J I M J

Volume 16 Number 1 January 2021
ISSN 1993-9698

Jahurul Islam Medical Journal

Jahurul Islam Medical College

Jahurul Islam Medical Journal

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Jahurul Islam Medical Journal

Vol. 16, No. 1, January 2021
Journal of Jahurul Islam Medical College
Bhagalpur, Bajitpur, Kishoregonj, Bangladesh

Editorial Board

Address of correspondence

Editor-in-chief, Jahurul Islam Medical Journal, Jahurul Islam Medical College,
Bhagalpur, Bajitpur, Kishoregonj, Bangladesh
Email: jimedj92@gmail.com

Editorial

Covid-19-Major complications & awareness

***Prof. Dipali Rani Pal, Prof. of Anatomy, JIMC**

* For correspondence*

The outbreak of Coronavirus disease 2019 (Covid-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been declared a Global pandemic by the World Health Organization & public health problem in almost all countries.[1,2]

By early January 2021, a total of more than 102577,980 confirmed cases and approximately 2219889 total deaths for Covid-19 had been reported globally by John HOPKINS University of medicine.

Because Covid-19 is a new disease, scientists are not sure about the effects month or years after the initial illness. Unfortunately there are no targeted drugs for treatment of SARS CoV-2 infection to date. Some supportive medical care, as recommended by National Institute of Health of the United States and China Center for Disease control and prevention which includes the use of antiviral, anticoagulant, antibacterial medications and supplemental oxygen therapy and mechanical ventilator support when needed.

Patients with Covid-19 disease exhibit with mild to moderate symptoms or severe symptoms. The decision to monitor a patient in the inpatient or outpatient setting made by on a case to case basis. The decision will depend on the clinical presentation, comorbidity, requirement for supportive care, potential risk factors for severe disease and ability of patient to self-isolate at home. Inpatient management includes supportive management of the most common complications of severe Covid-19: Pneumonia, acute respiratory distress syndrome, sepsis, septic shock, cardiomyopathy and arrhythmia, acute kidney injury and complications from prolong hospitalization, including secondary bacterial and fungal infection, thromboembolism, gastrointestinal bleeding.

Some patients with Covid-19 may have sign of hyper-coagulable state and be at increased risk for venous and arterial thrombosis of large and small vessels.[3, 4, 5]

Complication of Covid-19 disease differ from person to person, patients over 45 years and having comorbidities. Many patients admitted to hospital with Covid-19 have pre-existing disease & varying degrees of fatality. Coronavirus targets alveolar epithelial cell causes inflammation that can leads to fibrosis in several forms of interstitial lung disease.

Most people who develop Covid-19 recover within 2-6 weeks but some experiences long term symptoms. Researchers have found that this virus may cause similar effects to other coronaviruses such as SARS & MERS but there are key differences among them, as the 2020 study highlights. Although SARS-CoV-2 primarily affects lungs, several other organ systems including the urinary, cardiovascular, gastrointestinal, and neurological systems can also be affected.[6] This is particularly relevant for patients with severe symptoms, including those who required mechanical ventilation during their hospital stay. More than 50% of patients presented with residual chest imaging abnormalities 3 months after hospital discharge.[7]

More than a third of recovered patients develop fibrotic abnormalities. It has been found that 40% of patients with Covid-19 develop ARDS, and 20% of ARDS cases are severe. Cytokine storm caused by an abnormal immune mechanism may lead to initiation and promotion of pulmonary fibrosis. The resulting scar tissue can lead to long-term breathing problems. Use of steroids & anti-fibrotic drugs may reduce this long term breathing complications.

Because the symptoms of post-Covid syndrome are diverse and because this condition is so new and unique, all health care worker & front liner should dedicated to helping people manage post-Covid

syndrome. It's important to remember that most people who have Covid-19 recover quickly. But the potentially long-lasting problems from Covid-19 make it even more important to reduce the spread of the disease by following precautions such as wearing masks, maintain social distancing, avoiding crowds and keeping hands clean.

References

1. Li Q, Guan X, Wu P et al. Early transmission dynamics in wuhan, china, of novel coronavirus-infected pneumonia. N Engl J Med. 2020; 382(13):1199-1207.
2. Zhu N, Zhan D, Wang W et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl L Med. 2020; 382(8):727-733.
3. Tang N, Li D, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. J Thromb Haemost.2020 Feb 19; 18(4).
4. American Venous Forum. Considerations in prophylaxis and treatment of VTE in Covid-19 patients. 2020. Accessed April 2020 at https://www.veinforum.org/Covid-19.
5. Klok,FA;Kruip,MJHA; van der Meer NJM et al. Incidence of thrombotic complications in critically ill ICU patients with Covid-19, Thrombosis Research. 2020 Jul; 191:145-7.
6. Perico L, Benigni A, Casiraghi F, Ng LFP, Renia L, Remuzzi G. Immunity, endothelial injury and complement-induced coagulopathy in Covid-19. Nat Rev Nephrol. 2020; 17: 46-64.
7. Huang Y, Tan C, Wu J, et al. Impact of coronavirus disease 2019 on pulmonary function in early convalescence phase. Respir Res. 2020; 21:163.

Original Article

A study on Number of Occurrence of Chronic Kidney Disease Among the Young Patients in a Rural Tertiary Care Medical College Hospital, Kishoregonj

*Chowdhury MRA[1], Bhuiyan BU[2], Siddiqui MR[3], Hassan R[4], Kabir S[5], Amin ASMT[6]

1. *Dr. Md. Rashed Alam Chowdhury, Associate Professor, Dept. of Medicine, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj.
2. Prof. Dr. Bahar Uddin Bhuiyan, Professor and Head of Dept. of pathology, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj.
3. Dr. Md. Mahmudur Rahman Siddiqui, Associate Professor, Dept. of Medicine, Anwer Khan Modern Medical College Hospital.
4. Dr. Rakib Hassan, Assistant Registrar, Dept. of Medicine, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj.
5. Dr. Sazia Kabir. Medical Officer, Dept. of Medicine, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj.
6. Dr. ASM Towhid Amin. Medical Officer, Dept. of Medicine, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj.

Address of correspondence

Abstract

Background and objectives: *Chronic kidney disease (CKD), an important, chronic, noncommunicable disease is now one of the major public health problems in our country. Early detection of CKD is crucial to prevent its progression, and thereby, to potentially improve its outcome. Number of young patients with CKD is increasing day by day. Only a few studies are done in our country toassess the number of occurrence of CKD in young patients. This study was aimed to assess the number of occurrence of CKD in young patients.*

Materials and Methods: *Data were collected from 150 patients of CKD who presented to medicine and surgery outdoor, medicine and surgery indoor and dialysis department of Jahurul Islam Medical College Hospital, Kishoregonj from Jan 2019 to Dec 2019. Patients with CKD of age below 11 years were excluded. Patients of age 40 years and below 40 years are counted as young patient.They were clinically evaluated andunderwent relevant investigations including renal biopsy in indicated cases.*

Results: *In this study, there was an overall male preponderance (64.67%) with age range of 51-60 years (21.33%). Most common symptoms of presentation were related to gastrointestinal disturbances, breathlessness, easy fatigability, and urinary disturbances. Pallor, pedal edema, and facial puffiness were major clinical features. Small kidneys were seen in 65.33% of patients. 90 % of patients had proteinuria. 80% patients were presented in stage IV and stage V CKD. In this study, 30.67% of patients with CKD were found young(age 40 years and below 40 years).*

Conclusion: *It is concluded that number of young patients with CKD is alarming and increasing day by day that requires renal replacement therapy like dialysis in most of the cases. We have to take preventive measures to reduce CKD in young patients. Further study should be done in different area of our country to find out the cause of CKD in young patients.*

Key words: *Chronic kidney disease, young patients.*

Received: *25. 06. 2020*

Accepted: *20. 10. 2020*

Introduction

Chronic kidney disease (CKD) has become a major cause of morbidity and mortality in developing countries. 16-20% of our total populations are affected by chronic kidney disease and even in America; it affects upto 20 million of their total population.

The kidney disease outcomes quality initiative of National Kidney Foundation[1]defines CKD as either kidney damage or decreased glomerular filtration rate <60 mL/min/1.73 m2 for 3 or >3 months. Kidney damage is defined as pathological abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies. Kidney failure is defined as either (1) a level of glomerular filtration rate (GFR) to <15 mL/min/1.73 m2, which is accompanied in most cases by signs and symptoms of uremia, or (2) a need for initiation of kidney replacement therapy (dialysis or transplantation) for treatment for complications of decreased GFR, which would otherwise increase the risk of mortality and morbidity[2].

CKD is of diverse etiologylike diabetic nephropathy, hypertensive nephrosclerosis, chronic glomerulonephritis, chronic interstitial nephritis, chronic pyelonephritis, SLE, Prolonged use of NSAIDs, obstructive uropathy, renovascular, genetic mediated. A comprehensive understanding of the prevalence of CKD and its risk factors is, therefore,necessary in different people from different areas.

Patients with CKD stage III B or lower (GFR ≥30 mL/min) generally are asymptomatic and do not experience clinically evident disturbances in water or electrolyte balance or endocrine or metabolic derangements. In general, these disturbances clinically manifest with CKD stages IV and V (GFR <30 mL/min).

Materials & Methods

A prospective study of 150 patients of age more than 10 years with chronic kidney disease was undertaken after ethical clearance and with informed consent at Jahurul Islam Medical College Hospital, Kishoregonj from January 2019 to December 2019. Patients with age <11 years and with acute kidney injury were excluded. Patients of age 40 years and below 40 years are counted as young patient. After obtaining a detailed history, general physical examination, systemic examination, patients were subjected to relevant investigations. Random blood sugar, blood urea, serum creatinine, complete blood picture, serum electrolytes, complete urine examination, serum calcium, phosphate, total proteins, albumin, ultrasound of abdomen, hepatitis B surface antigen (HBsAg), hepatitis C virus (HCV), chest X-ray, electrocardiography and renal biopsy were done wherever indicated. Creatinine clearance (CrCl) can be calculated using Cockcroft–Gault formla[3] and modification of diet in renal disease study formula[3]. In this study, Cockcroft–Gault formula is used for calculating creatinine clearance. Antinuclear antibodies (ANA), double stranded DNA antibody levels, serum complement levels were performed in suspected patients. Renal biopsy was performed in few patients in outside institutions and was sent for analysis to outside lab in view of unavailability of immunofluorescence and other stains in our institution.

Qualitative data were expressed in the form of numbers and percentages. All calculations were carried out using a standard statistical package (SPSS version 19, Inc. in Chicago, USA).

Result

A total of 150 patients fulfilling inclusion criteria were studied over a period of 1year. In this study, there was an overall male preponderance (64.67%) with age range of 51-60 years (21.33%). In this study, 30.67% of patients with CKD were found young (age 40 years and below 40 years). (Table-1 & 2).

Male female ratio was 1.8:1 showing males affected more than females. (Gastrointestinal tract disturbances like nausea, vomiting, abdominal pain, constipation etc. (83.33%), breathlessness (76.67%), easy fatigability (73.33%), oliguria (80%) and nocturia (45.33%) were the most common symptoms of presentation. Among signs of chronic kidney disease, pallor (93.33%) was found in majority followed by pedal edema (90%), facial puffiness (65.33%), pulmonary edema (73.33%). (Table-3).

Anemia was noted in 93.33% of subjects with hemoglobin less than10 (g/dL). Uremia was noted in 90% of patients. Serum creatinine was >3 mg/dL in 100% patients. Complete urine analysis showed proteinuria in 90%. RBC and RBC cast were found in 46.67% of the patients. Hyperglycemia was found in 58.67% patients. Hyperphosphatemia was found in 53.33% patients. Hyperkalemia was found in 78.67% patients. Hypocalcemia was noted in 74% patients. Small sized kidneys were present in 65.33% of patients, large size in 29.33% based on ultrasonography. (Table-4).

Based on Creatinine Clearance rate, most of the patients were in stage IV (32.67%) and stage V (54.67%) of CKD. (Table-5).

Table-1: Age distribution of patients with CKD (n= 150).

Age	Total number of patients	Male	Female	Percentage (%)
11-20	06	04	02	04%
21-30	18	11	07	12%
31-40	22	15	07	14.67%
41-50	25	17	08	16.67%
51-60	32	21	11	21.33%
61-70	26	16	10	17.33%
71-80	13	08	05	08.67%
>80	08	05	03	05.33%
Total	**150**	**97**	**53**	**100%**

Table-2: Sex distribution of patients with CKD (n= 150).

Sex	Total number of patients	Percentage (%)
Male	97	64.67%
Female	53	35.33%
Total	**150**	**100%**

Table-3: Clinical features of patients with CKD (n= 150).

Clinical features	Number of patients	Percentage(%)
Pallor	140	93.33%
GI symptoms	125	83.33%
Breathlessness	115	76.67%
Easy Fatigability	110	73.33%
Oliguria	120	80%
Facial puffiness	95	63.33%
Nocturia	68	45.33%
Edema	135	90%
Features of pulmonary edema	110	73.33%

Table-4: Investigations findings of patients with CKD (n=150).

Investigations	Number of patients	Percentage (%)
Anaemia (Hb% < 10gm/dl)	140	93.33%
Hyperkalemia (K^+> 5.3mEq/L)	118	78.67%
Hypocalcemia (Ca^{++}< 8.5 mg/dl)	111	74%
Hyperphosphatemia (PO_4^-> 4.7 mg/dl)	80	53.33%
Hyperglycemia (RBS > 11.1 mmol/l)	88	58.67%
Uraemia (Urea >50 mg/dl)	135	90%
Creatinine>3 mg/dl	150	100%
Proteinuria (urine protein + and more)	135	90%
RBC and RBC cast in urine	70	46.67%
USG KUB (small kidney)	98	65.33%
USG KUB (large kidney)	44	29.33%
CXR P/A View- Pulmonary oedema	82	54.67%

Table-5: Stages of patients with CKD (n =150).

Stages	CrClrate	Number of patients	Percentage(%)
Stage-I	> 90 mL/min/1.73 m2	0	0%
Stage-II	60-89 mL/min/1.73 m2	3	2%
Stage-IIIA	45-59 mL/min/1.73 m2	7	4.66%
Stage-IIIB	30-44 mL/min/1.73 m2	9	6%
Stage-IV	15-29 mL/min/1.73 m2	49	32.67%
Stage-V	< 15 mL/min/1.73 m2	82	54.67%
	Total	**150**	**100%**

Discussion

The present study was done over a period of 1year, included 150 patients of > 10 years of age with CKD. Patients were assessed clinically and relevant investigations were done. In this study, 30.67% of patients with CKD were found young (age 40 years and below 40 years). This occurrence of CKD in young patients is very much alarming. Fouad M et al. observed that 6.5% of young obese patients had CKD in their study in Eypt[4].

United States Renal Data System 2004 annual data report revealed that the incidence rate of ESRD is higher for males with 409/million population compared to 276 for females[1]. Varma and Raman conducted a cross-sectional study that showed predominance in males (66.04%) than females (33.96%)[5]. In this study, majority of affected were male (64.67%). Rajapurkar

and Dabhihas observed CKD had a higher frequency in males, whereas those with CKD of unknown etiology were younger and had more females[6]. Rajput etal.found male (54%) predominance in their study[7].

Rajapurkar and Dabhi observed that in CKD of unknown etiology, the majority were in stage V. L.M. Lou Arnal et al. found 18.8% patient who presented in stage 3 A CKD[8]. Bingcao Wu et al. found 53% patients presented in stage 3 A and 23.8% patients presented in stage 4 CKD[9]. In our study, we found that majority (54.67%) of the patients were presented in stage V.

Conclusion

Chronic kidney disease is a worldwide public health problem, both for the number of patients and cost of treatment involved. Globally, CKD is the 12th cause of death and the 17th cause of disability, respectively[10]. Number of young patients with CKD is increasing day by day that requires renal replacement therapy like dialysis in most of the cases. We have to take preventive measures to reduce CKD in young patients. Further study should be done in different area of our country to find out the cause of CKD in young patients and early interventions that can retard the progression to CKD.

References

1. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: Evaluation, classification, and stratification. Am J Kidney Dis 2002;39: S1-266.
2. K/DOQI Clinical Practice Guidelines on Hypertension and Antihypertensive Agents in ChronicKidney Disease. Available from: http://www.kidney.org/professionals/kdoqi/guidelines_bp/ guide_2.htm. [Last accessed on 2013 Oct 10].
3. Stevens LA, Greene T, Kusek JW. Simplified equation to predict glomerular filtration rate from serum creatinine. J Am SocNephrol 2000;11:A828.
4. Fouad M et al. Prevalence of obesity and risk factors of CKD among young adults in Egypt; Indian journal of nephrology Nov 2016; vol-26, issue-6:413-18.
5. Varma PP, Raman DK. Prevalence of early stages of chronic kidney disease in apparently healthy central government employees in India. Nephrol Dial Transplant 2010;25:3011-7.
6. Rajapurkar M, Dabhi M. Burden of disease-Prevalence and incidence of renal disease in India. ClinNephrol 2010;74Suppl 1:S9-12.
7. Rajput et al. Prevalence of CKD in type 2 DM patients; START India study. J Diabetes Metab Feb 2017; 8: 722.
8. L.M. Lou Arnal et al. CKD in patients with DM2 treated in primary care. Nefrologia May 2010; 30(5): 552-6.
9. Bingcao Wu et al. Understanding CKD among patients T2DM: Prevalence, temporal trends and treatment pattern- NAHNES 2007-2012. BMJ Open Diabetes and Care Feb 2016;4:e000154.
10. Veerappan I, Abraham G. Chronic kidney disease: Current status, challenges and management in India. Ch. 130, Sec. 17:apiindia. org/medicine_update_2013. p. 593-7.

Original Article

Role of Color Doppler Indices in Diagnosis of Ovarian Tumor in a non-invasive way

Paul P [1], Talukder S [2], Sangma MA [3], Saha PL [4] , Sarna IZ [5].

