a continuous increase in median D-dimer concentration over the complete gestational period while which were well above the cut off concentration in non-pregnant stage.

Despite the decrease in fibrinolytic activity, levels of fibrin degradation products including D-dimers have been shown to rise with advancing gestational age.The increase in coagulation activity may manifest as increased D-dimer, and this change takes 6-8 weeks to return to normal after delivery[6]. In the present study levels of D-dimer showed increased values in first and third trimester but were within normal levels (<0.5mcg/ml) in second trimester. Kline *et al*[16] found that pregnancy increased the D-dimer concentration in a stepwise fashion from preconception to the third trimester. Liu *et al*[3] observed lowest TT in third trimester, intermediate in first trimester and highest in second trimester or pregnancy. Previous research has shown higher D-dimer concentration in pregnant women with pre-eclampsia as compared to normotensive women[12,19]. However in the present study although D-dimer levels increased during pregnancy, there was no significant change in hypertensive disorders. It could be due to less patients (only 9 cases) and only mild hypertension in the present study.

Increased fibrinogen has been observed in disseminated intramuscular coagulation (DIC) in which there is thrombocytopenia, prolonged coagulation times, reduced coagulation, inhibitors and high levels of fibrin …. products and D-dimers[13-15].

Erez *et al*[16] studied blood coagulation tests on all women during pregnancy and observed increased maternal plasma fibrinogen concentrations during pregnancy, gradual decrease of maternal platelets during pregnancy with no change in prothrombin time and aPTT with advance gestation. They established normographs for pregnancy and constructed DIC score based on ROC curve analysis. Even in animal studies on mares who have peripartum haemorrhage as a recurring hazardous… showed a positive correlation between fibrinogen levels and late pregnancy and a negative correlation between fibrinogen levels and early postpartum. The shortening of PT recorded near parturition along with increase in platelets and fibrinogen at foaling may reflect a physiological hyper-coagulation state to constrain heavy bleeding enhancing mares chance of survival[18].

Conclusion

In conclusion, our results indicate normal prothrombin time, activated partial thromboplastin time, thrombin time assesing the extrinsic, intrinsic and common coagulation pathways respectively throughout pregnancy. However D-dimer an assay of fibrin degradation products showed higher values during the first and the third trimester of pregnancy. Larger studies are needed to confirm the findings of present study.

Compliance with Ethical Requirements and Conflict of Interest : All procedures followed were in accordance with the Ethical Standard of the Responsible Committee on Human Experimentation and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from the patient. The study was conducted in department of Obstetrics and Gynaecology in collaboration with department of Lab Medicine. The work is designed and was performed after taking ethical clearance from the Institutional ethical committee. All the authors declare no conflict of interest with any pharmaceutical company or hospital. The authors have no financial disclosures to make.

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Case Report

Unusual presentation of idiopathic long segment small bowel intussusception in an adult — a case report

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Adult intussusception is rare. It requires high index of suspicion. Early diagnosis and management is necessary to avoid bowel ischemia and further operative complications. Small bowel intussusceptions may be difficult to diagnose preoperatively, with a consequent increase in ischaemic complications, secondary to delayed surgery. Ultrasound may prove helpful in diagnosing cases with palpable lump. Abdominal CT scan has been reported to be the most useful imaging modality in case of intussusception. Here we present a case of an adult with an intussusception involving almost entire small bowel.

[*J Indian Med Assoc* 2019; **117:** 22-3]

Key words **: Small bowel intussusception, Ultrasound, CT scan.**

- **Adult intussusception requires high index of suspicion.**
- **Though ultrasound is first line investigation, CT is of value in complex intra-abdominal masses or if there is complicated clinical picture.**
- **Small-bowel intussusceptions should be reduced before resection whenever possible if the underlying etiology is suspected to be idiopathic.**

Here we present a case of 26-year-old man with a long segment jejunoileal intussusception involving almost whole small bowel. The ultrasound and CT features are highlighted with due emphasis on the importance of early management.

Case Report

A 26-year-old male was admitted with 3 days history of abdominal pain, lump in abdomen and bilious vomiting. On physical examination a palpable rounded lump was noted centrally.

Plain X-ray abdomen showed a central, rounded abdominal mass and provisional diagnosis of mesenteric cyst was made (Fig 1).

Fig 1 — Scout film of abdomen demonstrating a large, rounded central abdominal mass (arrows)

USG was done and classical bull's eye lesions were noted involving long segment of bowel as demonstrated (Fig 2). CT scan was done immediately after USG to look for the extent of the involved bowel segment. The CT images demonstrated an enormous small bowel intussusception, involving nearly whole of the jejunum and ileum (Figs 3,4). There was no evidence of colon involvement. Eccentric area of intussuscepted mesenteric fat and mesenteric vessels also noted (Figs 3,4). The images showed typical target lesions in cross section.

Surgery performed thereafter confirmed CT findings. Involved small bowel segment measured about 3.5 feet starting from about 1.5 feet from duodenojejunal flexure. Then the intussusception was reduced. No pathological lead point was noted on table, though a specimen is sent for histopathology. The bowel had doubtful viability. Resection was not done and abdomen was closed. At day 7

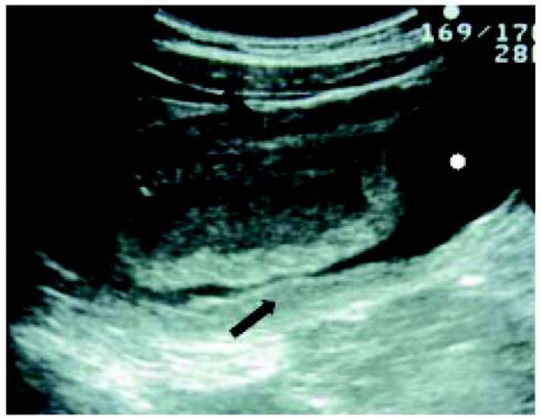

Fig 2 — Ultrasound abdomen showing oedematous outer bowel loop (arrows) with fluid between two bowel loops (asterisk)

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Fig 3 — Axial CT image showing layers of fat trapped within the intussusceptum (arrows)

of surgery bilious leak was noted through drain. Again laparotomy was done and about 1 feet of non-viable bowel resected and reanastomosis done. Four weeks after his admission, the patient was finally discharged from hospital. Histopathology showed ischemic bowel only. Patient progressed well after discharge.

Discussion

In adults, intussusception is exceedingly rare, representing less than 5% of all intestinal obstructions. In contrast to the pediatric population, about 90% of intussusceptions in adults are associated with a pathologic lesion, or lead point, in the bowel wall. Recent studies show that 30% of small-bowel intussusceptions are caused by malignancy. The remainder of instances are caused by benign lesions (60%)[1] or are idiopathic (10%). Most colonic intussusceptions, however, are caused by malignancy (60%)[2].

A <3 cm doughnut-like lesion found in the left abdomen or paraumbilical region with ultrasound is suspicious for small bowel intussusception (SBI). An intussusception length >3.5cm has been reported as a sensitive and specific predictor of those SBIs that require surgical intervention, as compared to those that will resolve spontaneously[3,4]. The diagnosis of SBI can confidently be made with CT, due to their virtual pathognomic appearance: they are seen as a complex soft tissue mass, with a target, layered, sausage-shape or reniform configuration[5,6]. An eccentric area of fat density within the mass represents intussuscepted mesenteric fat, and the mesenteric vessels themselves may be visible within this fat layer. The superior anatomic detail of CT over ultrasound, mean that ensuing complications such as mesenteric thrombosis or small bowel volvulus may also be easily recognised. Whilst ultrasound remains the primary imaging modality used both to diagnose intussusception and for the evaluation of an abdominal mass lesion, the clinical condition of the patient (as in this case), may dictate that CT be sometimes used as a first-line investigation.

The standard treatment of intussusception in adults is surgical, without prior nonoperative attempts at reduction. Because of the high incidence of malignancy, especially in colonic intussusceptions, a segmental bowel resection without prior intraoperative reduction is generally undertaken. However, an alternative approach may be useful for patients with "pediatric-type" idiopathic small-bowel intussusception[2]. In these patients, a surgical, preferably laparoscopic, exploration may be helpful. In the absence of inflammation or ischemia, a cautious attempt at surgical reduction may be justified. The finding of a healthy small bowel with no underlying pathology will prevent the need for a bowel resection.

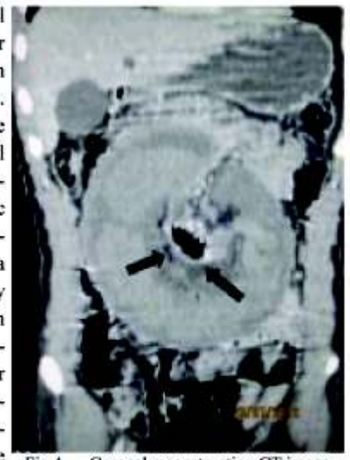

Fig 4 — Coronal reconstruction CT image showing extensive small bowel intussusception. Mesentery along with fat layers is seen clearly (arrows)

Conclusion

Adult intussusception is an infrequent problem. It is important to have a high index of suspicion[7]. The diagnosis of this condition can be difficult as symptoms are often non-specific. In this scenario CT may have a significant diagnostic advantage over ultrasound. In contrast to its pediatric counterpart, the treatment almost always is surgical. Reduction can be attempted in small bowel intussusception if the segment involved is viable or malignancy is not suspected.

Conflicts of interest : NIL

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Case Report

Dermatofibrosarcoma protuberans of the vulva — a case report

Hem Prabha Gupta[1], Shalini Dwivedi[2]

A 34 years lady presented with swelling over Rt Labia Majora since last three months which was gradually increasing, painless, not adherent to deeper tissue. Wide excision of the mass was done & histopathological report was Dermatofibro Sarcoma Protuberance Vulva. Which is extremely rare with low malignant potential. The patient is doing well after operation.

[*J Indian Med Assoc* 2019; **117**: 24 & 26]

Key words **: Dermatofibro Sarcoma Vulva, Excision, MoH's Operation.**

Dermatofibro Sarcoma Protuberance of Vulva is a very rare tumour. It occurs in adults in their thirties. The incidence is 0.8-4.5/ million per year[1]. In 2 to 5% of cases it can metastasise with low malignant potential. Although it behaves like benign Tumour its recurrence is very common. As such this tumour is found on the Torso. But it can be found on the arms, legs, head & neck also & vulva is a rare site.

Case Report

Mrs X a 34 years old female, P3+0 with two living issue visited Gynae OPD at Era's Medical College and Hospital, Lucknow on 21st November 2012 with chief complaints of swelling over the right Labia Majora since last three months. It was painless and was gradually increasing in size.

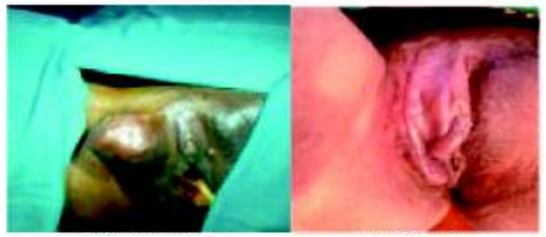
Past history — She had similar swelling over the mons Pubis 5 years ago, for which surgical excision was done but she did not have the histopathological report.

The patient was hospitalized. The patient was of average built and nutrition. There was no lymphadenopathy, systemic examination revealed no abnormality.