1. **Dr. Pratima Paul, Assistant Professor, Dept. of Radiology and Imaging, Jahurul Islam Medical College & Hospital.*
2. *Dr. Shaurav Talukder, Assistant Professor, Dept. of Anaesthesiology and ICU, Jahurul Islam Medical College & Hospital.*
3. *Dr. Mousumi Anuradha Sangma, Junior Consultant, Dept. of Radiology and Imaging, Mymensingh Medical College and Hospital.*
4. *Dr. Panna Lal Saha, Medical Officer, Dept. of Radiology and Imaging, Mymensingh Medical College and Hospital.*
5. *Dr. Israt Zahan Sarna, Medical Officer, Physical Medicine, Mymensingh Medical College and Hospital.*

****Address of correspondence***

Abstract

Background: *Most cases of epithelial ovarian tumor are detected at late stages because of late onset of symptoms and results poor outcome. However, when epithelial ovarian cancer is detected with the disease confined to the ovary the prognosis is favorable.*

Objective: *To assess the blood flow characteristics using Color Doppler indices in diagnosis of ovarian tumor.*

Methods: *A descriptive cross-sectional type of observational study was carried out from January 2015 to December 2016 on purposively selected 43 patients with suspected ovarian tumor in the Radiology and Imaging Department of Mymensingh Medical College Hospital, Bangladesh. The blood flow characteristics was assessed using Color Doppler indices to diagnose ovarian tumor in a non-invasive method. The Color Doppler indices for this study included Resistance Index (RI) and Pulsatility Index (PI).*

Results: *Resistance Index (RI) revealed 19(44.20%) benign tumors and 24(55.80%) malignant tumors. Pulsatility Index (PI) revealed 14(32.56%) benign tumors and 29(67.44%) malignant tumors. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of Resistance Index (RI) in diagnosis of ovarian tumor were 91.67%, 89.47%, 91.67%, 89.47% and 90.69% respectively with cut-off value ≤0.5 for malignancy. The sensitivity, specificity, PPV, NPV and accuracy of PI were 100%, 73.68%, 82.76%, 100% and 88.37% respectively with cut-off value ≤1.0 for malignancy.*

Conclusion: *The Color Doppler indices are useful non-invasive diagnostic tool for diagnosis of benign and malignant ovarian tumor.*

Keywords: *Ovarian tumor, Color Doppler Ultrasonography, Resistance Index (RI), Pulsatility Index (PI).*

Received: *23.08.2020*

Accepted: *10. 11. 2020*

Introduction

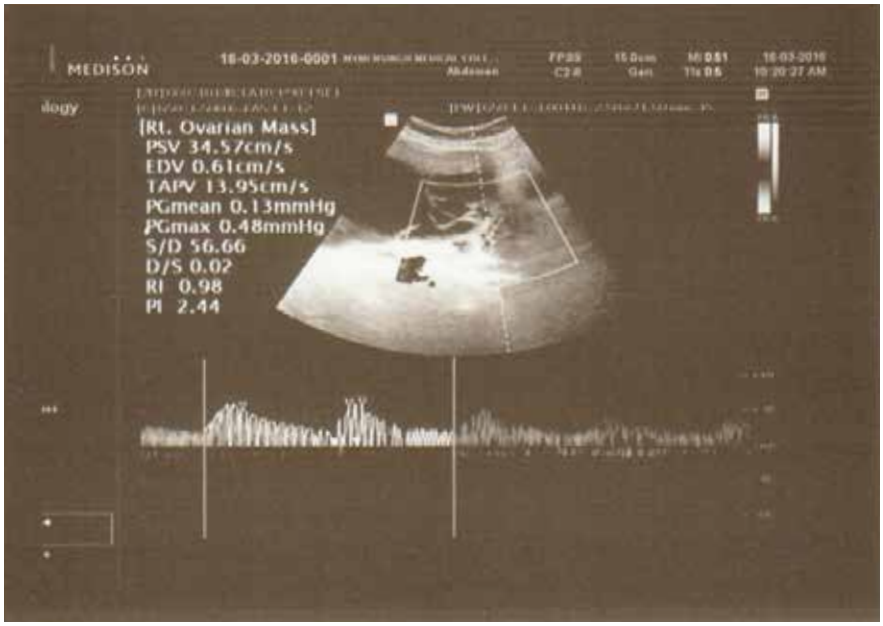
Ovarian cancer is the 4th leading cancer in Bangladesh and the prevalence in female is 3.3 percent [1].

Ovarian cancer ranks 5thin cancer deaths among women in America, accounting for more deaths than any other cancer of the female reproductive system. A woman's risk of getting ovarian cancer during her lifetime is about 1 in 78. Her lifetime chance of dying from ovarian cancer is about 1 in 108[2]. This cancer is the most frequent cause of death from gynecological malignancy in the Western world. Most cases of ovarian cancer presents at late stage due to its vague symptom, making early diagnosis very difficult and resulting high mortality rate[3]. Ovarian cancer is associated with an overall mortality of 75%, but can be cured in up to 90% of cases if diagnosed while still limited to the ovaries[4]. Majority of ovarian tumors are benign (73%) and 27% tumors are malignant[5]. Although the majority of adnexal masses are benign, the primary objective of the diagnostic evaluation is the exclusion or the diagnosis of malignancy[4]. Correct characterization of adnexal masses is important for optimal patient management. Masses felt to be benign can be managed expectantly or with minimal-access surgery. Malignant pathology will require referral to an appropriately trained gynecological oncologist[5]. Current methods to differentiate benign from malignant ovarian tumors (eg, physical examination, chemical markers such as CA-125, and gray-scale ultrasound) have fallen short of expectations. In a patient with an ovarian tumor, a new and better technique for accurate differentiation of malignant and benign disease would reduce unnecessary anxiety and improve triage of appropriate ovarian tumors to a gynecologic oncologist[6]. Among all the diagnostic modalities of ovarian tumor, Color Doppler ultrasonography has become more popular because of its availability, non-invasiveness and real time monitoring. Color Doppler ultrasonography can be done trans abdominally without causing discomfort to the patient and has no known radiation hazard. Now a days Color Doppler ultrasonography is a well-developed diagnostic modality in diagnosis of ovarian tumor in western countries. Color Doppler ultrasonography is named after Austrian physicist Johann Christian Doppler, who described Doppler Effect in 1842.The application of color blood-flow imaging, is very helpful in the detection of adnexal malignancy because of the presence of neovascularization in malignant tumors. Since these newly formed vessels are devoid of the muscular layer, the downstream resistance measured by color flow indices such as Resistance Index (RI) and Pulsatility Index (PI) is low and can be eventually used to predict ovarian malignancy. The Doppler signal can be investigated using spectral analysis, allowing waveform to be displayed and blood velocity to be measured. Doppler shift signal obtained from flowing blood contains a range of frequencies and these change of frequencies make signals that produce color image on screen of USG machine. Doppler Effect is due to Doppler shift and it is defined as apparent change in received frequency due to relative motion between a sound source and sound receiver. If source moves toward receiver, frequency increases and if source moves away from receiver, frequency decreases. Images of blood flow as well as direction of blood flow can be obtained by Color Doppler ultrasonography. Color Doppler ultrasonography is angle dependent and angle between beam and vessel lumen should be within 60 degree[7]. Early detection of ovarian tumor is so important that lots of research works were carried out worldwide on Color Doppler ultrasonography, to diagnose ovarian tumor as Color Doppler ultrasonography showed both high sensitivity and specificity in several studies in distinguishing benign from malignant ovarian tumors[8,9,10]. Color Doppler indices used in this study included Resistance Index (RI) and Pulsatility Index (PI). Resistance Index (RI) is defined as the ratio of the difference between the peak systolic and end diastolic velocity to the peak systolic velocity. It is the measurement of vascular bed resistance[7]. The resistance index assesses arterial waveforms where there is no reverse flow component and has the advantage that the value is independent of beam/vessel angle and only requires the measurement of two precisely defined points in the spectral display. The cut-off value for malignancy was ≤0.5 in this study[11]. Pulsatility Index (PI) is the measurement of diastolic run off into vascular bed. It is defined as the ratio of the difference between the peak systolic and end-diastolic velocity to the mean peak velocity[7].The cut-off value for malignancy was ≤1 in this study [3,10,11].

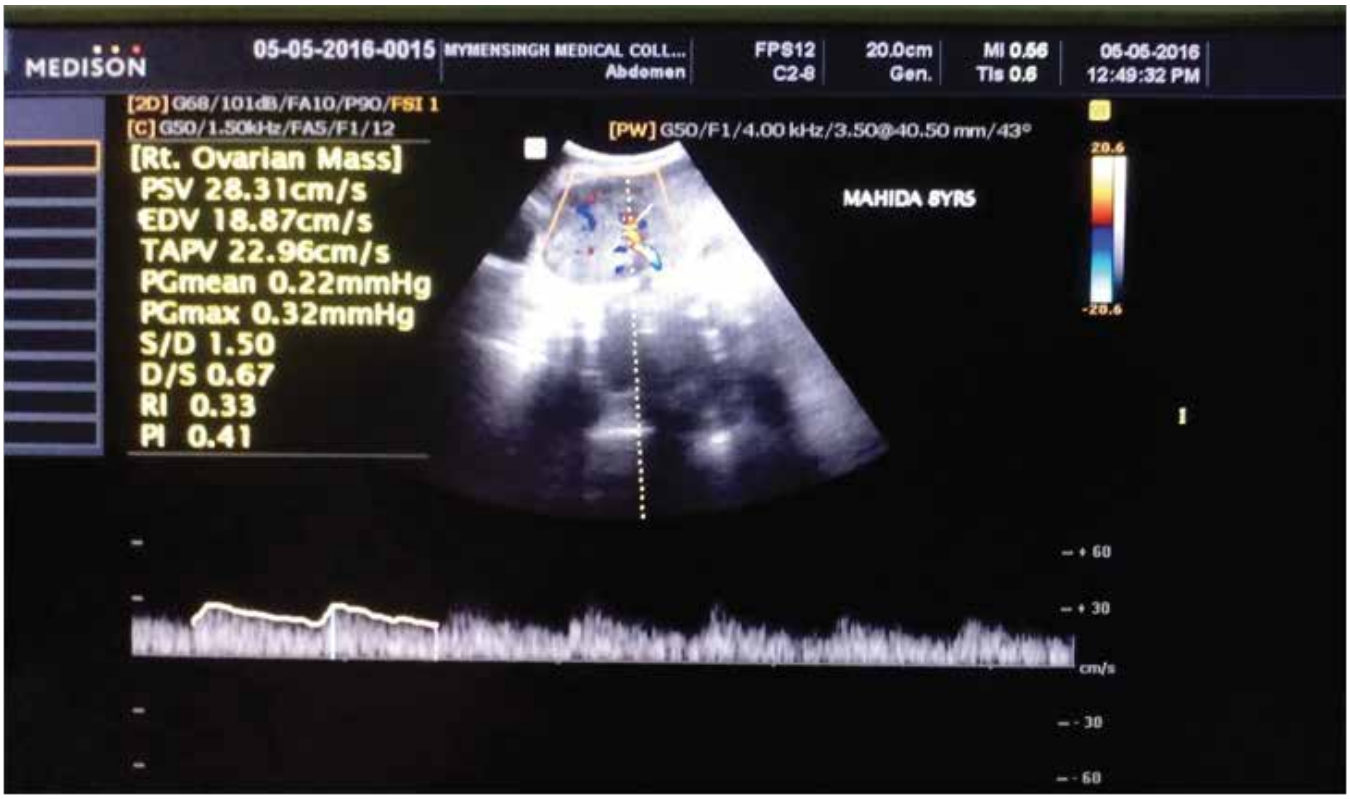
Considering the above facts, this study was conducted to assess the diagnostic performance of Color Doppler ultrasonography as a useful tool for early detection of ovarian tumor against a gold standard histopathological diagnosis.

Materials and Method

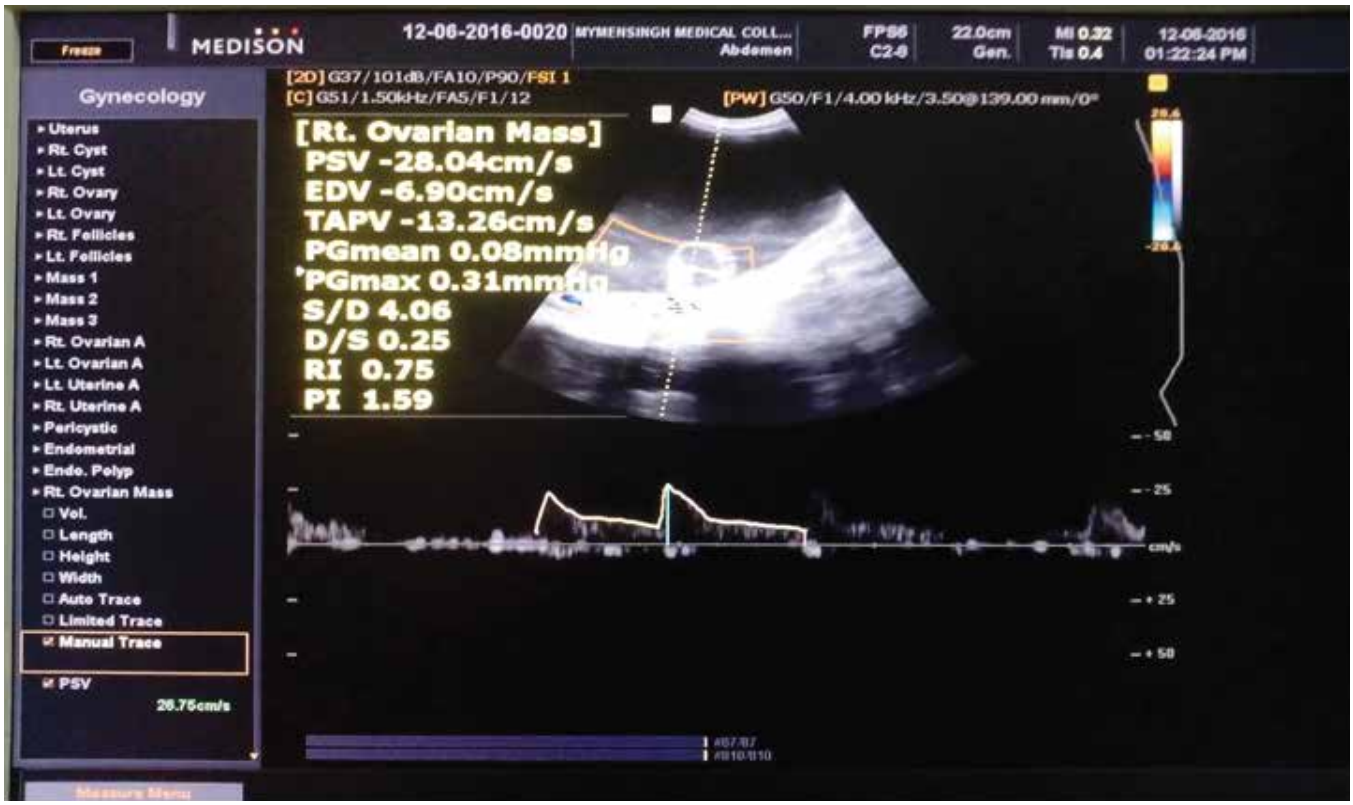
An observational, descriptive cross-sectional study was conducted from January 2015 to December 2016 among patients attending Department of Radiology and Imaging of Mymensingh Medical College Hospital, with suspected ovarian tumor. Total 43 patients were studied in this study period. Purposive type of non-probability sampling was done for collecting data. All clinically suspected cases of ovarian tumor referred to Radiology and Imaging department for USG examination were included in the study. The unfit patients for surgery, non co-operative patients and patients without histopathology reports were excluded from the study. After approval of the research protocol by the local ethical committee, the informed written consent of the patients were taken. Data were collected from clinical history, bed head tickets, physical examination, trans-abdominal ultrasonography, Color Doppler indices (RI, PI) and postoperative histopathology reports and the findings were recorded in data collection sheet. Medison Sonoace X8 ultrasonogram machine with a curvilinear transducer or probe of 3.5 to 5 MHz frequency was used for this study. Patients were scanned trans abdominally with full bladder so that it acted as a window to scan the pelvic organs. Maintaining proper privacy and in presence of a female attendant, the examination was carried out. Patient was in supine position on the examination table and was told to relax the muscles. Coupling agent or gel was applied on the abdomen to reduce the acoustic impedance. At first trans abdominal real time imaging was performed. The probe was placed and moved over the abdominal skin. After standard gray-scale morphological assessment, Color Doppler study was done. The entire ovary or tumor was examined and increased color flow was found in the solid portions, wall and septa of the tumors. Tumor arteries showed spectral waveform and the veins were identified by monophasic flow. Spectral analysis of the arterial waveform was done by both manual and auto tracing and Resistance Index (RI) and Pulsatility Index (PI) values were calculated by the USG machine and desired result appeared on the screen. The cut-off values of RI and PI were ≤0.5, ≤1 respectively for malignancy[3,10,11]. The RI and the PI values as well as the histopathology findings of postoperative ovarian tumors of the patients were recorded in the data collection sheet. The data were cross-checked for completeness, consistency and discrepancy. Statistical analysis was performed using SPSS version 20.0 for Windows (SPSS Inc, Chicago, III, USA). Descriptive statistical analysis was carried out. Results on quantitative data were described as frequency, mean and standard deviation (SD) and results on qualitative data were described as frequency of distribution and percentage. Data were presented by Tables. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of variables on imaging and laboratory findings were calculated. Test of significance like Chi-Square test was carried out to assess statistical association. Value of less than 0.05 was considered as statistically significant.



Photograph1: A malignant ovarian tumor with resistance index (RI)= 0.33 and pulsatility index (PI)= 0.41



Photograph 2: A benign ovarian tumor with resistance index (RI) = 0.98 and pulsatility index (PI)= 2.44



Photograph 3: A benign ovarian tumor with resistance index (RI) = 0.75 and pulsatility index (PI) = 1.59

Results

A total number of 43 patients with suspected ovarian tumor were studied. Observational findings of this study are shown in different frequency tables.

Table I: Tumor status based on Resistance Index (RI)

Tumor status	Frequency	Percentage
Benign	19	44.20
Malignant	24	55.80
Total	**43**	**100**

Table II: Tumor status based on Pulsatility Index (PI)

Tumor status	Frequency	Percentage
Benign	14	32.56
Malignant	29	67.44
Total	**43**	**100**

Table III: Color Doppler indices with their cut-off values and performances

Test	Cut-off value	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Diagnostic Accuracy (%)	Chi square Value (χ^2)	P Value
Resistance Index (RI)	≤ 0.5	91.67	89.47	91.67	89.47	90.69	28.31	<0.001
Pulsatility Index (PI)	≤ 1.0	100	73.68	82.76	100	88.37	26.22	<0.001

Table IV: Respondents according to histopathology finding of ovarian tumor

Type	Frequency	Percentage
Benign	19	44.18
Serous cyst adenoma	10	23.25
Dermoid cyst	4	9.30
Mucinous cyst adenoma	3	6.97
Granulomatous inflammation (Tuberculosis)	1	2.33
Fibroma thecoma	1	2.33
Malignant	24	55.82
Papillary adenocarcinoma	16	37.21
Dysgerminoma	5	11.62
Invasive papillary mucinous cyst adenocarcinoma	1	2.33
Borderline malignancy	1	2.33
Serous cyst adenocarcinoma	1	2.33
Total	**43**	**100**

Discussion

Color Doppler ultrasonography is an advanced, available, non-invasive modality with no radiation hazard. Lots of research works were carried out worldwide with the help of Colour Doppler indices to diagnose ovarian tumor effectively[6, 8,9,10].

In this study, Resistance Index (RI) with cut-off value ≤ 0.5, was found statistically significant having sensitivity 91.67% and accuracy 90.69%. In a similar type of study, Hossain F et al. found that sensitivity and accuracy of Resistance Index (RI) was 91.7% and 90% respectively[11] . Carter JR et al. used different cut-off values of RI ranging from 0.4-1.0[12]. Kurjak A et al. (1992), Hossain F et al. (2010), Chou CY et al. (1994), used cut-off value of RI ≤0.5 for malignancy[9.11,13]. Among 43 patients, according to Resistance Index (RI), 24 (55.80%) patients had malignant tumor. Among them histopathologically 22 patients had malignant and 2 patients had benign tumor. 19 (44.20%) patients had benign tumor according to RI, among them histopathologically 2 patients had malignant and 17 patients had benign tumor. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of Resistance Index (RI) in diagnosis of ovarian tumor were 91.67%, 89.47%, 91.67%, 89.47% and 90.69% respectively. Chi-square Value was 28.31 and P Value was <0.001. Difference was statistically significant. In a similar type of study, Hossain F et al. found that sensitivity, specificity, positive predictive value, negative predictive value and accuracy of Resistance Index (RI) was 91.7%, 88.9%, 84.6%, 94.1% and 90% respectively[11].

According to Pulsatility Index (PI), 29 patients (67.44%) had malignant tumor. Among them histopathologically 24 patients had malignant and 5 patients had benign tumor. 14 patients (32.56%) had benign tumor according to PI, among them histopathologically 14 patients had benign tumor. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy of Pulsatility Index (PI) in diagnosis of ovarian tumor were 100%, 73.68%, 82.76%, 100% and 88.37% respectively. Chi-square Value was 26.22 and P Value was <0.001. Difference was statistically significant. Tekay A and Jouppila P found in a study that the sensitivity, specificity, positive predictive value, negative predictive value and accuracy of Pulsatility Index (PI) in diagnosis of malignant ovarian tumor were 100%, 83%, 73%, 100% and 100% respectively[14].

A total number of 43 patients in this study underwent surgery and the ovarian tissues were sent for histopathology examination. Based on histopathology findings, benign tumors were found in 19 (44.18%) cases and malignant tumors were 24 (55.82%). Among the benign tumors, serous cyst adenoma was most common 10 (23.25%) followed by dermoid cyst 4 (9.30%), mucinous cyst adenoma 3 (6.97%), granulomatous inflammation 1 (2.33%), fibroma thecoma 1 (2.33%). Among the malignant tumors papillary adenocarcinoma was most common 16 (37.21%) followed by dysgerminoma 5 (11.62%), invasive papillary mucinous cyst adenocarcinoma 1 (2.33%), borderline malignancy 1 (2.33%) and serous cyst adenocarcinoma 1 (2.33%). Alcazar JL et al. found same type of study result, benign tumors were in 40.4% cases and malignant tumors were 59.6%[15]. In another study by Czekierdowski A , it was found that benign tumors were 16.3% and malignant tumors were 46.8% and most of the benign tumors were serous cyst adenoma[16].

Conclusion

Color Doppler ultrasonography shows high sensitivity and specificity. Based on the current study, it is concluded that Color Doppler ultrasonography provides better diagnostic accuracy and can be used as a non-invasive method for early diagnosis of ovarian tumor in suspected cases. Now a days Color Doppler has become a common and popular diagnostic tool in our country. By applying Color Doppler, accurate diagnosis of different diseases has become easier.

References

1. Hussain SMA. Comprehensive update on cancer scenario of Bangladesh. South. 2013 Oct-Dec; 2(4): 279–284.
2. American Cancer Society. Key Statistics for Ovarian Cancer. 2020. Cancer.org. Leo and Gloria Rosen family.
3. Varras M. Benefits and limitations of ultrasonographic evaluation of uterine adnexal lesions in early detection of ovarian cancer. Clin. Exp. Obst & Gyn. 2004;31(2): 390 .
4. Das PM and Bast RC. Early detection of ovarian cancer. Med. August,2010;2(3):291–303.

5. Timmerman D, Testa AC, Bourne T, Ameye L, Jurkovic D, Holsbeke CV et al. Simple ultrasound-based rules for the diagnosis of ovarian cancer. Ultrasound Obstet Gyne col. 2008;31: 681–690.

6. Shy K, Dubinsky T. Is Color Doppler Ultrasound Useful in Diagnosing Ovarian Cancer? Clinical Obstetrics and Gynecology Issue. December 1999;42(4):902-15.

7. Thrush A and Hartshorne T. Peripheral Vascular Ultrasound. 2nd ed. London. Elsevier Limited. 2005:24.

8. Fleischer AC, Lyshchik A, Hirari M, Moore RD, Abramson RG and Fishman DA. Early Detection of Ovarian Cancer with Conventional and Contrast-Enhanced Trans vaginal Sonography: Recent Advances and Potential Improvements. Journal of Oncology Volume 2012; 302858 : 11.

9. Kurjak A, Schulman H, Sosic A, Zalud I, Shalan H. Trans vaginal ultrasound, color flow and Doppler waveform of the postmenopausal adnexal mass. Obstet gynae col. 1992;l(1):50-52.

10. Pakkal MV and Balogun M. Imaging of ovarian cancer. 2006;18: 20-27.

11. Hossain F, Karim MN, Rahman SMM, Khan N, Siddiqui M, Hussain R. Preoperative detection of ovarian cancer by color Doppler ultrasonography and CA 125. Bangladesh Med Res Counc Bull. 2010;36:68-73.

12. Carter JR, Lau M, Fowler JM, Carlson JW, Carson LF, Twiggs LB. Blood flow characteristics of ovarian tumors: implications for ovarian cancer screening. Am J Obstet Gynecol. March 1995;172(3):901-7.

13. Chou CY, Chang CH, Yao BL, Kuo HC. Color Doppler ultrasonography and serum CA 125 in the differentiation of benign and malignant ovarian tumors. J Clin Ultrasound. October 1994;22:491-496.

14. Tekay A, Jouppila P. Controversies in assessment of ovarian tumors with transvaginal color Doppler ultrasound. Acta ObstetGynecol Scand. 1996;75:316-329.

15. Alcazar JL, Errasti T, Zornoza A, Minguez JA, Galan MJ. Transvaginal color Doppler ultrasonography and CA 125 in suspicious adnexal masses. Ultrasound obstet. Gynecol. 1999; 6:1208-14.

16. Czekierdowski A. Studies on angiogenesis in the benign and malignant ovarian neoplasms with the use of color and pulsed Doppler sonography and serum CA-125, CA-19.9, CA-72.4 and vascular endothelial growth factor measurements. 2002; 1:16.

Original Article

Current Trends of Using Antimicrobial Drugs in Acne Vulgaris Patients

Shaha KC [1], Ajmery S [2], Jyoti BK [3]

1. **Dr. Kartick Chanda Shaha, Assistant professor, Department of Pharmacology, Dhaka National Medical College.*
2. *Dr. Suny Ajmery, Assistant professor, Department of Pharmacology, Jahurul Islam Medical College*
3. *Dr. Bhagyoshre Karmokar Jyoti, Medical officer, Department of Surgery, Dhaka Medical College*

**Address of correspondence*

Abstract

Objective: *The aim of the present study was to investigate the current trends of using antimicrobial drugs in acne vulgaris patients at a tertiary level teaching hospital in Dhaka. The study of prescribing patterns seeks to monitor, evaluate and suggest modifications in practitioners prescribing habits so as to make medical care rational.*

Methods: *A descriptive, cross sectional study was conducted from January 2020 to April 2020 among 100 acne vulgaris patients attending at Dermatology and venereology outpatient department of the sir salimullah medical college hospital after obtaining requisite consent from the patients. Data were collected through interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to assess the current trends of using antimicrobial drugs in acne vulgaris patients. The study was approved by the institutional ethical committee.*

Results: *In a pool of 100 Acne vulgaris patients, most of the patients belonged to 21-25 years. Female patients (62%) were more than the male patients (38%) at the Dermatology and venereology outpatient department. Most commonly prescribed antibiotic for acne vulgaris patients is doxycyline (35%) followed by Erythromycin (23%). Average number of drugs per prescription was 3.8. 57.9% of the drugs prescribed through oral route, while 42.10 % of the drugs prescribed through topical route.*

Conclusion: *Most antimicrobial agents were prescribed without bacteriological culture and sensivity testing evidence. There is a need for motivating the physicians to prescribe antimicrobial agents with supportive bacteriological evidences.*

Keywords: *Acne vulgaris patients, anti-microbial drugs.*

Received: *26.08.2020*

Accepted: *12. 12. 2020*

Introduction

Acne vulgaris is a chronic inflammatory multifactorial, pleomorphic skin disease of the pilosebaceous follicles that affects more than 85% of adolescents and young adults[1], and is characterized by a variety of non-inflamed (open and closed comedones) and inflamed (macules, papules, pustules, and nodules) lesions. Four major factors are involved in the pathogenesis of acne vulgaris including increased sebum production, hypercornification of the pilosebaceous duct, an abnormality of the microbial flora (especially colonization of the duct with Propionibacterium acnes), and the production of inflammation. Although acne is not infectious, three major organisms have been isolated from the pilosebaceous ducts of acne patients including Staphylococcus epidermidis, Malassezia furfur and Propionibacterium acnes (P. acnes) [1]. In addition, acne is a socio-economic problem. In 1995 acne was the most common dermatologic diagnosis in the USA with 10.2 million cases, accounting for 25.4% of the dermatologic diagnoses of all physicians. The patients received 6.5 million prescriptions for a systemic acne therapy (either antibiotics or isotretinoin) yearly, costing more than 1 billion US dollars. In 2001, 2.1 billion Euros were spent world-wide on acne medications; this is 18.3% of the annual expenditures for treating dermatologic diseases. In 2004, the direct costs in the USA had climbed to over 2.2 billion US dollars [2]. Oral and topical antibiotics are among the most commonly prescribed therapies in dermatologic practice, used predominantly for acne vulgaris (AV) and rosacea, but also for many other inflammatory and infectious skin diseases. Data ranging from 2003 through 2013 has shown that dermatologists in the United States prescribe approximately 8 to 9 million antibiotic prescriptions annually, accounting for at least 20 percent of all prescriptions written by dermatologists, with up to two-thirds of these antibiotic prescriptions being given for treatment of AV [3]. The indiscriminate use of antibiotics, whether topically or orally, has raised concerns globally about the development and spread of resistant organisms and fears about resulting failures to antibiotic therapy [4]. Crucial questions concerning the role of antibiotics in acne (and alternative treatment modalities), their ideal duration of use and the impact of their use on antibiotic resistance should now be urgently addressed [5].

Materials & methods

A descriptive, cross sectional study was conducted from January 2020 to April 2020 among 100 acne vulgaris patients attending at Dermatology and venereology outpatient department of the Sir Salimullah Medical College hospital after obtaining requisite consent from the patients. Data were collected through interviewing of the patients. The study was approved by the institutional ethical committee. There are no violations of moral and ethical norms during preparing this research. Purposive sampling was adopted for collecting data. The interviews were held directly in the corridor just outside the Outpatient Department. Prescriptions slips were taken from the patients and the relevant information was entered into the predesigned proforma to investigate the current trends of using antimicrobial drugs in acne vulgaris patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1).

Result

The age structures of the patients have been categorized in years into five groups. Overall 32 patients were in 15-20 years old while 37 patients were 21-25 years old, 12 patients belong to 26-30 years old, 10 patients belong to 31-35 years old and 9 patients belong to 36-40 years old. Most of the patients belonged to 21-25 years (Table 1).

Table 1: Age distribution of the study population (n=100)

Age in years	Number	Percentage
15-20	32	32%
21-25	37	37%
26-30	12	12%
31-35	10	10%
36-40	9	9%

Total numbers of patients both male and female were 100. It comprised of 38 male and 62 female in outpatient. Female patients were more than the male patients at the Dermatology and venereology outpatient department (Figure 1).

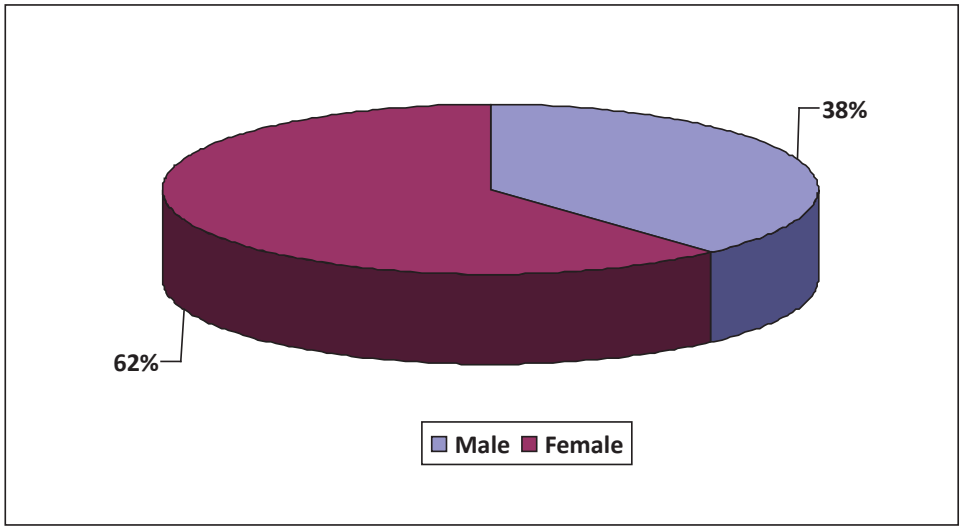


Figure 1: Pie chart showing sex distribution of the study population

Doxycycline were the most commonly prescribed antibiotic (35%) followed by Erythromycin (23%), azithromycin (22%), clindamycin (15%) and levofloxacin (5%). (Table 2)

Table 2: Most frequently prescribed anti-microbial drug in acne vulgaris patients (n=100)

Name of antimicrobial drug	Frequency	Percentage
Doxycycline	35	35%
Erythromycin	23	23%
Clindamycin	15	15%
Azithromycin	22	22%
Levofloxacin	5	5%

Totally 380 drugs were prescribed during the study period. Average number of drugs per prescription was 3.8. 57.9% of the drugs prescribed through oral route, while 42.10 % of the drugs prescribed through topical route. (Table 3)

Table 3: Analysis of prescriptions for patients of acne vulgaris (n=100)

Parameter	Frequency	Percentage
Number of prescriptions	100	
Total no. of drugs prescribed	380	
Total no. of drugs prescribed through oral route	220	57.9%
Total no. of drugs prescribed through topical route	160	42.10%
Average no. of drugs prescribed per prescription	3.8	

Discussion

All together a total of 100 prescriptions were collected during the study period. This study showed that acne vulgaris is more prevalent in female patients than in male patients. Similar results were obtained in the study conducted by Rosso, Rosen, and Palces [6]. In our study, the most common age group was 21-25 years (37%). This result correlates with the study of Dharrao et al.[7]. In our study Doxycycline were the most commonly prescribed antibiotic (35%) followed by Erythromycin (23%). Our result is similar to the Adawiyah et al.[8] study and dissimilar to the Amit gupta[9] study in which azithromycin were the most commonly prescribed antibiotic. In our study average number of drugs per prescription was 3.8. 57.9% of the drugs prescribed through oral route, while 42.10 % of the drugs prescribed through topical route. Dissimilar results were obtained in the study conducted by Amit gupta[9] in which average number of drugs per prescription was 4.14. 33% of the drugs prescribed through oral route, while 67 % of the drugs prescribed through topical route.

Conclusion

Based on the results, we conclude that in the acne vulgaris, Doxycycline was the most frequently prescribed antimicrobial agent. Most antimicrobial agents were prescribed without bacteriological culture and sensivity testing evidence. There is a need for motivating the physicians to prescribe antimicrobial agents with supportive bacteriological evidences. It is important that the physicians need to be aware of the increasing antibiotic resistance, should obtain a good history of previous antibiotic usage and be vigilant when prescribing antibiotics for acne.

References

1. Hassan IAS, Hassan MA, Embarek MS, Attallah DA, Mokhtar MA, Aldin GMA. Antibiotic Susceptibility Patterns of Propionibacterium Acnes Isolated from Acne Vulgaris in Assiut University Hospitals, Egypt. Egyptian Journal of Medical Microbiology. 2015;24(4): 67-72.
2. Gollnick HP, Zouboulis CC. Not all acne is acne vulgaris. Dtsch Arztebl Int. 2014; 111: 301–12.
3. Rosso JQ, Gye F, Webster MD, Lawrence . Status Report from the Scientific Panel on Antibiotic Use in Dermatology of the American Acne and Rosacea Society. J Clin Aesthet Dermatol. 2016;9:18-24.
4. Mills O, Thornsberry C, Caroline WC, Smile KA, Leyden JJ. Bacterial Resistance and Therapeutic Outcome Following Three Months of Topical Acne Therapy with 2% Erythromycin Gel VersusIts Vehicle. Acta Derm Venereol. 2002;82:260-265.
5. Sinnot SJ, Bhate K, Margolis DJ and Langan SM. Antibiotics and acne: an emerging iceberg of antibioticresistance? British Journal of Dermatology. 2016:1127–1128.
6. Rosso D, Rosen and Palces. Patient Awareness of Antimicrobial Resistance and Antibiotic Use in Acne Vulgaris. Journal of clinical and aesthetic dermatology. 2019;12(6):30-41.
7. Dharrao SB and Bhansali PB. Study of Drug Utilization Pattern in Acne Vulgaris in Skin Outpatient Department in Tertiary Health Care Center. MVP Journal of Medical Sciences. 2019;6(1):72-77.
8. Adawiyah J, Priya G, Roshidah B. Oral antibiotics in acne vulgaris: therapeutic response over 5 years. Malaysian Family Physician. 2010;5(3):130-133.
9. Gupta A. Drug Utilizing Pattern for Acne Vulgaris in a Tertiary Care Teaching Hospital. Journal of Basic and Clinical Pharmacy. 2017;8:230-234.

Original Article

Pattern of Antimicrobial Resistance of Escherichia coli Among the Patients with Urinary Tract Infection in Jahurul Islam Medical College.