Local examination — A big transverse surgical scar was present over the Mons Pubis healed by secondary intention. A well circumscribed swelling of 3x2 inches was present on the upper part of the right Labia Majora, the colour of the skin overlying the swelling was normal. It was firm and mobile from side with regular well defined margins. The swelling was not fixed to deeper structures. On vaginal examination and per speculum examination cervix and uterus were normal.

Investigations — All investigations including Hb% viral markers, blood sugar levels, X-ray chest, and complete urine examination were normal.

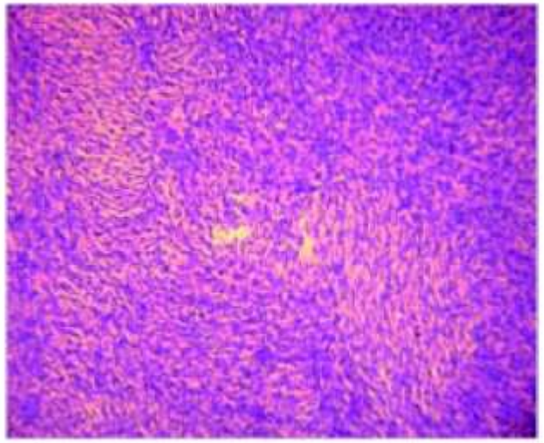
Management — Wide excision of the swelling was done under spinal anaesthesia on 29th November 2012. Postoperative recovery was uneventful. Histopathology report confirmed the diagnosis of DERMATOFIBROSARCOMA PROTUBERANS. After six months she came for check up she was doing well without any problem, on next subsequent check ups. She had no problem.



Before Operation **After Operation**

Discussion

DFSP of the Vulva is extremely rare and Uncommon[6]. It is a low grade Sarcoma of the Dermis, Clinically appears encapsulated but microscopically has Tumour projections well away from the central nodule. In 1981 Barnhill DR & Boling R *et al* reported it as a fifth reported case of this Neoplasm[5]. In 1981 MH Saltan reported the case with a comment that is has not been proviously reported in Vulva[6]. According to Marcia MD *et al*, it is seldom seen in Vulva and only 29 cases have been reported[7] & in their institution 13 cases were reported in 29 years (1978-2007).



Histopathological picture : Showing Storiform Pattern

(Continued on page 26)

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Case Report

Jatropha curcas Poisoning

Newton Luiz[1]

Five persons including two adults presented with vomiting and abdominal pain within an hour of ingesting Jatropha seeds. They underwent gastric lavage and received IV fluids, and all recovered rapidly. Euphorbol esters are the major toxin. Fatality has not been reported in human beings, but is common in animals.

[*J Indian Med Assoc* 2019; **117**: 25-6]

Key words **: Jatropha curcas, poisoning, bio-fuel.**

This report of 3 children and 2 adults with Jatropha curcas poisoning discusses recent information on the toxicity of Jatropha. As this shrub is today being actively cultivated and investigated as a possible source of bio-fuel, the incidence of accidental poisoning is likely to increase in the future.

Case Report

Three children aged 3, 5 and 8 years and an adult aged 22 were brought to the hospital with the complaint of vomiting and abdominal pain after ingesting some seeds. The adult discovered that the seeds tasted sweet, so she ate about ten of them and also gave a few seeds (number unknown) to the neighbouring children. They all started vomiting within an hour.

On admission all four of them had vomiting and two had abdominal pain. The 8 year old child had loose stools too, and her vomiting was severe, and she was dehydrated and looked toxic. The others looked well. None of them had fever. The general examination was normal; the pupils were normal in size.

All of them underwent gastric lavage, which brought out partially digested seeds. IV fluids were administered to all, though only the 8 year old girl had significant dehydration. Four hours later all of them had dinner, though this resulted in mild vomiting in the 8 year old. The next morning all of them were totally asymptomatic, and were discharged.

A 35 year old woman confessed that she too had eaten a seed, and she was kept under observation but did not undergo stomach wash as she was totally asymptomatic.

A botanist examined the leaves, fruit and seeds, and identified it as Jatropha curcas.

Discussion

This ubiquitous shrub is known as purging nut in English, Jungli erandi in Hindi and Kammatti in Malayalam. It has smooth green multi-lobed leaves and small yellow flowers. The green ovoid fruit becomes an attractive yellow on ripening; it has three black seeds (Fig 1). The seeds, leaves and latex are used for a wide variety of medical purposes in traditional systems of medicine the world over[1]; in Ayurveda the seeds are used for their purgative effect to manage constipation, haemorrhoids and worms.

The seeds are rich in oil, which can be extracted and added to diesel or used by itself as fuel, and its economic viability as a possible bio-fuel of the future is being investigated in India and some African countries. Jatropha may be an ideal candidate for bio-fuel as it is easy to grow even on wasteland, is drought- and pest-resistant, and is not a food crop (unlike corn and sugarcane). If it proves feasible, large-scale commercial cultivation may increase the incidence of accidental poisoning in the future. Profitability can be increased if the seedcake residue after oil extraction can be detoxified and used as an animal or human feed: this consideration has led to intensive research on its toxicity.

Fig 1— (A) Leaves of Jatropha curcas. (B) green ovoid fruit. (C) black seeds in the palm of the hand

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Contrary to most reports in the medical literature, the most potent toxins are its phorbol esters; Jatropha curcas strains that are low in them are safe for human consumption despite the presence of other toxins like curcin[2,3]. Not only do phorbol esters cause gastrointestinal symptoms but they stimulate Protein Kinase C (PKC). PKC is involved in signal transduction in most cells, and this brings about a wide range of biochemical and cellular effects[4], resulting in widespread tissue damage and lung hemorrhage, often leading to death in animals. Curcin, a ribosome-inactivating protein which was formerly believed to be highly toxic, is probably of little importance. Curcanoleic acid, a strong purgative found in the oil, is important for the immediate gastrointestinal toxicity. Ricin toxin is not present in Jatropha species.