Mitu MZA[1], Hasan MS[2], Yasmin S[3], Khanom T[4]

1. **Dr. Md. Zabed Ahmed Mitu, Associate professor, Department of Microbiology, Jahurul Islam Medical College.*
2. *Md. Sayeed Hasan, Professor and Head, Department of Microbiology, Jahurul Islam Medical College.*
3. *Selina Yasmin, Assistant Professor, Department of Microbiology, Sylhet Women's Medical College.*
4. *Tahera Khanom, Assistant Professor, Department of Microbiology, Comilla Army Medical College.*

****Address of correspondence***

Abstract

Background: *Urinary tract infection (UTI) is very common in our day to day clinical practice. Among the all organisms Escherichia coli (E.coli) is the most common urinary pathogen. Antimicrobial resistance becomes an alarming issue for urinary tract infection management now a days.*

Objective: *Aim of the study is to assess the pattern of antimicrobial resistance of E.coli among the UTI patients in Jahurul Islam Medical College.*

Methodology: *This observational study was carried out in Jahurul Islam Medical College and Hospital, Bhagalpur, Bajitpur, Kishoregonj from 1st September, 2019 to 15th September, 2019. Clinically diagnosed cases of UTI irrespective of age and sex from out-patient and in-patient department were selected for the purpose of the study. Total 80 samples were collected for this study. The culture of the urine samples were done on 10% sheep blood agar and MacConkey's agar media using calibrated loop following standard bacteriological technique and incubated at 37° C for 24 hours. After the incubation, the plates were examined for bacterial pathogen. Pure bacterial colony counting ≥10^5 /ml were considered as significant and subjected to identification based on colony character and biochemical tests. The disk diffusion method (Kirby Bauer's) was used to determine the antimicrobial susceptibility of the isolates on Mueller-Hinton agar.*

Result: *The highest prevalence of UTI was found in females (61.3%) and the age group was 21-30 years (36.3%).We tested for thirteen different commonly used antibiotics in UTI for evaluating the antibiotic susceptibility in our study. Among them Azithromycin showed the highest rate of resistance to Esch.coli which constituted 85.0% of the total patients. The second antibiotic that showed resistance to E.coli was Cefixime which constituted 63.7% of the total patients. In our study Colistin showed 100% sensitivity to Esch.coli. The next antibiotics that showed most sensitivity were Meropenem (85.0%), Pipercillin/Tazobactum (85.0%) and Nitrofurantoin (82.5%).*

Keywords: *UTI, E.coli, Antibiotic resistance.*

Received: *23.09.2020*

Accepted: *16. 11. 2020*

Introduction

Urinary tract infection (UTI) is the most common bacterial infection accounting for 25.0% of all infections. It is one of the most important causes of morbidity and also the second most common cause of hospital visit[1]. It is estimated that about 35% of healthy women suffer from symptoms of UTI at some time in their life. Urinary tract infection is caused mainly by normal bowel flora-principally *Escherichia coli*, responsible for ≥75% of cases. Other Gram negative *Enterobacteriaceae*, Gram positive *Enterococcus faecalis* and *Staphylococcus saprophyticus* are responsible for remainder of UTI[2]. Urinary tract infection is more common in women than in men though male over the age 60 years with prostatic hypertrophy are the exceptions[3]. Women are more prone to UTI than men because urethra is much shorter and closer to the anus in female[4].

The aim of a microbiology laboratory in the management of UTI is to diagnose accurately and timely. Aim also includes appropriate antimicrobial sensitivity testing to reduce morbidity[5]. Development of resistant strain is a common problem in antimicrobial chemotherapy. Frequency of resistance to antibiotics and drug is directly linked to consumption of antibiotic[6]. Due to improper use of antibiotic the prevalence of antimicrobial resistance among urinary pathogens has been increasing worldwide[7,8]. A retrospective analysis using The Surveillance Network®, USA in 2012 reported the most common pathogen isolated from female who visited U.S. outpatients in 2012 was *Esch. coli* (64.9%). Urinary tract infection causes morbidities including pyelonephritis and cystitis which are resulted by the presence of microorganisms in the urinary tract[9]. Though UTIs are related to minimum morbidity, the annual financial burden of the US alone costs at around 2 billion dollar[10]. However UTI is a common scenario in our daily clinical practice, but the increasing antimicrobial resistance is associated with treatment failure and overburden of healthcare cost around the globe[11]. Evidence shows that antimicrobial resistance pattern to urinary *E coli* is growing gradually not only in the developing countries but also in the developed countries. In India from 2008 to 2013, the trend of antimicrobial resistance for *Esch.coli* to third generation Cephalosporin, Fluoroquinolone and Carbapenems were increased from 70% to 83%, 78% to 85% and 10% to 13% respectively[12]. From 2000 to 2014, in Germany, Sweden, Spain and UK antimicrobial resistance against *Esch.coli* were increasing to ciprofloxacin from 2.2% to 20.2%, 0% to 7.3%, 14.7% to 30.8% and 0.5% to 15.3% respectively and to Trimethoprim from 22.5% to 36.8%, 8.8% to 16.9%, 25.1% to 37.3% and 14.9% to 46.0% respectively. In UK Nitrofurantoin resistance to urinary *E. coli* were increased from 0% to 6% in the same duration[13]. In USA from 2005 to 2009, increased *Esch.coli* resistance to Ampicillin from 39% to 43%, Cefazolin from 4% to 7%, Trimethoprime-Sulfamethoxazole from 17% to 25%, Fluoroquinolone from 7% to 16%, Gentamicin from 3% to 7%, and extended-spectrum Cephalosporins from 1% to 3%[14]. A time series analysis over five years in an Australian Tertiary Hospital reported significantly raised antimicrobial resistance in *Esch. coli* against different antibiotics[15]. In the Study for Monitoring Antimicrobial Resistance Trends (SMART) in Canada and United States (US) confirmed increasing resistance in *E. coli* after evaluation of resistance trend in 3498 *Esch.coli* induced UTI between 2010 to 2014 and found Extended Spectrum Beta-lactamase (ESBL) phenotype increasing (7.8 – 18.3%, $P < 0.0001$) in US and susceptibility to Cephalosporins and Fluoroquinolones was significantly lower. But in Canada, no significant increasing trend (10.4 -13.0%, $P = 0.079$) of ESBL was found and was lower than US rates[16]. Reports of US also confirmed increasing resistance in *Esch.coli* by retrospective study using The Surveillance Network®, USA in 2012 with a comparison with 2003 reports showing increasing resistance against Ciprofloxacin (3.6% to 11.8%) and Trimethoprim-Sulfamethoxazole (17.2% to 22.2%) with a lower resistance against Nitrofurantoin (from 0.7% to 0.9%)[17]. As antimicrobial resistance is increasing all over the world even in the developed countries, so we have designed this study with the aim to see the effectiveness of different antimicrobials used against urinary tract infection with *Esch.coli* in terms of antimicrobial resistance in Jahurul Islam Medical College, Bangladesh.

Methodology

This observational study was carried out in the Department of Microbiology of Jahurul Islam Medical College and Hospital, Bhagalpur, Bajitpur, Kishoregonj from 1st September, 2019 to 15th September, 2019. Clinically diagnosed cases of UTI irrespective of age and sex from out-patient department and in-patient

department were randomly selected for the purpose of the study. For collection of urine sample, patients were advised to collect a clean catch mid stream urine specimen in a sterile wide mouth leak proof container supplied by the laboratory. Guideline for proper specimen collection was given to all patients. Total 80 samples of mid stream urine (MSU) were collected for this study. For culture, measured amount of urine samples were inoculated on 10% sheep blood agar and MacConkey's agar media using calibrated loop following standard bacteriological technique and incubated at 37° C for 24 hours. After incubation, the plates were examined for bacterial pathogen. Pure bacterial colony count of $\geq 10^5$/ml were considered as significant. The isolated bacteria were subjected to identification based on colony character and biochemical tests. The disk diffusion method (Kirby Bauer's) was used to determine the antimicrobial susceptibility of the isolates. For antimicrobial sensitivity tests antibiotic discs were placed on inoculated Mueller-Hinton agar and incubated at 37°C for 24 hours. Antimicrobial susceptibility and resistance was determined with the help of NCCLS (National Committee for Clinical Laboratory Standards). The antimicrobial drugs tested for in the sensitivity study included Amoxiclav, Amikacin, Azithromycin, Cotrimoxazole, Cefuroxime, Cefixime, Ceftriaxone, Colistin, Gentamycin, Levofloxacin, Meropenem, Nitrofurantoin and Piperacillin/Tazobactum.

Results

Antibiotic resistance among uropathogens has become a public health concern in Bangladesh. The pattern of antimicrobial resistance of the microorganisms causing UTI vary in their susceptibility to antimicrobials from place to place & from time to time. A total 80 eligible patients of both sexes irrespective of age whose urine culture yielded growth of *Esch.coli* were included in our study.

The highest prevalence of UTI was found in the females (61.3%) and 38.7% in males (Table-1). UTI prevalence was highest in the age group of 21-30 years (36.3%) followed by 31 to 40 years, 11-20 years, 41-50 years, 51-60 years and it was least among the age group of below 10 years and above 60 years (Fig-1). Thirteen different antibiotics that are commonly used in the treatment of UTI were tested for evaluating the antibiotic susceptibility in our study. Among them Azithromycin showed the highest percentage of resistance to *Esch.coli* which constituted 85.0% of the total patients. The second antibiotic that showed most resistance to *Esch.coli* was Cefixime which constituted 63.7% of the total patients. In our study Colistin showed 100% of sensitivity against *Esch.coli*. The next antibiotic that showed most sensitivity was Meropenem (85.0%) followed by Pipercillin/Tazobactum (85.0%), Nitrofurantoin (82.5%), Gentamycin (70.0%), Levofloxacin (67.5%), Amikacin (51.3%), Ceftriaxone (51.3%), Cefuroxime (41.3%), Cotrimoxazole (38.7%), Amoxiclav (38.7%), Cefixime (36.3%) and Azithromycin (15.0%) (Table-2).

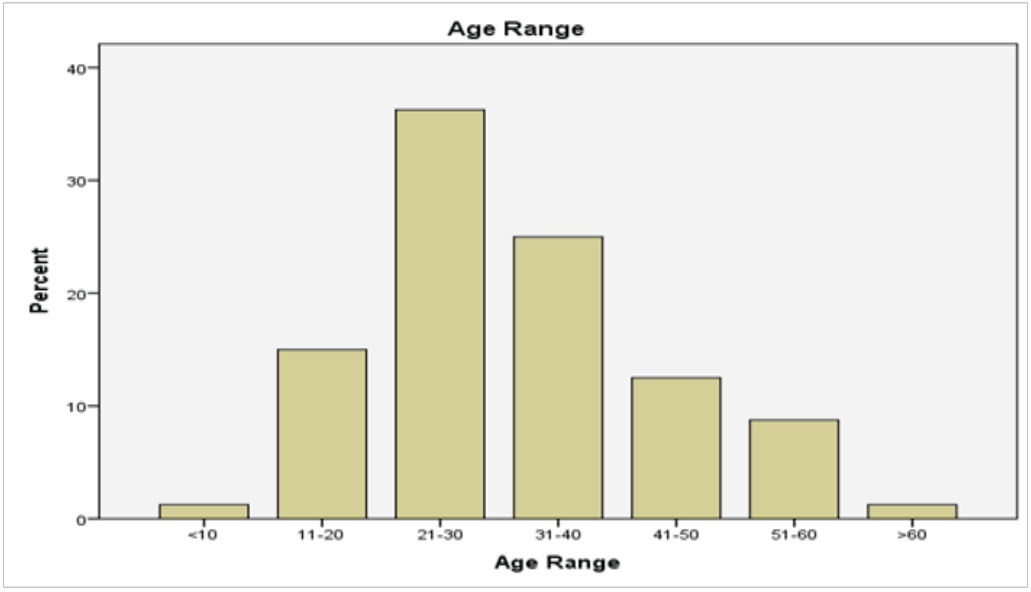


Figure 1: Age distribution of the study population.

Table 1: Sex distribution among the study population.

Sex	Number	Percentage
Male	31	38.7%
Female	49	61.3%
Total	80	100%

Table 2: Antibiotic resistance and sensitivity pattern in the study population.

Antibiotic	Resistant (n=80)	Sensitive (n=80)
Amikacin	39(48.7 %)	41(51.3%)
Amoxiclav	49(61.3%)	31(38.7 %)
Azitromycin	68(85.0%)	12(15.0%)
Cefixime	51(63.7 %)	29(36.3%)
Cefuroxime	47(58.7 %)	33(41.3%)
Ceftriaxone	39(48.7 %)	41(51.3%)
Cotrimoxazole	49(61.3%)	31(38.7%)
Gentamycin	24(30.0%)	56(70.0%)
Levofloxacin	26(32.5%)	54(67.5 %)
Meropenem	12(15.0%)	68(85.0%)
Nitrofurantoin	14(17.5%)	66(82.5%)
Piperacillin	12(15.0%)	68(85.0%)
Colistin	00(0.00%)	80(100%)

Discussion

Urinary tract infection is the second most common infection after the respiratory tract infection which may affect urethra, urinary bladder or kidneys[18]. *Esch.coli*, a Gram negative bacillus which is responsible for more than 80% cases of urinary tract infections worldwide[19]. The prevalence of UTI varies according to sex and age[20]. It has been usually observed that UTI most commonly occurs in the female and up to one-third of all women experience a UTI at some time during their lifetime[21].

In the present study, regarding age and sex distribution majority of the cases are in the age group of 21 to 30 years (36.3%) [Fig-1] and the highest prevalence of UTI was found in the female (61.3%) [Table-1]. The high incidence of UTI at this age might be due to their initial exposure to sex or related improper personal hygienic practice.

The most common uropathogen is *Escherichia coli.* The reason for the highest incidence of *Esch.coli* is that they are normal fecal flora and uropathogenic strains of *Esch.coli* have an adherence factor called P fimbriae or pili, which mediate the attachment of *Esch.coli* to uroepithelial cells[22]. In our study, the highest rate UTI was found in females and in the age group of 21 to 30 years (36.3%) which is similar with the reports showed by Zakariaet et al[23] and Yasmeen et al[24].

Antibiotic resistance among uropathogens has become a public health concern in Bangladesh. The pattern of antimicrobial resistance of the microorganisms causing UTI vary by their susceptibility to antimicrobials from place to place & from time to time. In this study *Esch.coli* was found to be most sensitive to Colistin (100%) followed by Meropenem (85.0%), Piperacillin/Tazobactum (85.0%) and Nitrofurantoin (82.5%) (Table-2). It was also found that *Esch. coli* was most resistant to commonly used antibiotics like Azithromycin (85.0%) followed by Cefixime (63.7%), Cefuroxime (58.7%) and Cotrimoxazole (61.3%).

Antibiotic resistance in the bacterial infection may be a great barrier for the effective treatment option even in case of UTI. The antibiotic resistance is closely related with the greater mortality or morbidity and a burden of total healthcare costs. Abuse of antibiotics, lack of patients education, unauthorized sale of antibiotics, limited access of health care systems, inadequate surveillance of regulatory systems, and non-human use of antimicrobials such as in animal production are the main causative factors for resulting antibiotic resistance in the developing country[25]. In our study Azithromycin showed highest resistance (85%) against *Esch.coli.* Goutom Kumar Acherjya et al in hisstudy found 56% resistance of Azithromycin against *E coli in* urinary tract infection which is closely similar to our study[26]. In another study conducted by Shahandashtietal reported that the resistance rate of *E.coli*to Ceftriaxone, Cefotaxime and Cefiximewere 40.4%, 45.6% and43.9% respectively which are nearly similar to our study[27]. Meropenem showed 15.0% resistance and 85.0% sensitivity to *Escherichia coli* in our study. A study in Bangladesh also showed 10.5% resistance of Meropenemagainst *E.coli*[28].

Antibiotic abuse due to easy availability & practicing incomplete antibiotic regimen due to poverty has considerably promoted the dissemination of multidrug resistant bacteria. The highest percentage of resistance of *Esch.coli* causing UTI were found against antibiotics like Azithromycin, Cefixime, Cefuroxime and cotrimoxazole and had lower resistance against less commonly used parenteral antibiotics like Amikacin, Colistin, Meropenem and Piperacillin/Tazobactum in the present study.

Conclusion

UTI is more prevalent among female and the most predominant uropathogen is *Esch. coli*. The prevalence of antimicrobial resistance among microorganisms that causes UTI is increasing worldwide and is a major problem in selecting antibiotics for treatment. Our study has been conducted in a particular region of Bangladesh.Larger sample sizes from other regions of Bangladesh can give a more significant result.

References

1. Ronald AR. The natural history of urinary infection in adults. Med Clin North Am. 1991;75:299-312.
2. Lee LB, Neild HG. Urinary tract infection. Medicine. 2007;35(8):423-428.
3. Calvin, MK. Urinary tract infections in females. Clin. Infect. Dis. 1994;18:1-12.
4. Jawetz E, Melninick. Clinical correlations: urinary tract in Medical Microbiology, 20th Ed. London, UK, Prentice Ball Intl. Inc. 1995;p.634.
5. Graham JC, Galloway A. The laboratory diagnosis of urinary tract infection. Journal of Clinical Pathology. 2001:54:911-919 .
6. Wilson ML, Gaido L. Laboratory Diagnosis of Urinary Tract Infections in Adult Patients. Clin Infect Dis. 2004; 34:1150-8.
7. Bonadio M, Meini M, Spetaleri P, Gilgi C. Current microbiological and clinical aspects of urinary tract infections. Eur J Urol. 2001;40:439-45.
8. Grude N, Tveten Y, Kristiansen BE. Urinary tract infections in Norway: bacterial etiology and susceptibility, a retrospective study of clinical isolates. ClinMicro boil Infec. 2001; 7:543-79.
9. Sanchez GV, Babiker A, Master RN, Luu T, Mathur A, Bordon J. Antibiotic resistance among urinary isolates from female outpatients in the United States in 2003 and 2012. Antimicrobial agents and chemotherapy. 2016 Feb 16:AAC-02897.
10. Kulkarni R, Dhakal BK, Slechta ES, Kurtz Z, Mulvey MA, Thanassi DG. Roles of Putative Type

II Secretion and Type IV Pilus Systems in the Virulence of Uropathogenic Escherichia coli. PLoS ONE. 2009; 4(3):p.4752.

11. Foxman B. The epidemiology of urinary tract infection. Nature Reviews Urology. 2010;7(12):653.
12. Merz LR, Guth RM, Fraser VJ. Cost of Antimicrobial Resistance in Healthcare Settings: A Critical Review. In Antimicrobial Resistance 2010 (Vol.6, pp. 102-119). Karger Publishers.
13. Laxminarayan R, Chaudhury RR. Antibiotic Resistance in India: Drivers and Opportunities for Action. PLoS Medicine. 2016; 13(3):e1001974.
14. Kahlmeter G, Åhman J, Matuschek E. Antimicrobial Resistance of *Escherichia coli* Causing Uncomplicated Urinary Tract Infections: A European Update for 2014 and Comparison with 2000 and 2008. Infectious Diseases and Therapy. 2015; 4(4):417-423.
15. Swami SK, Liesinger JT, Shah N, Baddour LM, Banerjee R. Incidence of Antibiotic-Resistant *Escherichia coli*Bacteriuria According to Age and Location of Onset: A Population-Based Study From Olmsted County, Minnesota. Mayo Clinic Proceedings. 2012; 87(8):753-759.
16. Fasugba O, Mitchell BG, Mnatzaganian G, Das A, Collignon P, Gardner A. Five-Year Antimicrobial Resistance Patterns of Urinary *Escherichia coli* at an Australian Tertiary Hospital: Time Series Analyses of Prevalence Data. Butaye P, ed. PLoS ONE. 2016; 11(10):e0164306.
17. Lob SH, Nicolle LE, Hoban DJ, Kazmierczak KM, Badal RE, Sahm DF. Susceptibility patterns and ESBL rates of *Escherichia coli* from urinary tract infections in Canada and the United States. SMART 2010–2014. Diagnostic microbiology and infectious disease. 2016; 85(4):459-65.
18. Mobley H, Alteri C. Development of a Vaccine against Escherichia coli Urinary Tract Infections. Pathogens. 2015; 5(1):1.
19. Nicolle LE. Uncomplicated urinary tract infection in adults including uncomplicated pyelonephritis. Urologic Clinics of North America. 2008; 35:1–12.
20. Kosokai NY, Kumaoto T, Hirose N, Tanka Y, Ltikichi S, Sigeta Y, et al. Comparative studies on activities of antimicrobial agent against causative organisms isolated from urinary tract infection. Japan J Antiriot. 1990;43:95467.
21. Palac DM. Urinary tract infection in women. A physician's perspective. 1986. P.17-25.
22. Abubakar EM. Antimicrobial susceptibility pattern of pathogenic bacteria causing urinary tract infections at the Specialist Hospital, Yola, Adamawa State, Nigeria. Journal of Clinical Medicine Research. 2009;1(1):1-8 .
23. Zakaria MM, Talukder AS, Chowdhury EK. Prevalence and Drug Sensitivity of microorganisms in patients with Urinary tract infection attending a semi-rural hospital in Bangladesh. Bangladesh J Med Sci. 2002;8:111-114
24. Yasmeen BHN, Islam S, Islam S, Uddin MM, Jahan R. Prevalence of urinary tract infection, its causative agents and antibiotic sensitivity pattern: A study in Northern International Medical College Hospital, Dhaka. Northern International Medical College Journal. 2015;7(1):105-109
25. Ayukekbong JA, Ntemgwa M, Atabe AN. The threat of antimicrobial resistance in developing countries: causes and control strategies. Antimicrobial Resistance and Infection Control. 2017; 6:47.
26. Goutom Kumar Acherjya et al.Pattern of antimicrobial resistance to *Escherichia coli* among the urinary tract infection patients in Bangladesh. American journal of internal medicine. 2018; 6(5):132-137.
27. Shahandashti EF, Javanian M, Kouchaksaraei MM, YeganehB, Bijani A, otevaseli E, et al. Resistance patterns ofEscherichia coli causing urinary tract infection. CaspianJournal of Internal Medicine. 2015; 6(3):148-151.
28. Akhtar N, Rahman R, Sultana S. Antimicrobial SensitivityPattern of Escherichia coli Causing Urinary Tract Infection inBangladeshi Patients. American Journal of Microbiological Research, 2016; 4(4):122-125.

Original Article

Comparison of Effect of Spironolactone and Furosemide Combination Plus Human Serum Albumin With Those of Spironolactone and Furosemide Combination Alone in the Management of Ascites in Patients With Cirrhosis of Lliver.

Paul P [1], Islam MR [2], Farid A [3], Siddiqu AA [4], Gain G [5], Islam A [6],Kabir MA [7]

1. *[*]Dr. Pinaki Paul, Assistant Professor, Department of Gastroenterology, Shaheed Syed Nazrul Islam Medical College.*
2. *Dr. Muhammad Rashidul Islam, Assistant Professor, Department of Gastroenterology, Shaheed Tajuddin Ahmed Medical College.*
3. *Dr. Farid Ahamed, Assistant Professor, Department of Gastroenterology, Sheik Russel National Gastroliver Institute and Hospital.*
4. *Dr. Ashfaque Ahamed Siddiqe, Assistant Professor, Department of Gastroenterology, Sheik Russel National Gastroliver Institute and Hospital.*
5. *Dr. Gobinda Gain, Assistant Professor, Department of Gastroenterology, Sheik Russel National Gastroliver Institute and Hospital.*
6. *Dr. Aminul Islam. Assistant Professor, Department of Gastroenterology, Mymensingh Medical College.*
7. *Dr. Anwarul Kabir, Professor, Department of Gastroenterology, Bangabandhu Sheik Mujib Medical University.*

**Address of correspondence*

Abstract

Background: *Treatment of ascites with diuretic could result in intravascular volume depletion, electrolyte imbalance and impairment of renal function. Albumin has the potential to improve the response to diuretics and to prevent its complications in cirrhosis with ascites. Several studies showed the introduction of human serum albumin (HSA) with combination of diuretics in patients with ascites due to cirrhosis of liver bring better outcome.*

Objective: *To compare the effect of Human serum albumin and diuretics combination therapy with that of diuretics therapy alone.*

Methods*: A randomized comparative study was carried out in the Department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University, Dhaka, from April 2015 to March 2016. In this study 110 patients with ascites due to cirrhosis of liver meeting the exclusion and inclusion criteria was purposively taken. They were categorized either group A or group B by simple random sampling by lottery. . Those who were provided with diuretics (Spironolactone and Furosemide) considered as group A (control) and diuretics (Spironolactone and Furosemide) with human serum albumin was considered as group B (experimental). Then the clinical and laboratory parameters and adverse events were assessed and compared.*

Results: *The study showed the mean age of the patients was 50.45 years in group A and 50.27 years in group B. Maximum 61.8% were male in group A and 56.4% were male in group B. Study showed most common cause of liver cirrhosis was hepatitis B virus (HBV); other causes were hepatitis C virus (HCV), Wilson's disease and idiopathic in both groups. The mean body weight on day 1 and day 6 after treatment were 60.21±10.72 kg and 63.67±11.68 kg respectively in group A and 60.20±8.87 kg and 56.77±8.04 kg respectively in group B. Weight loss in group-B was more than that of group-A which was statistically significant. The mean decrease in abdominal girth in group-A was 2.61±9.67 cm and in group-B was 4.54±8.58 cm which was statistically significant. It was found that the urine output (24 hours) significantly increased from the day-1 to day- 6 in groups B. The mean increase in serum albumin in group-B (6.83±2.80 g/l) is more than that of group-A (-3.34±1.78 g/l) and is statistically significant. The mean excretion of 24 hour urine sodium is more in group-B (65.82±49.76 mEq/L) than that of group-A (-7.12±11.64 mEq/L).*

Conclusion: *It concluded that low doses of human serum albumin in combination with diuretics are more effective than diuretics alone. Long-term albumin administration after first-onset ascites significantly improves patient's survival and decreases the risk of ascites recurrence.*

Key Words: Liver Cirrhosis, Ascites, Spironolactone, Furosemide, Human serum albumin

Received: *07.08.2020*

Accepted: *06. 10. 2020*

Introduction

Cirrhosis is a diffuse process characterized by fibrosis and the conversion of normal liver architecture into structurally abnormal regenerative nodule[1]. In Western countries common causes are alcohol and NASH (non-alcoholic steatohepatitis); where as in developing countries, common causes are chronic hepatitis B or C virus infection[2]. Cirrhosis may be compensated; or decompensated when complicated by one or more of the following features: jaundice, ascites, hepatic encephalopathy and raised prothrombin time. Ascites is one of the most common and troublesome feature of decompensation in cirrhosis of liver. Two factors are of major importance of pathogenesis of ascites, increased hydrostatic pressure due to portal hypertension and low oncotic pressure due to poor hepatic synthesis of albumin. Both factors altered Starling's equilibrium in liver sinusoidal and splanchnic capillaries leading to translocation of fluid from the intra vascular compartment to the peritoneal cavity[3]. Other factors are also implicated in fluid and sodium retention by kidney due to decreased effective arterial blood volume, with arterial hypotension causing enhanced activation of the renin-angiotensin-aldosterone system and vasopressin[4]. With the progression of liver cirrhosis, the sinusoidal hydrostatic pressure and lymph formation exceed the amount of flow to lymphatic vessels, is retained as ascites[5]. Medical treatment of ascites is based on reduction of sodium intake and the administration of diuretics, namely aldosterone antagonists and loop diuretics. Used therapeutic schedule consists of the administration of furosemide and spironolactone, doses (20 mg and 50 mg/day, respectively) according to the clinical response[6]. All patients with cirrhosis and ascites are exposed to the development of diuretic induced hyponatremia and renal impairment (prerenal azotemia), the later occurring in 20% of patients on diuretics [7]. Albumin is the ideal plasma expander in this setting, since it ameliorates systemic and renal hemodynamics, so reducing sodium retention, and increases oncotic pressure in the splanchnic compartment. Furthermore, albumin corrects the altered pharmacokinetics of loop diuretics that occurs in cirrhotic patients and also improve the better quality of life[8]. A recent Italian survey, the "Studio Delphi albumina" that used the Delphi method to formulate consensus on the clinical use of albumin both in and outpatients with cirrhosis[8]. There was a 77% agreement that in hospitalized patients with ascites treated with diuretics, administration of albumin reduces the length of hospital stay of 4.13 days (range: 2–8 days); more than half of these clinicians estimated the saved time as 6 or more days. 86% participants also agreed that albumin should be administered on outpatient basis, since it reduces both the recurrence of ascites and the rate of readmission to the hospital and improves the quality of life. Commercially available human serum albumin is a sterile aqueous solution for single dose intravenous administration containing 20% human albumin (weight/volume). So aim of this study was to see the comparative efficacy of combination with HSA plus diuretics regime versus diuretics alone in the management of ascites or decompensated cirrhosis of liver.

Method

A randomized open label parallel group comparative study was done from April 2015 to March 2016 in the admitted patients in the department of gastroenterology of Bangabandhu Sheik Mujib Medical University (BSMMU), Dhaka. After registration, patients underwent a 3 days lead in period under hospitalization and were randomly assigned to either control group (Group A) or experimental group (Group B) . The study treatment period maximum 6 days.

Sample size calculation:

Sample size: $n = \frac{P_1(1-P_1)^2 + P_2(1-P_2)^2}{(P_1-P_2)^2} \times (Z_\alpha + Z_\beta)^2$

(Kirtkwood and Jonathon, 2003)[10]

Where,

P_1= Proportion of patients developing outcome in control group

= 70 % patients of control group responded after treatment with diuretics. So, P_1 = 70 % =0.70 (Gentilini P et al, 1999)[8]

P_2 = Proportion of patients developing outcome in case group

= 90 % patients of case group responded after treatment with diuretics with human serum albumin. So, P_2 =90% =0.90 (Gentilini P et al, 1999) [8]

Z_α =Z-value (two tail) at a definite level of significance

= 1.96 (at 5% level of significance)

Z_β = Z-value (one tail) at a definite power

= 0.8416(at 80% power)

Therefore, Sample size

$$n = \frac{0.7(1-0.7)^2 + 0.9(1-0.9)^2}{(0.7-0.9)^2}(1.96 + .8416) = 58.86$$

= 59

So, each group will consists of 59 patients will a total of 118 patients.

Selection criteria

Inclusion criteria:

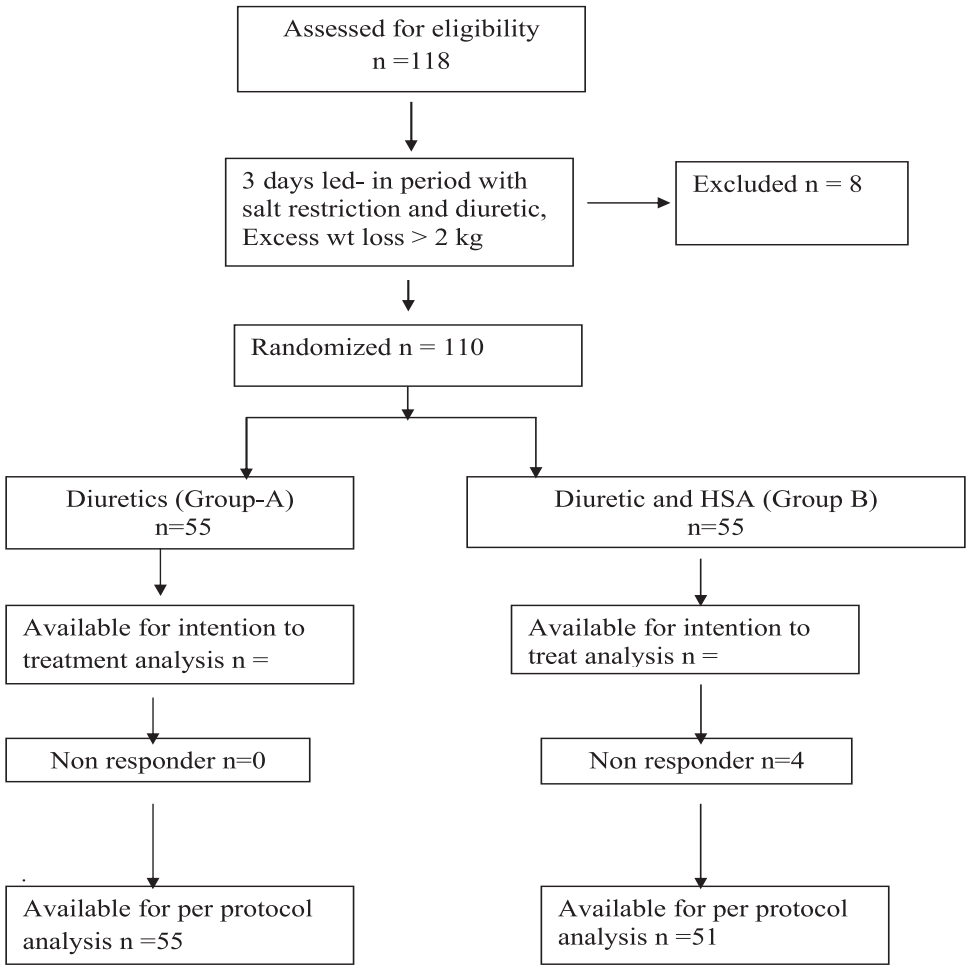
- Patients with cirrhosis due to any etiology with ascites admitted into the department of Gastroenterology, BSMMU
- Age:18 to 75 years of age
- Serum albumin concentration: < 3 g/dl.

Exclusion criteria:

- Age < 18 year
- Patients scheduled to undergo therapeutic paracentesis
- Patients with hepatic encephalopathy at the time of hospitalization , hepatorenal syndrome, hematemesis and malaena and spontaneous bacterial peritonitis
- Patients with severe renal disease (serum creatinine levels ≥ 2.0 mg /dl)
- Patients who could not tolerate protocol specified diuretic therapy
- Patients who are unwilling to enter the study protocol

Sampling technique

All 118 cases were selected purposively. The cases were randomized by simple random sampling by lottery. 118 numbers of token were kept in a box where 59 marked as diuretics and 59 marked as human serum albumin with diuretics. Before grouping each patient instructed to take a token and according to token he or she was categorized either group A or group B. Those treated with diuretics was considered as group A (control) and with human serum albumin with diuretics was considered as group B (experimental).



Consort diagram showing patient flow with dropouts and protocol violations

Study procedure: Consecutive hospitalized patient with cirrhosis due to any etiology and meeting all the inclusion criteria was initially be enrolled for the study. Cirrhosis of liver with ascites was diagnosed by history, clinical examination and biochemical findings (Serum albumin, prothrombin time, serum creatinine, haematocrit, serum electrolyte and 24 hour urinary sodium), abdominal ultrasound, endoscopy and liver biopsy if required. All patients were undergone a 3 day lead in period in hospital with a low salt diet (5gm/day), bed rest and diuretics therapy oral spironolactone (50mg/day) and furosemide (20mg/day). Patient exhibiting symptomatic improvement by the disappearance of ascites and/or a weight loss of at least 2 kg during the lead-in period were excluded from the study. The remaining patients were evenly and randomly be assigned to the group-A or group-B. Randomization were done by lottery.

Patient in group-A was received diuretics (Spironolactone and furosemide) only, on the other hand group-B was received the diuretics (Spironolactone and furosemide) and 50ml of 20% human serum albumin (grifol's) for 5 days. Serum albumin, serum creatinine, hematocrit, serum electrolyte, 24 hour urinary sodium concentration was done at base line before starting treatment with human serum albumin and at 6^{th} day after completion of therapy & was recorded in the data sheet. Body weight (kg), abdominal girth (cm), 24 hour urinary volume was measured every day during the hospital stay & recorded in the data sheet. Any occurrence of adverse effects due to either human serum albumin during the study period was recorded. Length of hospital stay was recorded during discharge from hospital.

Outcome of variables:

- Decrease in Body weight (kg),
- Decrease in abdominal girth (cm)
- Increase in 24 hr urinary volume (cc)
- Increase in Serum albumin (g/dl)
- Increase in 24 hour urinary sodium (mmol/L)
- Adverse effects

Data processing and analysis: The baseline data, outcome and adverse effects were compared by the computer based program SPSS for windows version 20. The mean difference of continuous data was compared by Student t test and categorical data by Chi-square test. P value less than 0.05 was considered as significant.

Result

This randomized controlled trial enrolled 118 patients with ascites due to cirrhosis of liver. All patients were treated with bed rest, salt and water restriction and diuretics. Eight patients showed >2 Kg weight loss in first 3 days led-in period and were excluded from the study. 55 patient were assigned to Group-A and 55 patient were in group-B. Patients of group A were treated with spironolactone and furosemide and those of group-B were treated with human serum albumin (HSA) with spironolactone and furosemide. The result and observation were shown in table and graph.

Table I: Sex distribution of the study subjects

sex	Group A (n=55)		Group B (n=55)		P value
	No	%	No	%	
Male	34	61.8	31	56.4	0.561
Female	21	38.2	24	43.6	

Table I shows 34(61.8%) patients in group-A and 31 (56.4%) in group-B were male. On the other hand 21 (38.2%) patients in group-A and 24 (43.6%) in group-B were female.

Table II: Cause of liver cirrhosis

Cause	Group A (n=55)		Group B (n=55)		P value
	No	%	No	%	
HBV	36	65.5	33	60.0	0.941
HCV	10	18.2	11	20.0	
Wilson	3	5.5	4	7.3	
Idiopathic	6	10.9	7	12.7	

However there was no significant difference in etiology between the two groups (p= 0.955).