Fatal poisoning is not reported, which is why Jatropha curcas poisoning is sparsely reported in medical journals[5-8] and in textbooks of toxicology and forensic medicine. Occasionally there may be severe vomiting, hemorrhagic diarrhoea and dehydration. Most case reports are similar to this one: mild-to-moderate vomiting and abdominal pain and loose stools occurring within an hour of ingestion, with response within hours to gastric lavage and correction of dehydration. However one should be cautious as poisoned animals manifest weight loss, glomerular sclerosis, myocardial and hepatic damage, lung hemorrhage etc. which may be fatal[4].

Unlike Jatropha curcas, Jatropha multifida has once been reported to cause miosis, raising confusion with organophosphorus poisoning[9].

As with all cases of accidental poisoning, cases involving adults are rare[5]. Accidental poisoning is usually caused by curiosity: in this case a branch of the tree was cut down, and the 22 year old picked up the ripe fruit and tasted the seeds, which tasted like almonds.

Management is symptomatic. Despite the vomiting, gastric lavage usually brings out additional undigested material. Dehydration should be corrected aggressively. Activated charcoal has been used. One should watch for systemic involvement. Prognosis is excellent.

Conflict of Interest : NIL

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(Continued from page 24)

This tumour is of intermediate grade of malignancy with tendency of local recurrence. It rarely metastasis[2] but management should be multidisciplinary. MOH's micrographic surgery is generally advocated to ensure precise margin control Survival rate ranges from 91-100% & local recurrence rate upto 20-49% have been reported[3]. Therefore follow up is recommended. It is not clear what causes this type of malignancy. It is thought that injury or trauma to the skin may be the predisposing factor. There is no evidence to suggest that it is hereditary. It occurs in all ages and races, more likely between the age 20-50 years. It results from new mutation that occurs in the body cell after conception and is found only in Tumor Cells. This type of genetic change is called somatic mutation and is not generally in herited. The general prognosis is excellent[4]. In the past, recurrence rate was high but with the introduction of MOH's operation recurrence has decreased. The cure rate is 98%, usually recurs in three years of treatment, so follow up during first three years is in 3-6 months and after three years annual check up is recommended life long. Because of Rarity this case is being reported , the patient is doing well after one & half years of surgery.

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Case Report

Giant cell tumor of patella — a case report

Atanu Mohanty[1], Satyajeet Ray[2]

Typically, giant cell tumor of the bone occurs at the end of a long bone, commonly the distal femur, proximal tibia and distal radius. Other sites are unusual and rare. We are presenting a rare case of giant cell tumor of the right patella which was confirmed by FNAC. The patient was treated with total patellectomy including a rim of normal tissue. Quadriceps mechanism was repaired.

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Key words **: Giant Cell Tumour, patella, total patellectomy.**

Giant cell tumor (GCT) is a tumor found most often in the ends of long bones and is essentially located in the epiphyseometaphyseal or epiphyseal equivalent portions of bone. It is a locally aggressive neoplasm, generally arising in adults between the ages of 20 and 40 Years. The patella is a rare site with a reported incidence of less than one percent, mostly in the form of case reports[1]. In this article, we report a case of GCT originating from the right patella which was diagnosed on Fine needle aspiration cytology (FNAC). Because of paucity of cases, the treatment guidelines for these tumors are not described and range from simple curettage to patellectomy. Recently, treatment of patellar giant cell tumor by patellectomy and patellar allograft has been described[2]. We present such a case which was treated with patellectomy with suturing of retinaculum to maintain the extensor mechanism.

Case Report

A twenty-five year old male presented to OPD with chief complaints of pain, swelling and restriction of movement of Right knee of four months duration with history of trivial injury. It was not associated with any other lumps, history of weight loss or similar episodes.

Examination **—** Physical examination revealed an averagely built male with a swelling over the anterior aspect of Right knee. It was tender to palpation, however there was no erythema or warmth. The swelling measured approximately 7cm×5cm×3cm and was firm to hard in consistency, non pitting ,non fluctuant, trans illumination negative and had no fluid thrill. Attempted motion of the knee was terminally painful and was associated with 20 of extension lag.

Investigations **—** Routine blood investigations performed were all within normal limits. Serum calcium, phosphorous and Alkaline phosphatise were within normal range.

Radiographs of the Right knee showed an expansile, lytic lesion replacing the entire patellar bone with only a rim of intact patellar cortex (Fig 1). FNAC of the swelling revealed Giant cell morphology with a provisional diagnosis of GCT of patella.

Management **—** In view of the near complete destruction of the bone patellectomy with repair of extensor apparatus was planned. A midline incision over knee was utilized to expose the patella with subsequent patellectomy and repair of retinaculum (Figs 2a&2b) and continuity of extensor apparatus. Post operatively the patient was kept in a cylinder cast for 6 weeks after which range of motion

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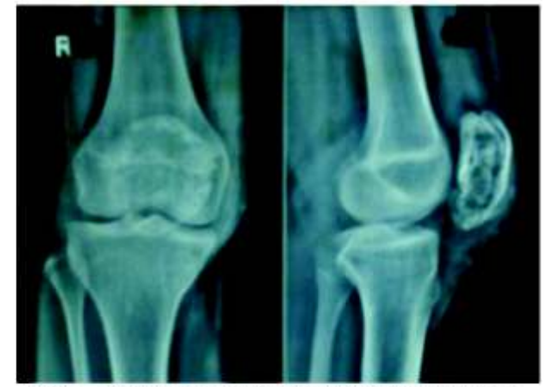


Fig 1 — AP & LAT view of Right knee showing an expansile, lytic lesion involving the entire patella

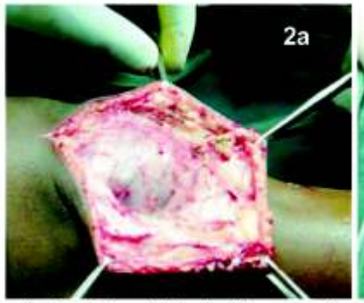
& strengthening exercises were done. Excised patella upon bisection (Fig 3) showed the patella to be replaced by brownish-tan tissue, which had a soft consistency with areas of hemorrhage. Excisional biopsy confirmed it to be a case of Giant cell Tumour. Recent follow up shows no further swelling or tenderness over knee and there is full range of movement without any mediolateral instability.