Table III: Body weight of the study population between two groups

Weight in Kg	Group A (n=55)	Group B (n=51)	P value
	Mean±SD	Mean±SD	
Day 1	60.21±10.72	60.20±8.87	0.996
Day 6	63.67±11.68	56.77±8.04	0.001
Mean change	1.74±4.31	3.42±2.05	0.001
P value	0.001	0.001	

Table III shows body weight significantly reduced in group B.

Table IV: Urine output (24 hours) of the study population between two groups

Urine output (ml/24 hours)	Group A (n=55)	Group B (n=51)	P value
	Mean±SD	Mean±SD	
Day 1	1385±624	1175±466	0.048
Day 6	1042±486	2206±563	0.001
Mean change	342±305	1030±505	0.001
P value	0.001	0.001	

Table IV shows urine output significantly increases in group B.

Table V: Serum albumin of the study population between two groups

Serum albumin (g/l)	Group A (n=55)	Group B (n=51)	P value
	Mean±SD	Mean±SD	
Day 1	24.89±2.74	24.19±3.58	0.255
Day 6	21.54±1.92	31.08±3.50	0.001
Mean change	3.34±1.78	6.83±2.80	0.001
P value	0.001	0.001	

Table V shows serum albumin significantly increases in group B.

Table VI: Urinary sodium (24 hours) of the study population between two groups

24hoursUrinary sodium （mEq/L)	Group A (n=55)	Group B (n=51)	P value
	Mean±SD	Mean±SD	
Day 1	63.51±17.54	64.23±14.25	0.814
Day 6	56.39±49.76	130.05±52.11	0.001
Mean changes	7.12±11.64	65.82±49.76	0.001
P value	0.001	0.001	

Table VI shows urinary sodium (24 hour) significantly increase in group B

Table VII: Adverse event (incidence)

Transfusion reaction	Group B (n=51)	
	No	%
Mild (Articarial)	1	1.9
Febrile reactions	0	00
Severe anaphylactic	0	00
None	50	98.1

Table VII shows only one patient had mild Urticarial transfusion reaction in group-B which was 1.9%. But no reaction happened in group-A.

Table VIII: Correlation between albumin and weight in different group

	Group A		Group B	
	r value	p value	r value	p value
Weight loss versus change in serum albumin	0.157	0.251	0.048	0.728

Table VIII shows-In group-B decrease in body weight was accompanied by increased in serum albumin, but no significant correlation was found. But in group-A decrease in body weight was accompanied by decreased in serum albumin. In case of group-A, Pearson correlation coefficient r value 0.157 with p value 0.251, in group-B, r value 0.048 with p value 0.728.

Discussion

Two predominant factors in the formation of ascites are portal hypertension and hypoalbuminaemia. In this study, the patients of both groups were followed the first-line treatment modalities for ascites; bed rest, salt restricted diet, water restriction and diuretics (50 mg spironolactone and 20 mg furosemide). We attempted to see the comparative efficacy of combination with human serum albumin plus diuretics regime (Group B) versus diuretics alone (Group A) in the management of ascites or decompensated cirrhosis of liver. We compared the two groups on the basis of clinical response (reduction in body weight, decrease in ascites reflected by abdominal girth measurement and increase in 24-hour urine output) and laboratory data (serum albumin and 24 hour urinary sodium).

In our study the mean age of the patients in group-A and group-B were 50.45±14.47 years and 50.27±13.32 years respectively. There was no significant difference in age between two groups. In the study of Gentilini et al., the mean age of the patients were 62.8±1.3 years in group-A and 61.5±1.3 years in group-B[8]. Regarding sex distribution of our study, 34 (61.8%) patients in group-A and 31(56.4%) in group B were male. On the other hand 21 (38.2%) patients in group- A and 24 (43.6%) in group- B were female. Similar sex distribution was in the previous study (Nakamura et al., 2014)[6].

In our study, mean body weight on day-1 in group-A was 60.21±10.72 and in group-B was 60.20±8.87, on day- 6 mean body weight in group-A was 63.67±11.68 and in group-B (after 5 days HSA with diuretics) was 56.77±8.04. The mean body weight loss was 3.42±2.05 Kg in group-B which was consistent to the study by Nakamura et al., where body weight loss was 3.06 kg[6]. In group-A, the mean weight gain was 1.74±4.31 kg. Mean body weight was markedly reduced in group-B where's increased in group-A which was statistically significant (P value 0.001). In this study the mean abdominal circumference on day-1 in group-A was 81.97±9.13 cm and in group-B was 79.57±9.33 cm; those were similar to previous study[6]. They showed that the mean abdominal circumference were 87.46±9.78 cm with HSA and 88.12±2.34 cm without HSA. On day 6 mean abdominal girth in group-A was 84.59 ±1.78 and in group-B was 75.02 ±6.26. The mean decrease in abdominal girth in group-B was 4.54±8.58 cm and in group-A was 2.61±9.67 cm, both were statistically significant (P value 0.001). It was also found that on day 1, the mean urine output (24 hours) in group-A was 1358±624 ml and in group-B was 1175±466 ml. On day 6, mean urine output (24 hours) in group-A was 1042±486 and in group-B was 2206±563 ml. The similar result was found in the previous study[6]. The mean decrease in 24 hour urine volume was 342±305 ml in group-A and mean increase in group-B was 1035±505 ml both were statistically significant (P value 0.001).

This study showed that the mean serum albumin level on day-1 was 24.89±2.74 g/l in group-A and 24.19±3.58 g/l in group-B. On the other hand, on day 6, serum albumin level was 21.54±1.92 g/l in group-A and 31.08±3.50 g/l in group-B that is similar to previous study[8]. The mean decrease in serum albumin in group-A was 3.34±1.78 g/l and mean increase in group-B was 6.83±2.80 g/l both were statistically significant (P value 0.001). In the study of Gentilini et al., the serum albumin in group-B (with albumin) was 29.6±0.7g/l on day1 and, 32.3±0.6g/l on day-6[8]. Serum albumin at the end of the treatment was higher in group-B than in group-A.

Study also showed that the mean 24 hour urinary sodium on day-1 was 63.51±17.54 mEq/L in group-A and 64.23±14.25 mEq/L in group-B. On day 6, the mean 24 hour urinary sodium was 56.39±49.76 mEq/L in group-A and 130.05±52.11 mEq/l in group-B. The mean increase in 24 hour urinary sodium was 65.82±49.76mEq/L in group-B which was statistically significant (P value 0.001) and the mean decrease of 24 hour urinary sodium in group-A was 7.12±11.64mEq/L which was also statistically significant (P value 0.001). Excretion of 24 hour urine sodium was more in group-B than that of group-A, and the difference between two groups was statistically significant (p = 0.001). Similar result was found in the study by Gentilini et al., Nakamura et al.,[6,8]. The study by Gentilini et al., showed that the mean 24 hour urinary sodium in group-B (treated with albumin) was 16.65±1.81 mEq/L on day-1 and 103.47±11.23 mEq/L on day-6[8]. The study by Nakamura et al., showed that the increase in 24 hour urinary sodium in group-B (treated with albumin and diuretics) was more than that of group-A (with diuretics) after 5 days of therapy, 24 hour urinary sodium was 0.71g/day in albumin group and 0.16g/day in non-albumin group[6]. Similar result was found in the study by Hollander et al.,[11]. It was observed that (1.9%) mild urticarial transfusion reaction happened in group-B with albumin.

Conclusion

The most outstanding finding of this study was that the HSA with diuretics (group-B) was more effective than diuretics only (group-A). Initially both groups were treated with diuretics, but in group-B HSA was added in addition to diuretics. All patients were admitted in hospital, so there was less chance to be influenced by third variable. Therefore we can say that the variation of outcome in group-B was due to effect of HSA. All the measured outcome variables (Body weight (kg), abdominal girth (cm), 24 hr urinary volume (cc), Serum albumin (g/dl) & 24 hour urinary sodium (mmol/L) showed better effects with statistical significance in group-B (Human serum albumin with spironolactone and furosemide).

It concluded that low doses of human serum albumin in combination with diuretics were more effective than diuretics alone in the management of ascites in cirrhosis.

References

1. Hawkey CJ, Bosch J, Joel E, Garcia G, and Francis KL. Ascites, Textbook of clinical gastroenterology and hepatology. 2nd edition. Willey –Blackwell, U.K. 1992: 103-106.
2. Dooley SJ,Lok A, Burroughs AK and Heathcote J. Ascites, 'Diseases of the Liver and Biliary System'. 12th edition.Willey –Blackwell, U.K. 2011: 103-06.
3. Laffi G, Gentilini P, RomanelliRG and La Villa G. 'Is the use of albumin of value in the treatment of ascites in cirrhosis? The case in favour,' Digestive Liver Disease. 2003: 35:660.
4. Runyon BA. Management of adult patients with ascites caused by cirrhosis. Hepatology. 1998; 27: 264–72.
5. Nakamura T, Sata M, Hiroishi K, Masaki N, Moriwaki H, Murawaki Y et al.Contribution of diuretic therapy with human serum albumin to the management of ascites in patients with advanced liver cirrhosis: A prospective cohort study. Molecular & Clinical Oncolog. 2014; 2 : 349-55.
6. Nakamura T, Sata M, Suzuki K, Moriwaki H, Fukui H, Fujiyama S et al.Open-labeled randomized controlled trial to compare diuretic therapy with recombinant human serum albumin and diuretic therapy for therapeutic treatment of ascites in patients with advanced liver cirrhosis: An exploratory trial. Hepatology Research. 2014; 44: 502–14.
7. Sherlock S, Senewiratne B, Scott A and Walker JG. Complications of diuretic therapy in hepatic cirrhosis. Lancet. 1966; 1: 1049–53.
8. Gentilini P, Casini-Raggi V, Di Fiore G, RomanelliRG, Buzzelli G, Pinzani Met al. Albumin improves the response to diuretics in patients with cirrhosis and ascites: results of a randomized, controlled trial. Journal of Hepatology.1999; 30: 639-45.
9. Chuang VT, Kragh-HansenU and Otagiri M.Pharmaceutical strategies utilizing recombinant human serum albumin.Pharmcology Research. 2002; 19: 569-77.
10. Kirkwood BR & Jonathon AC, Sterne. Essential Medical Statistics. 2nd edition. 2003.
11. Hollander J, Chalasani N, Gorski J, Craven R., Lane K. and Brater D. Effect of albumin infusion on response to furosemide in patients with cirrhotic ascites. Gastroenterology. 2000; 118(4): 1448-49

Original Article

Discordance between Serum FSH and AMH in Infertile Women of Two Age Groups

Bhowmik J [1], Fatima P [2], Banu P [3], Israt S [4], Deeba F [5], Chowdhury S [6]

1. **Dr. Juthi Bhowmik, Consultant, Obstetrics & Gynaecology, Mother & Child Centre, Ashulia, Dhaka.*
2. *Prof Parveen Fatima, Ex-chairman, Dept. of Reproductive Endocrinology & Infertility, BSMMU, Dhaka.*
3. *Prof. Jesmine Banu, Chairman, Dept. of Reproductive Endocrinology & Infertility, BSMMU, Dhaka.*
4. *Dr. Shakeela Israt, Associate Professor, Dept. of Reproductive Endocrinology & Infertility, BSMMU, Dhaka.*
5. *Dr. Farzana Deeba, Associate Professor, Dept. of Reproductive Endocrinology & Infertility, BSMMU, Dhaka.*
6. *Dr. Shiuly Chowdhury, Associate Professor, Dept. of Obstetrics & Gynaecology, BSMMU, Dhaka*

**Address to correspondence*

Abstract

Background: *Ovarian reserve testing with anti-müllerian hormone (AMH) and follicle stimulating hormone (FSH) provides important prognostic information regarding reproductive outcomes. AMH is a peptide hormone produced by granulosa cells of early antral follicles and can be collected at any point during a woman's menstrual cycle. Follicle stimulating hormone (FSH) and anti-Müllerian hormone (AMH) represent the three most frequently utilized laboratory tests in determining ovarian reserve (OR).*

Objective: *To determine the discordance between FSH and AMH in infertile female of two age groups.*

Methods: *It was an observational (Cross sectional) study. This study was done in the Department of Reproductive Endocrinology and Infertility, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, between July 2018 to June 2019. The study population consisted of all the diagnosed female infertility patients of reproductive age. The women attending the study center during study period having primary or secondary infertility was considered as study population. They were divided in 2 groups ≤ 35 years and >35 years. Data was collected using a structured questionnaire following physical & lab examination. For D_2 FSH level fasting blood was collected on D 2/3 of menstrual cycle, serum FSH level was measured by ADVIA Centraur(R) XP immunoassay system. For S. AMH level blood sample was collected on day 2 of cycle and measured by BECKMAN COULTER machine using Chemiluminescent Immunoassay method. Collected data were classified, edited, coded and entered into the computer for statistical analysis by using SPSS version 23.*

Result: *Out of 74 infertile women, almost two third 47(63.5%) patients belonged to age group ≤ 35 years. The mean age was found 32.6±5.5 years. Serum FSH and AMH were significantly associated with different age group. A negative correlation was found between serum FSH and serum AMH in age group ≤ 35 years (r= -0.745; p=0.001) and > 35 years (r= -0.819; p=0.001) respectively.*

Conclusion: *In conclusion, in less than 35 years age group the negative correlation between serum FSH and serum AMH was moderate and there was 40% discordance. So, study concluded that for best evaluation of ovarian reserve with day 2 FSH and serum AMH should be done.*

Key word: *Anti-Müllerian Hormone; Follicle Stimulating Hormone; Discordance.*

Received: *26.09.2020*

Accepted: *13. 11. 2020*

Introduction

Ovarian reserve tests have a significant role in predicting ovarian response to gonadotropin stimulation and to the outcome of assisted reproduction treatment (ART). Follicle stimulating hormone (FSH) and anti-Müllerian hormone (AMH) are the most commonly used ovarian reserve tests[1,2].

A woman is born with about 2 million primordial follicles, yet by the onset of menarche only about 400,000 follicles are left due to natural follicular atresia. As a woman reaches her mid-30s, the pace of oocyte depletion begins to increase and by the time she reaches her late 30s, the number of follicles declines to approximately 25,000, concomitant with a significant increase in miscarriage rate[3].

Ovarian reserve is a complex clinical phenomenon influenced by age, genetics, and environmental variables[3]. The decline in a woman's ovarian reserve with time is irreversible and the rate at which women lose primordial follicles varies considerably, with wide variation regarding the onset of sterility and timing of the menopausal transition[3].

Ovarian reserve tests started to emerge during the rise of ART in the late 1980s to predict both responsiveness to super ovulation drugs and the odds of pregnancy with treatment. They include both biochemical basal and provocative tests and ultrasound imaging of the ovaries. The first test to be introduced was day-3 follicle-stimulating hormone (FSH) (1988), followed by clomiphene citrate challenge test (CCCT) (1989), gonadotropin releasing-hormone (GnRH) agonist (1989), inhibin B (1997), antral follicular count (AFC) (1997), and antimüllerian hormone (AMH)[3].

Early follicular phase (basal) FSH as a marker of ovarian reserve was proposed almost 30 years ago, as a tool to predict ovarian response to in vitro fertilization (IVF)[4]. This test is an indirect assessment of ovarian reserve and is based on the feedback inhibition of FSH pituitary secretion by ovarian factors.

Women with normal ovarian reserve have sufficient production of ovarian hormones at this early stage of the menstrual cycle to maintain FSH levels within normal range[3].

However, basal FSH testing has several major limitations including significant intercycle and intracycle variability that limits its reliability[5]. It requires a functional hypothalamus-pituitary-ovarian axis, and it is not adequately sensitive for clinical utility–only elevations carrying significance[6].

A single abnormal FSH value in a woman <40 years of age may not predict a poor response to stimulation or failure to achieve pregnancy and should prompt repeat testing[7].

The ovary begins producing AMH in utero at about 36 weeks of gestation.[8] Its levels rise in young women beginning in adolescence and peak at about 25 years of age, then gradually decline until reaching undetectable levels a few years prior to menopause.

Since AMH is expressed during normal early folliculogenesis (secreted by early follicles up to 6 mm), it is relatively independent of gonadotropins circulating at physiologic levels and allows for testing anytime throughout the cycle[3].

Materials and methods

It was an observational (Cross sectional) study. This study was done in the Department of Reproductive Endocrinology and Infertility, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, between July 2018 to June 2019. The study population consisted of all the diagnosed female infertility patients of reproductive age. The women attending the study center during study period having primary or secondary infertility was considered as study population. They were divided in 2 groups ≤ 35 years and >35 years. For D_2 FSH level fasting blood was collected on D2/3 of menstrual cycle, serum FSH level was measured by ADVIA Centaur(R) XP immunoassay system. For S. AMH level blood sample was collected on any day of cycle and measured by BECKMAN COULTER machine using Chemiluminescent Immunoassay method. Statistical analysis was carried out by using the Statistical Package for Social Sciences version 20.0 for Windows. The mean values were calculated by frequencies and percentages. The quantitative observations were indicated by frequencies and percentages. Chi square test was used for categorical variables. Unpaired t-test was used for continuous variables. Pearson's correlation coefficient was used to test the relationship between the groups. Multivariate logistic regression analysis was used for risk factors of infertile women. P values < 0.05 was considered as statistically significant.

Results

This is a observational study was carried out in the infertility outdoor, department of Reproductive Endocrinology and Infertility, Bangabandhu Sheikh Mujib Medical University, Dhaka between July 2018 to June 2019. A total of 74 infertile women were included in this study with maintaining inclusion & exclusion criteria. The result & observation were shown in table & figure.

Table I: Distribution of the study patients by age (n=74)

Age (years)	Number of patients	Percentage
≤35	47	63.5
>35	27	36.5
Mean±SD	32.6	±5.5
Range (min -max)	22.0	-40.0

Table II: Distribution of the study patients according to serum FSH (n=74)

Serum FSH (IU/L)	Age ≤35 years (n=47)		Age >35 years (n=27)		P value
	N	%	n	%	
≤10.0 (Normal)	37	78.7	12	44.4	
>10.0 (Abnormal)	10	21.3	15	55.6	
Mean±SD	7.9	±4.7	10.2	±3.1	0.026 S
Range (min -max)	3.02	-27.0	5.0	-16.0	

s= significant

P value reached from unpaired t-test

Table III: Distribution of the study patients according to serum AMH (n=74)

Serum AMH (ng/ml)	Age ≤35 years (n=47)		Age >35 years (n=27)		P value
	N	%	n	%	
<1.0 (Low)	6	12.8	13	48.1	
1.0 -3.5 (Normal)	41	87.2	14	51.9	
Mean±SD	2.24	±0.98	1.37	±1.06	0.001 S
Range (min -max)	0.18	-3.50	0.02	-3.48	

s= significant

P value reached from unpaired t-test

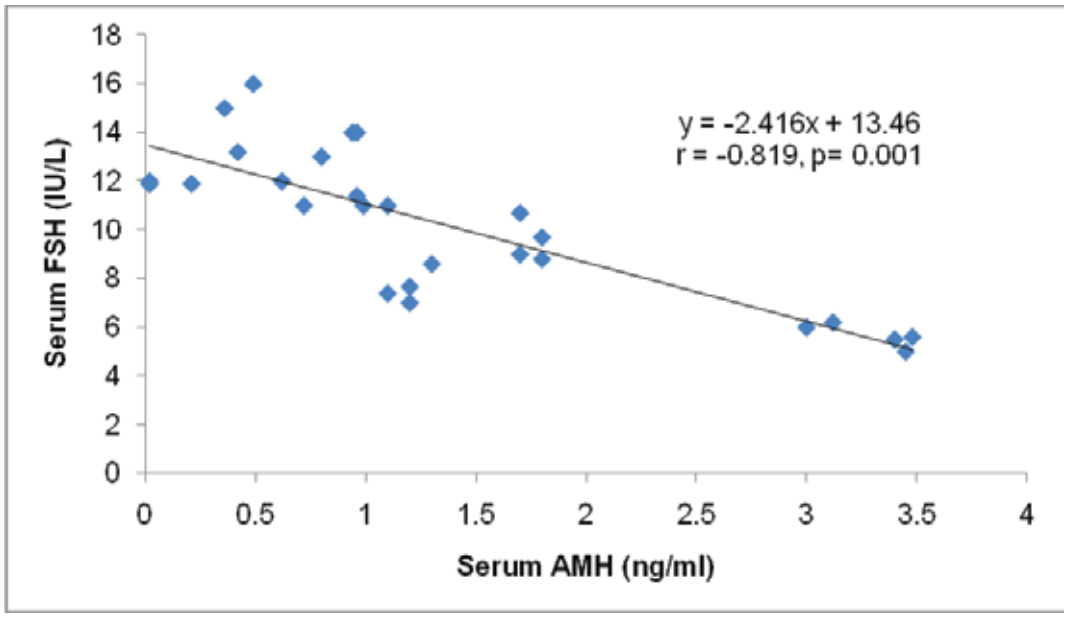


Figure 1: The scatter diagram showing negative correlation (r= -0.745; p=0.001) between serum FSH and serum AMH in age group ≤35 years.

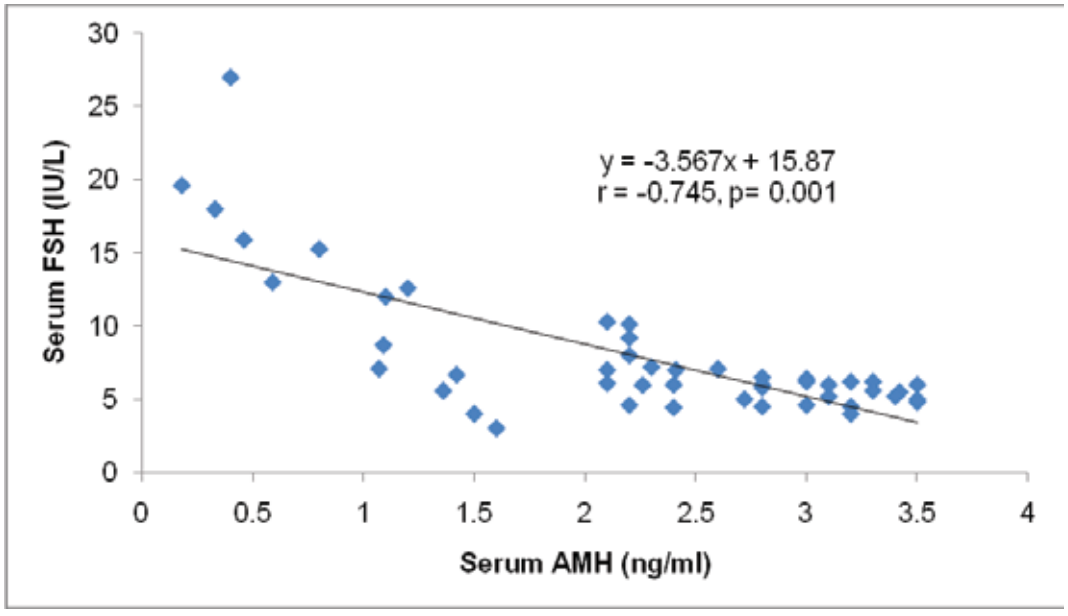


Figure 2: The scatter diagram showing negative correlation (r= -0.819; p=0.001) between serum FSH and serum AMH in age group >35 years.

Table IV: Multi variable logistic regression analysis for age >35 years

Risk factors	Regression coefficie nt (β)	Odds Ratio (OR)	95% CI for OR	P value
Serum FSH (>10.0 IU/L)	0.934	2.544	0.901 -7.182	0.078 ns
Serum AMH (<1.0 ng/ml)	1.531	4.626	1.649 -12.976	0.004 s

s= significant, ns= not significant

P-value reached from multivariate analysis by binary logistic regression analysis

Discussion

This observational (Cross sectional) study was carried out at Reproductive Endocrinology and Infertility department of Bangabandhu Sheikh Mujib Medical University, Dhaka, between July 2018 to June 2019. Patients were selected according to exclusion and inclusion criteria. Patients were divided in two age groups ≤35 years and >35 years. For D_2 serum FSH blood was collected on 2nd day of menstrual cycle. Then all the data were assessed and compared with age.

In present study showed that in age group ≤35 years, 37(78.7%) patients had serum FSH level ≤10.0 IU/L and >35 years age group 12(44.4%) patients had serum FSH level ≤10.0 IU/L. The mean serum FSH was found 7.9±4.7 IU/L in age group ≤35 years and 10.2±3.1 IU/L in age group >35 years. The mean difference was statistically significant (p<0.05) between two groups. Barbakadze et al. found significant association between serum FSH with different age group[9]. Okunola et al. showed in their study that there is a significant difference in both mean FSH and AMH level in different age groups (25-35 years and 35-45 years)[10].

Ozcan et al. revealed that the AMH concentration declined significantly with increasing age[11]. This decline began at the age of 30, and it became dramatically evident from the age of 35. This suggests that some women may be candidates of poor response due to the unexpected risk of a diminishing ovarian reserve after age 30. In this study it was documented that majority 41(87.2%) patients were normal (1.0-3.5 ng/ml) serum AMH in age group ≤35 years and 14(51.9%) in age group >35 years. The mean serum AMH was found 2.24±0.98 ng/ml in age group ≤35 years and 1.37±1.06 ng/ml in age group >35 years. The mean difference was statistically significant (p<0.05) between two groups.

In the largest study analyzing age-specific medians for serum AMH by Seifer et al. reported that both median and mean AMH values were inversely associated with age[12]. The average yearly decrease in the median serum AMH value was 0.2 ng/ml/year upto age 35 then diminished to 0.1 ng/mL/year after the age of 35. The most striking study on means of AMH in general population is the study of Tremellen and Kolo[13]. They evaluated a total of 1032 women aged between 18 and 43 years and found that the mean serum AMH level is relatively stable at approximately (4.1 ng/ml) (1 ng AMH is 7.143 pmol) in the under 30-year-old range; however, from 30 years of age onwards the serum AMH levels decline rapidly, became half in concentration to an average of only (1.95 ng/ml) in the 35-39 year old age group.

Barbakadze et al. found significant negative correlation of serum AMH with advancing age group[9]. In this study it was observed that there was a moderate negative correlation (r=-0.745; p=0.001) between serum FSH and serum AMH in age group ≤35 years and strong negative correlation (r= -0.819; p=0.001) between serum FSH and serum AMH in age group >35 years. Barbakadze et al. consisted that AMH showed a negative correlation with FSH (rs=-0.48, p<0.0001)[9]. Gada et al. found that there was a negative correlation between AMH and FSH (R= -0.41)[14]. Okunola et al. showed in their study the Pearson's coefficient for the correlation between FSH and AMH after controlling for age was -0.311 (P=0.012)[10]. Scheffer et al. documented that AMH was significantly correlated with FSH (r=-0.32, *p*<.01)[11].

In present study it was evident that there is a discordance between AMH and FSH, 40% patients ≤ 35 years age group had FSH level >10IU/L but AMH level >1 ng/ml. In >35 years of age group this discordance between FSH and AMH was 13.3%. Leader et al. showed in a large study of 5354 women that discordance between FSH and AMH was 20% in age group ≤ 35 years[15].

Gleicher et al. reported that women with normal AMH and FSH produced high number of oocytes, whereas women with normal FSH but decreasing AMH produced a significantly lower number of oocytes[16]. This also indicates that serum AMH levels are more important predictors of ovarian aging than FSH levels. This is similar with previous studies by Barad et al. that shows that AMH levels are better predictors of response to ovarian stimulation and clinical pregnancy than baseline FSH[17]. The relatively lower slopes of increasing FSH in older age have made FSH a late predictor of ovarian reserves (Knauff et al)[18].

Barbakadze et al[9] reported that according to regression analysis, age only explained the variation of AMH in 22%, the variation of FSH in 14%. Among FSH and age, age was the only independent predicting variable (beta=-0.4, p=0.001). In this study it was found that in multivariate logistic regression analysis, patients having serum AMH (<1.0 ng/ml) was 4.626 (95% CI 1.649 to 12.976) times in age group >35 years. Patients having total AFC (<5 number) was 9.412 (95% CI 2.543 to 34.838) times in age group >35 years.

Conclusion

In all age group, FSH and AMH correlates but it is more pronounced in advanced age that means >35 years age group. Further studies can be undertaken by including large number of patients.

References

1. Selcuk S, Zeynep Kamil Hastanesi, Usküdar, Istanbul, Turkiye. Discordance Rates Between AMH and FSH in Different Age Groups. J Clin Anal Med. 2016;7(5): 621-4.
2. Singer T, Barad DH, Weghofer A, Gleicher N. Correlation of antimüllerian hormone and baseline follicle-stimulating hormone levels. Fertil Steril. 2009; 91(6):2616-9.
3. Sharara FI, Scott RT Jr and Seifer DB. The detection of diminished ovarian reserve in infertile women. Am J Obstet Gynecol. 1998;179:804–812.
4. Toner JP, Philput CB, Jones GS and Muasher SJ. Basal follicle-stimulating hormone level is a better predictor of in vitro fertilization performance than age. Fertil Steril. 1991;55(4):784–791.
5. Kwee J, Schats R, McDonnell J, Lambalk CB and Schoemaker J. Intercycle variability of ovarian reserve tests: results of a prospective randomized study. Hum Reprod. 2004;19:590–595.
6. Roberts JE, Spandorfer S, Fasouliotis SJ, Kashyap S and Rosenwaks Z. Taking a basal follicle-stimulating hormone history is essential before initiating in vitro fertilization. Fertil Steril. 2005;83(1):37–41.
7. Rajpert-De Meyts E, Jorgensen N, Graem N, Muller J, Cate RL and Skakkebaek NE. Expression of anti-mullerian hormone during normal and pathological gonadal development: association with differentiation of Sertoli and granulosa cells. J Clin Endocrinol Metab. 1999;84(10):3836–3844.
8. Broer SL, Mol BW, Hendriks D and Broekmans FJ. The role of antimüllerian hormone in prediction of outcome after IVF: comparison with the antral follicle count. Fertil Steril. 2009;91: 705–714.
9. Barbakadze L, Kristesashvili J, Khonelidze N and Tsagareishvili G. The Correlations of Anti-Mullerian Hormone, Follicle-Stimulating Hormone and Antral Follicle Count in Different Age Groups of Infertile Women', International Journal of Fertility and Sterility. 2015;8(4):393-398.
10. Okunola T, Ajenifuja K, Loto O, Salawu A and Omitinde S. Follicle stimulating hormone and anti-müllerian hormone among fertile and infertile women in Ile-Ife, Nigeria: is there a difference? Int J Fertil Steril. 2017;11(1):33-39.
11. Ozcan P, Ficicioglu C, Yesiladali M, Devranoglu B, Aydın S and Batmaz G. Age-Related Distribution of Basal Anti-Mullerian Hormone Levels in a Population of Infertile Women. J Clin Anal Med. 2016; 7(3): 355-8.
12. Seifer DB, Baker VL and Leader B. Age-specific serum anti-Müllerian hormone values for 17,120 women presenting to fertility centers within the United States. Fertil Steril. 2011;95(2): 747-50.
13. Tremellen K and Kolo M. Serum anti-Mullerian hormone is a useful measure of quantitative ovarian reserve but does not predict the chances of live-birth pregnancy. Aust N Z J Obstet Gynaecol. 2010;50(6): 568–572.
14. Gada R, Morbeck D, Amols M, Rollene N, Jensen J, Coddington C et al. Anti-mullerian hormone (AMH), antral follicle count (AFC) and age predict IVF outcomes significantly better than follicle timulating hormone. Fertility and Sterility. 2010;94(4):97.
15. Leader B, Hedge A, Baca Q, Stone K, Lannon B and Baker VL. High frequency of discordance between antimullerian hormone and follicle stimulating hormone levels in serum from estradiol confirmed days 2 to 4 of the menstrual cycle from 5,354 women in US fertility centers, Fertil Steril. 2012;98(4):1037-1042.
16. Gleicher N, Weghofer A and Barad DH. Discordance between follicle stimulating hormone (FSH) an anti mullerian hormone (AMH) in female infertility', Reprod Biol Endocrinol. 2010; 8(64):1–7.
17. Barad DH, Weghofer A and Gleicher N. Comparing anti-Mullerian hormone (AMH) and follicle-stimulating hormone (FSH) as predictors of ovarian function. Fertil Steril. 2010;91(4): 1553–1555.
18. Knauff EAH, EijkmansMJC, Lambalk CB, Kate-BooijMJ, Hoek A. Anti Mullerian Hormone, Inhibin B, and Antral Follicle Count in young woman with ovarian failure. J Clin Endocrinol Metab. 2009;94(3):786–92.

Original Article

Phaco in Soft Cataract: A New Technique, Safe and Easy

Bhuiyan MBB [1], Jannat KE [2], Rabbani G [3], Islam MA [4], Akter M [5]

1. **Md Bazlul Bari Bhuiyan, Associate professor, Ophthalmology, Holy Family Red Crescent Medical College & Hospital.*
2. *Khatun-E-Jannat, Resident Medical officer, Ophthalmology, Holy Family Red Crescent Medical College & Hospital.*
3. *Golam Rabbani, Registrar, Ophthalmology, Holy Family Red Crescent Medical College & Hospital,*
4. *Mohd Aminul Islam, DO Resident, National Institute of Ophthalmology*
5. *Mahfoja Akter, Medical officer, Narsingdi Eye Care.*

***Address of correspondence**

Abstract

Purpose: *To describe a risk-free new phacoemulsification technique in soft cataracts.*

Case selection: *Two hundred and fifty Soft cataracts irrespective of age, sex and systemic diseases were included. Subluxated and complicated cataracts with posterior synechia, small and rigid pupil ceases were excluded. Both hypermetropic and myopic eyes were included. Traumatic cataracts without zonular dehiscence were also included.*

Setting: *In three different eye hospitals of Bangladesh (1. Holy Family RC Medical college Hospital,1 Eskaton Garden, Dhaka 2. Harun Eye Foundation Hospital, House-12/A, Dhanmondi-5, Dhaka. 3. Narsingdi Eye Care, 150/12 Bilasdi, Velanagar, Narsingdi.) 250 soft cataract surgeries were done applying this technique during the period of November 2016 to July 2019.*

Design: *Prospective clinical (surgical) Cohort study.*

Method: *Two hundred and fifty eyes with soft cataracts underwent phacoemulsification under local and topical anesthesia applying this technique. At the beginning all the steps were as usal up to capsulorhexis. Then anterior cortex and epinucleus were removed circumferentially along the rhexis margin . Hydro-delineation was done by pushing fluid at the junction of nucleus and epinucleus at 2 to 3 sites 90 to 180 degree apart. Thus cortico-epinuclear shell was created below the nucleus(Bari's Shell). Then hydrodissection was performed and popping up of the nuclear edge was visible. No rotation of nucleus was done. The core nucleus was caught by phaco tip, it came out of the shell with a tumbling movement, and was emulsified directly at high vacuum and low power. Epinucleus was removed mostly by phaco tip and the cortex was removed by irrigation aspiration (I/A) tip.*

Result: *Most of the patients, 82% (n=205) were less than 55 years of age (21 to 54 years) and 18% (n=45) were above. Regarding gender 64%(n=160) were male and 36% (n=90) were female. No posterior capsular tear (PCT) occurred during phacoemulsification of nucleus (0%) and there was no nucleus or cortex drop in the vitreous (0%). Posterior chamber Intraocular lens (PCIOL) was given in 100% of the cases, in bag 249 and 1 in sulcus. One PCT (0.4%) during polishing of posterior capsule and one small zonnular dehiscence after IOL implantation. No additional cost was required.*

Conclusion: *Bari's Shell Technique phaco is a safe, easy and effective method in soft cataract without any additional cost.*

Key Words: *Shell technique, Phacoemulsification, Soft cataract.*

Received: *20. 07. 2020*

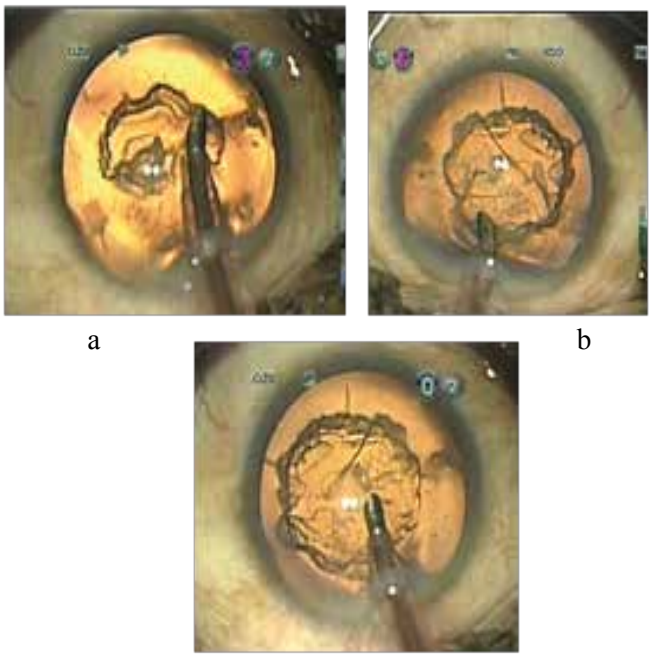
Accepted: *15. 12. 2020*

Introduction

Number of soft cataract surgery is increasing day by day in daily practice. The common challenges of true soft cataract with the existing techniques are: 1.Rotation of nucleus, 2. Proper separation and breaking of the core nucleus, 3. Holding the core nucleus by phaco tip. As a result there is a high chance of piercing through the nucleus and rupturing the posterior capsule (PC) in a soft cataract[1] And these challenges are really difficult to overcome by the young surgeons. The overall incidence of posterior capsule tear (PCT) in previous published literatures shows as high as 14%[2,3,4,5,6,7]. Wth the advancement of technology and expertise it came down to around 3.6% in expert hands[1] and up to 11% or more among new surgeons[2,8,9]. Despite recent advances in technique and technology, phacoemulsification in soft cataract is challenging for majority of young surgeons[10]. This new technique is modification of some steps of the existing phaco procedure that ensures the safety in several folds. The documented risk of posterior capsular tear is least in this technique (0.4%). This is very easy to adopt specially by the young surgeons.