Discussion

Primary intraosseus lesions of the patella are rare. In a review, Mercuri and Casadei could collect only 384 cases of patellar tumors (primary and secondary) reported in literature during entire twentieth century. The majority (73%) of these tumors were benign (279 cases) with 126 Giant Cell tumors reported as the most frequent diagnosis[3].

Clinically, most of the cases of patellar neoplasms occur in middle aged males and present with anterior knee pain which is especially severe at night[1,4]. However, an underlying patellar neoplasm as a cause of anterior knee pain is an extremely rare occurrence and its diagnosis should be suspected in cases of resistant night pain and appropriate lateral radiographs of the knee should be taken[1]. X rays are very simple and effective means of diagnosis. CT and MRI further help to stage the tumor which helps in further management.

Grading and staging of GCT have focused on (i) Histological features: Benign, aggressive and malignant, the latter having clearly pleomorphic features with abundant mitotic figures and (ii) Surgi-



Figs 2a & 2b — Midline incision over Rt Knee with complete exposure and repair of Patellar retinaculum after patellectomy

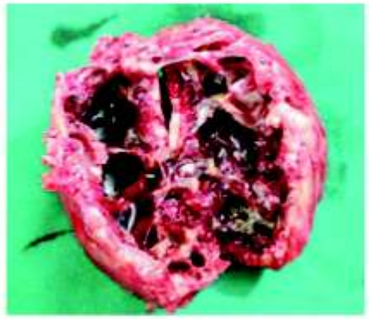


Fig 3 — Bisected specimen showing areas of Lysis with haemorrhage & Brownish tissue

cal staging: Clinically latent, active and aggressive.

Giant cells are ubiquitous in bone lesions. During histological examination, if particular attention is paid to the background stromal cells and the clinico radiological data are correlated, then establishing the diagnosis becomes easier. A differential diagnosis of aneurysmal bone cyst (ABC), browntumor, chondroblastoma, chondromyxoid fibroma (CMF), non-ossifying fibroma (NOF), and malignant fibrous histiocytoma can be considered on cytology.

Various modalities of treatment for GCT of patella are followed like curettage, alone or in conjunction with bone grafting or cement filling and patellectomy with or without patella prosthetic replacement[1,3]. Curettage alone is associated with risk of recurrence ranging from 40-60%, in comparison to curettage & bone cement (25%) and patellectomy (7%)[5].

As the patellar bone can be sacrificed without any significant morbidity vis a vis the complications of preserving it, Patellectomy with repair of Extensor apparatus is a viable option for the complete cure for Patellar GCT.

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Case Report

Schwannoma of the cervical vagus nerve mimicking glomus tumor on MRI : a case report

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Nerve sheath tumors arising from the cervical vagus nerve are extremely rare, and are of diagnostic challenge. We report A 14-year old male presented with swelling in the left side of neck for the past 6 months. FNAC revealed a vascular lesion, MRI scan showed a well circumscribed mass, 4 × 4 cm located in the lateral part of neck and was suggestive of a Glomus tumor. At surgery the swelling was found to be in close proximity with the internal jugular vein and common carotid artery and the vagus nerve on the left side. The encapsulated tumor was completely resected through a J-incision and it was found to be a benign schwannoma in pathology. Schwannoma are relatively rare tumor and even rarer in children. The incidence of such tumors and the management of our patients are discussed.

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Key words **: Schwannoma, Pediatrics, Histology, Surgery.**

The head and neck region is a source of swelling of a wide range of pathological types. The commonest cause of neck swelling in children is reactive lymphadenopathy associated with upper respiratory tract infections. However, other types of swellings such as branchial, sebaceous and thyroglossal cysts are regularly encountered. We report an unusual swelling in a 14 year old boy with Schwannoma of the cervical vagus nerve mimicking Glomus tumor on a MRI scan.

Case Report

A 14-year-old boy presented with a history of an asymptomatic swelling of the left side of neck since 6 months, which is slowly increasing in size. It was situated in the anterior triangle of the neck. The size at the time of admission was 4 x 4 cms. There was no history of hoarseness of voice, nasal regurgitation, syncopal attacks or associated pain. There was no history of trauma or fever. Examination revealed a firm; non pulsatile swelling that was mobile only in transverse plane. The carotids were palpable anterior to the swelling. FNAC revealed a vascular lesion, MRI scan showed a well circumscribed mass, 4 × 4 cm located in the lateral part of neck and was suggestive of a Glomus tumor (Fig 1), With Glomus tumor in mind the surgical procedure was planned.

The neck was explored by a J- incision along the upper part of neck (Fig 2), After dissection of carotids, Internal jugular vein, the tumor was found to arise from the left vagus nerve. The tumor was completely excised along with the sheath sacrificing the vagus nerve. Patient was discharged after 7 days. The histopathological examination of the specimen revealed schwannoma. Postoperatively the patient has hoarseness of voice and is on speech therapy.

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Fig 1 — MRI Scan of the neck showing the tumor

Discussion

Paragangliomas are rare tumors. Approximately 10% of them arise from the vagus nerve. Till June 2000, only 95 schwannoma has been reported in the literature, with the majority of being in patients between 30 and 60yrs of age[1,2]. Although neck swellings in children are common, the vast majorities are due to the reactive lymph nodes. Neurogenous tumors are relatively rare. In one reported series of pediatric neck masses, neurogenous tumors accounted for 2% of benign non-lymphadenomatons lesion. The commonest cause was sebaceous cysts (34%), followed by throglossal

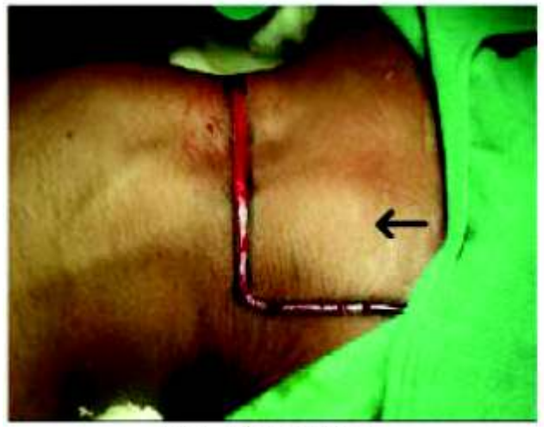

Fig 2 — Incision of the neck

cysts (13%), branchial remants (9%) and dermoid (9%)[3]. A review of documented cases suggests that approximately 10% of schwannoma are diagnosed in patients less than 21 years of age[4-6]. Schwannoma may found in any part of the body but tend to occur in the head and neck region and the flexor surfaces of the upper and lower extremities. Between 25 and 45% of all reported schwannoma are found in the head and neck region.

These sites include the parapharyngeal space, neck, Para nasal sinuses, nasal and oral cavities, face, scalp, intracranial cavity and larynx[7,8]. Reported cases of head and neck schwannoma in children include involvement in the nasopharynx and neck[9] and larynx[10]. The lateral side of the neck is the commonest site of extra cranial schwannoma. Cranial nerves and sympathetic chain give rise to tumors in the medial half of the neck. The vagus nerve is the most commonly involved cranial nerve. The nerve of origin can be identified in only approximately one quarter of cervical schwannoma.

A preoperative diagnosis may be made with some certainty based or a high index of suspicion from the history of painless, pulsatile

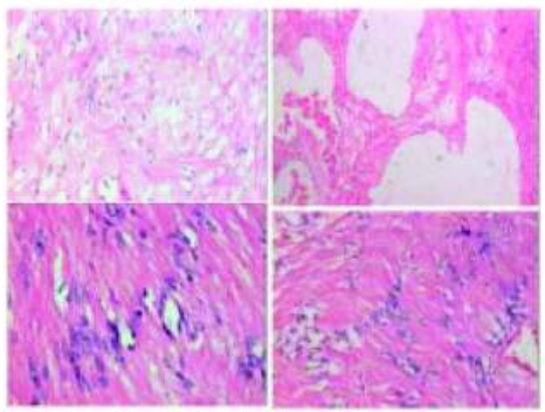

Fig 3 — Histopathlogical examination typically of schwannomas

swelling, characteristically mobile laterally but immobile vertically, reflecting its attachment to the vagus nerve. CT scan, MRI and angiography may obtain confirmation of the diagnosis. Incisional biopsy is unnecessary and contraindicated because of vascular nature of the lesion and the possibility of uncontrolled hemorrhage. It may also make removal of tumor mass difficult because of obliteration of tissue plane.

A schwannoma is a solitary and encapsulated tumor. Histologically, it exhibits two main patterns-Antoni A and Antoni B. Antoni A tissue is represented by a tendency towards palisading of the nuclei about a central mass of cytoplasm (Verocay bodies). In contrast, Antoni B tissue is a loosely arranged stroma in which the fibers and cells form no distinctive pattern. A mixed picture of both types can exist. Other typical features include necrosis, hemorrhage and cystic degeneration (Fig 3). Malignant change in the nerve sheath tumors in the head and neck is very rare.

Gross total resection remains the treatment of choice for these tumors. The capsule is gently and carefully dissected from the fascicles of the nerve. When it is necessary to debulk the tumor, the capsule is incised longitudinally to preserve the uninvolved fascicles. However as much as possible of the capsule should be removed to prevent recurrence. It the nerve or some of the fascicles cannot be salvaged, a split repair should be performed using the great auricular or sural nerve. In cases where it is not possible, vagus nerve is sacrificed along with the tumor. Hoarseness is nearly always present after resection and recovers in most cases. Other common complications include pharyngo-laryngeal anesthesia, aspiration and cranial nerves IX, XI and XII palsies, which may be transient or permanent.

Conclusion

Schwannomas of the head and neck are usually benign and slow growing tumors. They are most often diagnosed in adults but can also occur in children although not so often. Even in children, such tumors are relatively rare compared with other types of neck swellings. Surgical excision of schwannoma with or without sacrificing nerve results in complete cure with little likelihood of recurrence.

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Case Report

Ileal Tricho-phytobezoar a rare cause of intestinal obstruction : a case report

GN Vaghasiya[1], JP Dave[2], SG Parikh[3], VS Parmar[4]

A bezoar is a ball of swallowed foreign material that collects in the gastrointestinal tract and usually fails to passs through. Trichobezoar (hair) and phytobezoar (vegetable fibres) are the most frequent forms. Rarely even their combination have also been seen as tricophytobezoar which is in our case. Stomach is the commonest site of occurrence. However it may also occur in the small bowel. Intestinal obstruction due to trichophytobezoar is an extremely rare entity, which should also be kept in mind while considering various differential causes of obstruction. A female patient of 26 years of age presented with complains of pain in abdomen, vomiting, abdominal distension and constipation since 8 to 10 days. Clinically she had tachycardia, abdominal findings were suggestive of distension along with tenderness, and guarding. On emergency exploration she was found to have a single ileal intraluminal mass, mobile in nature, which was removed through enterotomy. This mass was than identified as Tricho-phytobezoar. She was also consulted and treated by a psychiatrist. Primary small-bowel bezoars themselves are very rare but must be kept in mind as a possible cause of small bowel obstruction.

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***Key* words : Tricho-phytobezoar, intestinal obstruction, endoscopy, laparotomy.**

Bezoar is a tightly packed collection of undigested material that is unable to exit the stomach, Most bezoars are of indigestible organic matter such as hair-trichobezoars; or vegetable and fruit the – phytobezoars; or a combination of both, but other rare substances has been also been described in literature[1]. Trichobezoars, commonly occur in patients with psychiatric disturbances who chew and swallow their own hair. Only 50% will have history of trichophagia. Trichobezoars have been described in literature and they comprise 55% of all bezoars[1,2]. In very rare cases the so called "Rapunzel Syndrome" occurs in which the hair extends through the pylorus into the small bowel causing symptoms and signs of partial or complete gastric outlet obstruction[3].

Small-bowel bezoars normally come from stomach, and primary small-bowel bezoars are very rare. They are seen only in patients with underlying small-bowel disease such as diverticula, strictures, or tumors. Primary small bowel bezoars almost always present as intestinal obstructions. Here we present a case of small bowel obstruction due ileal trichophytobezoar.

Case Report

A young female patient of 26 years of age, presented to the department of surgery with the complains of persistant abdominal pain, vomiting, constipation since 8 to 10 days. On admission her vitals were, pulse 110/min, BP-128/80mmhg. Her abdominal findings were suggestive of abdominal distention, guarding and rigidity.

Her routine blood investigations were normal. Standing abdomen X-rays were suggestive of multiple air fluid levels. Ultrasound report showed multiple dilated bowel loops.

So it was than planned to go for urgent laparotomy and exploration. On exploration, a single firm consistency bowel mass was palpated at about 20 to 25 cms proximal to ileoceacal junction, which was intraluminal, not adherent to the bowel wall or mucosa and also was freely mobile. Enterotomy was done and an approximately 12x5 cms of longitudinal mass was extracted which was found to be a tricho-phytobezoar. The enterotomy was closed with silk in two layers. Rest of the bowel and other abdominal organs were normal.

The patient was discharged uneventfully on 10th post operative day. She was referred to a psychiatrist who had than counseled her and also started antipsychotics before discharge. Patient than had regularly followed up in surgical OPD at an interval of 20 days for two months and at 1 month interval for the next four months during which she did not have any complains. She also had followed up in psychiatric OPD for her regular counseling which continued for six months.

Discussion

The origin of word "bezoar" derives either from the Arabic term "badzehr" or the Persian word "padzahr," both of which denote counter poison or antidote. This word was applied to a greenish, hard concretion (stone like) found in the fourth stomach of the Syrian goat[2,3]. The stone was felt to prevent poisoning and came to Europe as the bezoar stone, which was highly prized for its medicinal properties.

Trichobezoar (hairball) is a complication of trichotillomania that is recurrent hair pulling, and subsequent trichophagia or mouthing of the hair. Bezoars are foreign bodies in the lumen of the digestive tract, which increase in size over time by the accumulation of

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ingested non-absorbable food or fibers[4].

The age of occurrence of intestinal bezoars has been reported to range between 10 and 58 years old; the most dominant fraction of age is between 15 and 30 years old with 90% being females. About 10% of patients have shown psychiatric abnormalities or mental retardation. Intestinal bezoars are associated with symptoms like abdominal pain, vomiting and irregular bowel habbits. They might also occur with gastrointestinal bleeding and intestinal obstruction or perforation[2,4]. Primary small bowel bezoars without any associated gastric bezoars are uncommon. Decreased intestinal motility is the most quoted factor in intestinal bezoar formation. It is usually caused by a portion of the gastric trichobezoar which becomes detached to cause small or large bowel obstruction. In rare cases, it is caused by the bezoar itself; such is the profile of our patient. The most common sites of obstruction are the gastric outlet or duodenum where as obstruction of distal parts of the small bowel or the large bowel is extremely rare[1,2,7].

Eneterotomy done

Extraction of Bezoar

Closure of Enterotomy done

Bezoar specimen

Blood investigations may reveal iron deficiency anaemia. Examination of the hair content of stool may also be done but is rarely used. Radiography may suggest a calcified rim delineate the bezoar. In ultrasonography, the typical trichobezoar appears curvilinear with bright echogenic band that does not allow transmitting the ultrasound waves, which generate a shadow over the left upper quadrant. Both, contrast radiography and endoscopy of the upper gastrointestinal tract are the procedures of choice for establishing the diagnosis[5].

CT-scan is the most useful diagnostic tool in patients with bezoars because it reveals the localization of bowel obstruction. Recently, researchers have recommended magnetic resonance imaging to be good for the evaluation of small-bowel disease[6,8]. Upper endoscopy might also be used for endoscopic retrieval of proximal small trichobezoars[9].

The treatment consists of removing the mass by a single enterotomy or resection of the bowel if it is not feasible. It is mandatory to perform a thorough exploration of all the small intestine and the stomach searching for retained bezoars. Laparoscopy is considered to create fewer intraabdominal adhesions than open laparotomy. The psychiatric follow-up is essential to prevent recurrences.

Conclusion

Trichophytobezoars are a rare clinical entity. Primary small bowel bezoars occur meagerly. Intestinal obstruction due to bezoars is extremely rare but still an entity to be kept in mind. Various imaging modalities have been recommended for revealing the pathology. Apart from endoscopic retrieval for small bezoars the treatment consists of removing the mass using a single enterotomy or resection of the bowel if not feasible.

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Case Report

Unusual benign multicystic swelling in the neck : a case report

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Thyroid swellings rarely present as cystic masses in neck laterally. We present a rare case of multicystic swelling in the left supra-clavicular region of neck with no other thyrotoxic or pressure features but appeared to be malignant during surgery on gross examination, and turned to be a benign thyroid-cyst by histopathological examination. [*J Indian Med Assoc* 2019; **117:** 33-4]

Key words **: Multicystic, thyroid-cyst.**

Cystic neck masses appearing in the anterior or posterior triangles of the neck are usually benign. However, they may occasionally have a sinister origin and should be investigated rigorously[1].

Thyroid cysts most often result from cystic degeneration in an adenomatous nodule. The risk of malignancy is low but increases to 14% for mixed solid and cystic lesions (cysts larger than 3-4 cm). Most common type of malignant thyroid cyst is papillary thyroid carcinoma[2].

We report a case of multi-cystic swelling of thyroid origin in neck extending from left supraclavicular region to right side of neck which turned out to be true benign swelling.

Case Report

A 41-year-old female patient presented with painless swelling on left side of the neck for last 3 years, small in size to start in left supraclavicular region, and gradually increased to present size (8 × 6 cm) in last 6 months. Clinically swelling was evident on left side of neck only and swelling did not move with deglutition or protrusion of tongue, consistency was variable. No cervical lymphadenopathy and no features of toxicity and pressure effects were present. Neck and chest X-ray showed tracheal deviation to right side and foci of fine punctate calcification in neck in thyroid region. An ultrasound of her neck showed a large well-defined multicystic swelling. Fine Needle Aspiration Cytology of the swelling showed straw colored fluid and features suggestive of benign cystic lesion (Fig 1).

Patient was subjected for surgery under general anesthesia. Horizontal incision given over the swelling and flaps raised. Fluid in cyst was clear light brown in colour. Swelling found to be multicystic, constituting cysts of variable size. Some cysts were intercommunicating and some non-communicating. Swelling was found extending towards right side of the neck crossing and deviating the trachea. Swelling was adherent to external jugular vein, digastric muscle and to other surrounding structures. No intra thoracic extension was present. Total excision of the multicystic swelling was done.

Postoperative period was uneventful except mild voice change.

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On histopathological examination of specimen, thyroid tissue found in some sections, exhibiting adenomatous goiter with mild papillary hyperplasia, cystic change, fibrosis, hemorrhages (recent and old) and many areas of dystrophic calcification (Fig 2).

Fig 1 — Swelling present in left supra clavicular region of neck (Before surgery)

Discussion

Branchial cysts, dermoid cysts and epidermoid cysts are the most common benign neck cysts, sometimes oropharyngeal and tonsillar tumors can also present as metastatic cystic masses in the neck[3]. Presentation of thyroid tissue as a cystic mass in the lateral side of neck is rare[4]. Sometimes there can be central liquefaction of the lymph node metastasis from thyroid cancer or malignant transformation of the ectopic thyroid gland which results into formation of such cysts[5]. Ultrasonography is helpful in distinguishing such cysts into benign or malignant. Cysts having more solid composition, hypoechoic, micro-calcifications, irregular margins and increased intra-nodular vascularity are more likely to be malignant[6]. Nearly 40% of lymph node metastasis from papil-

Fig 2 — Specimen of multicystic swelling (partly solid, partly cystic). Cysts filled with brownish colour fluid, grey white in colour. Cut surface showing areas of hemorrhage & calcification

lary carcinoma of thyroid can undergo liquefactive degeneration and may present as benign cystic neck swelling[7]. Ultrasound guided FNAC and raised thyroglobulin levels of the aspirated fluid from such cysts can help in deciding the origin and presence of neoplasia in such cystic neck swellings[8].

Conclusion

Unusual presentation of thyroid malignancies like solitary cystic nodal mass or multi-cystic mass in neck must be considered. Ultrasound guided FNAC can help in differentiating benign from malignant cystic lesions of neck. Aspirated fluid thyroglobulin and thyroid transcription factor levels may help to differentiate cystic thyroid carcinomas from benign cystic lesions. In case of benign cystic swelling complete excision is the cure.

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Activities Report

IMA JDN Executive Commettee Meeting held at IMA HQs, New Delhi on 16-03-2019 in presence of Dr Santanu Sen, MP, Rajya Sabha & National President, IMA and Dr R V Asokan, Hony Secretary General, IMAHQs

IMA TB Poster for World TB Day was released by IMA MP State Branch at Jabalpur on 24/3/2019

IMA Sirsi Branch Organised IMA Solidarity day, Health Awareness activities, Free neonatal intensive care to needy neonates & Pulse polio programme

IMA Mysuru Branch organised CME, End TB Initiative Programme

IMA Bellary Branch organised CME, Oration, Celebrated Womens Day

IMA Chitradurga Br celebrated International women's day

IMA Mangaluru Branch arranged cricket tournament, Health camp, Family meet

IMA CULTURAL WING INAUGURATION by IMA Trissur Branch

IMA Raichur branch organized Swach Bharath Abhiyan, International Women's Day, Wealth is Health programme

IMA Kundapura Branch arranged CME & Beti Bachao Beti Padao, Women Heath, PC-PNDT Act programme

IMA Saharanpur Branch organised CME, Public health awareness campaign, Cricket Match, Table Tennis championship league, Annual sports etc

CME "Chest pain – Evaluation and Management" conducted by IMA Koppal Branch on 16-03-2019

Dr Santanu Sen, MP, Rajya Sabha & National President, IMA at Press conference on IMA End TB Initiative at IMA Bengal State on 28/03/2019

IMA Palakkad Branch Conducted CMEs, IMA END TB programme, World TB day, A Training programme on Lung Ultrasound and Ventilator management

IMA Vadakara Branch conducted International Women's Week, Poster Competition for Nursing and other Paramedical staff, A Karate demonstration, A free Cervical Cancer detection Camp, World Kidney Day, CME, World Down's Syndrome Day, World TB day, A Magic show, Measles Immunisation day

IMA Tellicherry Branch arranged CME, Mega Medical camp, Cardiology Camp, Motivation Class, Self Defense Session, International Womens Day, No Smoking

IMA Kottakkal branch conducted International Women's day, monthly CME, International day of happiness

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