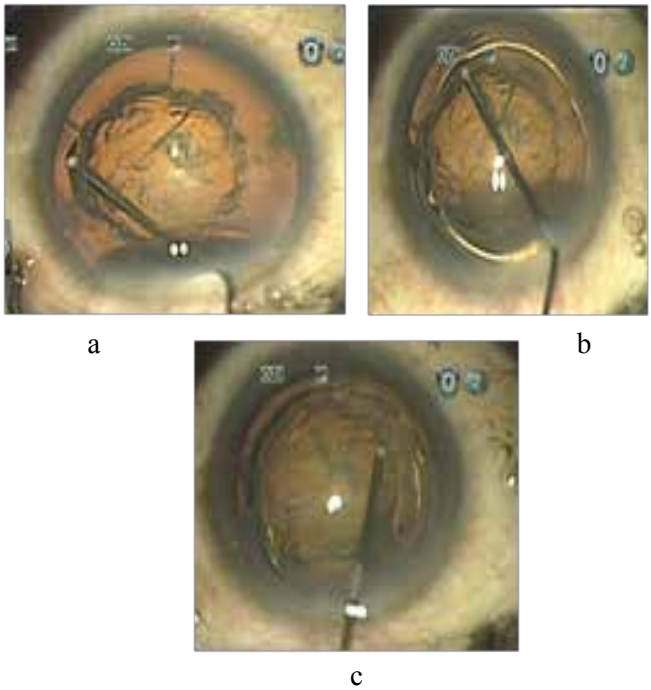
Method

Two hundred and fifty eyes with soft cataracts underwent phacoemulsification by the first author under local and topical anesthesia applying this technique. At the beginning all the steps were as usual up to capsulorhexis. Then anterior cortex and epinucleus were removed circumferentially along the rhexis margin at bevel down position of the phaco tip at low power and vacuum setting Power 20 to 30%, Vacuum 80 to 90 mm, i.e. Phaco-1; (Fig:1 a,b,c). Then hydro-delineation was done by pushing fluid with cannula at nucleo-epinuclear junction under direct visualization (Fig:2 a,b,c) at two to three sites 90 to 180 degree apart from the primary site. Appearance of golden ring ensured the Procedure (Fig: 2b).



a b c

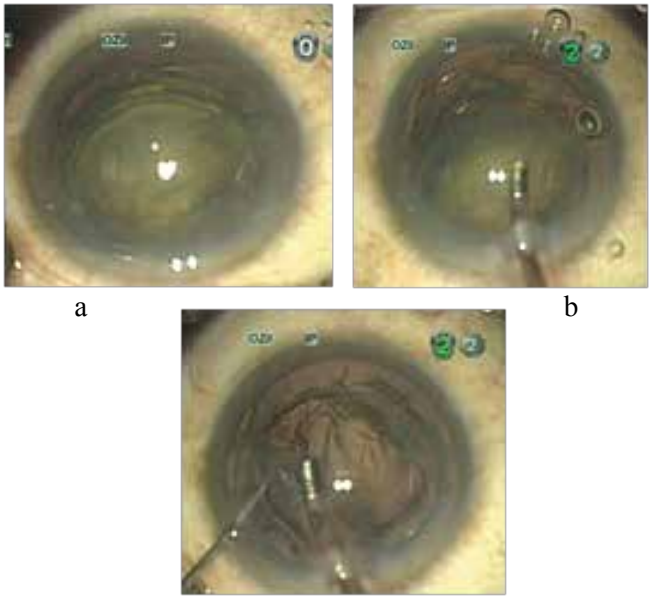
Fig-1: a, b & c Removal of anterior cortex and epinucleus



a b c

Fig-2: a & b Hydrodelineation, (c) Hydrodissection

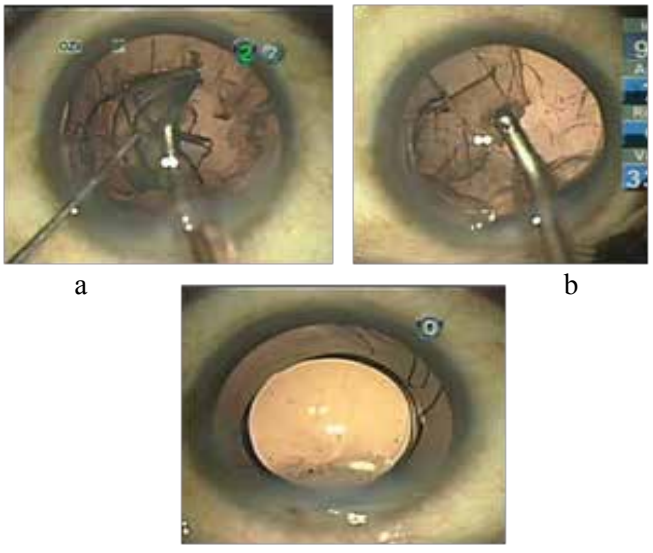
The core nucleus became free and popped up of edge was observed. Thus the shell was created. Then hydro-dissection was done by pushing saline just beneath the capsule. There was further popping up of the core nucleus (Fig-3 a) . No reposition of the nucleus was done.



a b c

Fig-3: a. Popped up nucleus; b. Tumbling of nucleus & c. Nucleus removal by phaco tip

The phaco machine was set at low power, high vacuum Power: 20 to 30 %, Vaccum: 300 to 400 mm, i.e. Phaco 2 mode) and the edge of nucleus was engaged by the phaco tip. The core nucleus came out with tumbling fashion leaving behind a protective shell of cortex and epinucleus (Fig: 3b) The free core nucleus was removed en mass by the phaco tip (direct Catch & eat!). Average nucleus emulsification time in this technique was less than a minute (minimum18 seconds, maximum 52 seconds) only. Then the shell was removed: epinuclear part by the phaco tip mostly (Fig: 4a) and the cortex by irrigation aspiration tip (Fig: 4b) .



a b c

Fig-4: a & b Shell removal, c. IOL implantation

In some instances both the parts of the shell was removed by I/A tip. Remaining parts of the surgery was as usual, IOL insertion, A/C wash and wound sealing in every case.

Result

In three different eye hospitals of Bangladesh **250** Soft cataract (non-breakable) surgeries were done by the author applying this technique during the period of November 2016 to July 2019. Regarding age 82% (n=205) patients were less than 55 years (21 to 54 years) and 18% (n=45) were above. In respect of gender 64 % (n=160) were male and 36% (n=90) were female. No PCT occurred during phacoemulsification of nucleus (i.e.PCT 0%) and there was no nucleus drop in the vitreous (0%). PCIOL insertion was done in every case (100%). Only one PCT occurred (0.4%) during polishing of posterior capsule and one zonnular dehiscence (small area) occurred after IOL implantation. All IOL was implanted in posterior (100%) with 99.6 % within the capsular bag (n=249) and 1 in sulcus (0.4%).

Discussion

Freeing of the upper part of the cataract by this new technique provides enough space to the core nucleus of to be separated easily and come out of the epinucleus during hydro procedures. Hydro delineation is the most important part in this technique, not the hydrodissection. The cortico-epinuclear shell protects the posterior capsule (PC) during phacoemulsification of the nucleus by preventing forward bulging of the PC acting. Hydrodissection makes the shell removal easy after nucleus emulsification. Several techniques are described for safe phacoemulsification of soft cataract[1,11,12,13]. However each technique has its own limitations and scope of improvement is there. Variations are made to make the technique more lower complication rates[13]. Several factors predispose to PCT and vitreous loss in phacoemulsification, one important of which is surgeon experience. The overall incidence of posterior capsule tear (PCT) in previous published literatures shows as high as 14%[2,3,4,5,6,7] With the advancement of technology and expertise it came down to around 3.6% inexpert hands[1] and up to 11% or more among new surgeons[2,8,9]. In this new technique the PCT rate is 0.4% which is least in comparison to other studies.

Vasavada and Raj[14] described inside-out delineation in context of soft and posterior polar cataract. In this new technique, nucleus rotation is not required, which is a very difficult job in soft cataract. As the nucleus easily comes out of the shell, there is no need of groove and phacoemulsification of the nucleus becomes 'Bread and Butter' to the surgeon. True soft nucleus has minimal or no adverse effect on corneal endothelium as very low power with minimum time (<1 minute) is required to remove the free nucleus. All these factors are highly favourable to both the surgeon and the patient. Only two avoidable complications occurred at the end of surgery. One is PCT during policing of posterior capsular plaque and the other is small zonnular dehiscence during A/C wash after IOL insertion.

Conclusion

This new Shell Technique (Bari's shell technique) Phacoemulsification is a highly effective, safe and easy procedure for soft cataracts.

References

1. Arup Chakrabarti and Nazneen Nazm. Posterior capsular rent: Prevention and management.. 1Indian J Ophthalmol. 2017 Dec; 65(12): 1359–1369. doi: 10.4103/ijo.IJO_1057_17
2. Vajpayee RB, Sharma N, Dada T, Gupta V, Kumar A, Dada VK, et al. Management of posterior capsule tears. Surv Ophthalmol. 2001;45:473–88. [PubMed] [Google Scholar]
3. Noecker RJ, Allinson RW, Snyder RW. Resident phacoemulsification experience using the in s i t u nuclear fracture technique. Ophthalmic Surg. 1994;25:216–21. [PubMed] [Google Scholar]
4. Gimbel HV, Sun R, Ferensowicz M, Anderson Penno E, Kamal A. Intraoperative management of posterior capsule tears in phacoemulsification and intraocular lens implantation. Ophthalmology. 2001;108:2186–9. [PubMed] [Google Scholar]
5. Hagan JC, 3rd, Davison JA. Clinical comparison of the alcon 20,000 legacy and 10,000 master phacoemulsification units. J Cataract Refract Surg. 1998;24:693–6. [PubMed] [Google Scholar]
6. Ng DT, Rowe NA, Francis IC, Kappagoda MB, Haylen MJ, Schumacher RS, et al. Intraoperative complications of 1000 phacoemulsification procedures: A prospective study. J Cataract Refract Surg. 1998;24:1390–5. [PubMed] [Google Scholar]
7. Lundström M, Barry P, Leite E, Seward H, Stenevi U. 1998 European cataract outcome study: Report from the European cataract outcome study group. J Cataract Refract Surg. 2001;27:1176–84. [PubMed] [Google Scholar]
8. Narendran N, Jaycock P, Johnston RL, Taylor H, Adams M, Tole DM, et al. The cataract national dataset electronic multicentre audit of 55,567 operations: Risk stratification for posterior capsule rupture and vitreous loss. Eye (Lond) 2009;23:31–7. [PubMed] [Google Scholar]
9. Lundström M, Behndig A, Kugelberg M, Montan P, Stenevi U, Thorburn W, et al. Decreasing rate of capsule complications in cataract surgery: Eight-year study of incidence, risk factors, and data validity by the Swedish national cataract register. J Cataract Refract Surg. 2011;37:1762–7. [PubMed] [Google Scholar]
10. Vasavada AR, Raj SM. Inside-out delineation. J Cataract Refract Surg. 2004;30(6):1167-9.
11. Braga-Mele R, Khan BU. Hydro-chop technique for soft lenses. J Cataract Refract Surg. 2006;32(1):18-20.
12. Fine IH. The chip and flip phacoemulsification technique. J Cataract Refract Surg. 1991;17(3):366-71.
13. Güell JL, Vázquez M, Lucena J, Velasco F, Manero F. Phaco rolling technique. J Cataract Refract Surg. 2004;30(10):2043-5.

Original Article

Lower GI bleeding from Idiopathic Colonic Varices in a 65 year old man: A case report.

Saqeb KMN [1]

*1. *Dr. Khan Md. Nazmus Saqeb, Assistant Professor, Dept. of Gastrointestinal, Hepatobiliary & Pancreatic diseases, Jahurul Islam Medical College & Hospital, Bhagalpur, Bajitpur, Kishoreganj*

Address of correspondence

Abstract

Background: *Idiopathic colonic varices are extremely rare. Lower gastrointestinal bleeding from colonic varices is very rare as well, with fewer than 100 cases reported in the literature. We report a case of lower GI bleeding from idiopathic colonic varices in a 65 year old man.*

Case: *The patient presented with painless per rectal bleeding & was admitted to hospital for further management. Any other symptoms which could have suggested other organic diseases were absent. Past history & family history was insignificant. Examination revealed no abnormality except for a mild anemia. There was no evidence of chronic liver disease, neither clinical nor biochemical. Colonoscopy revealed a tuft of dilated tortuous submucosal vessels at the recto-sigmoid junction without any signs of active bleeding, suggestive of colonic varices. USG of whole abdomen showed a normal liver with uniform echo texture. No splenomegaly, ascites or signs of portal venous thrombosis were seen on USG & doppler studies. The serological markers for hepatitis B and C were also negative. Upper GI endoscopy & CT scan of abdomen were normal. Thus, the most common cause of colonic varices, portal hypertension (HTN) secondary to liver cirrhosis was excluded. Portal HTN secondary to portal venous obstruction of different etiologies was ruled out step by step. Thrombophilia was excluded by a normal coagulation & autoantibody profile. And a diagnosis of Idiopathic colonic variceal bleeding was made. As there was no evidence of active bleeding, a conservative approach was taken. He was managed with oral iron supplements and laxatives. He was discharged with an advice for sclerotherapy, if further episodes of per rectal bleeding recur.*

Conclusion: *Colonic varices may at times present with massive lower GI bleeding. Early diagnosis is the key to control such emergency. A differential of colonic variceal bleeding should therefore always be in the mind, even in the absence of signs of portal HTN. Because the colonic varix could be idiopathic, just like our case.*

Key words: *Idiopathic Colonic Varices, Lower GI Bleeding.*

Received: *30.05.2020*

Accepted: *17. 08. 2020*

Introduction

Colonic varices are not that much common. They usually tend to occur secondary to portal HTN. Other less common causes of colonic varices are congestive heart failure, mesenteric vein thrombosis, pancreatitis with splenic vein thrombosis and post-operative adhesions. Idiopathic colonic varices are extremely rare. Lower gastrointestinal bleeding from colonic varices is very rare as well, with fewer than 100 cases reported in the literature. We report a case of lower GI bleeding from idiopathic colonic varices in a 65 year old man.

Case

A 65 years old man was admitted to the Gastroenterology department, Square Hospital with the complaints of fresh per rectal bleeding for 5 days. The bleeding was painless & intermittent in nature. And for the last 2 days prior admission it was gradually

decreasing in amount. He didn't complain of any abdominal pain, anorexia, weight loss, altered bowel habit or tenesmus. He didn't give any significant past history. There was no history of surgery. No such complaints were seen running in his family.

On examination, the patient was mildly anemic. Abdominal examination revealed no abnormality. There were no signs of chronic liver disease or portal hypertension. Other system examinations revealed no abnormality. Investigation revealed anemia with normal hepatic & renal function. After initial resuscitation an urgent colonoscopy was arranged. Colonoscopy revealed a tuft of dilated tortuous submucosal vessels at the recto-sigmoid junction, suggestive of colonic varices. Rest of the colon including the terminal ileum appeared normal. No evidence of active bleeding was seen.

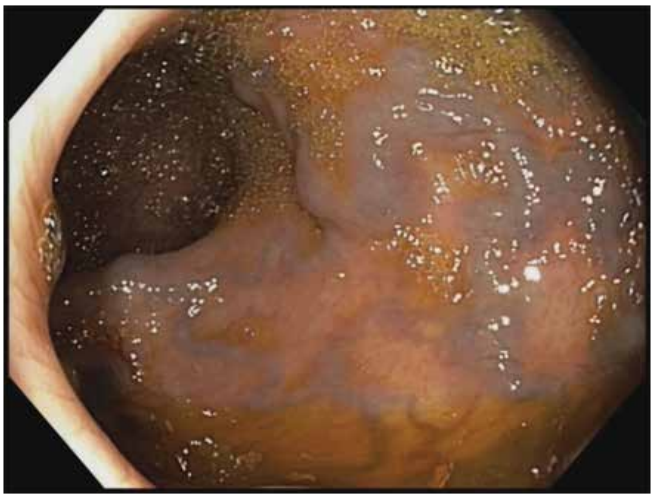


Figure 1: Colonoscopy showing a tuft of colonic varices at the rectosigmoid junction.

Abdominal USG revealed a normal appearance of liver with uniform echo texture. There was no splenomegaly on USG, neither there were any signs of portal venous thrombosis on doppler examination. Abdominal doppler sonography revealed normal portal flow volume & velocity. There was no evidence of collaterals on USG. For further evaluation and to rule out portal HTN, an upper GI endoscopy and a CT scan of whole abdomen was done, but no abnormality was detected. Echocardiogram was done to exclude Congestive heart failure.

The coagulation profile, hepatitis serology, autoantibody profile, pancreatic enzyme levels were within normal limit, virtually excluding all possible causes of colonic varices. As there was no evidence of active bleeding, a conservative approach was taken. He was managed with oral iron supplements and laxatives. He was discharged with an advice for sclerotherapy, if further episodes of per rectal bleeding recur.

Discussion

Ectopic varices are a term used to describe any portosystemic collateral veins that are dilated, circuitous, and located outside of the gastro-esophageal region. These varices are often caused by portal hypertension secondary to liver cirrhosis, but it is estimated that only 3.4% of patients with intrahepatic portal hypertension also have colonic varices[1]. Other less common causes of colonic varices are congestive heart failure, mesenteric vein thrombosis, pancreatitis with splenic vein thrombosis and post-operative adhesions[2]. One study estimated that regardless of etiology, colonic varices have an incidence rate of only 0.07%[3].

It has been observed that non-idiopathic colonic varices occur equally in males and females and are usually diagnosed after age 50. Idiopathic colonic varices though are seen more often in males at a younger age, with a median age of diagnosis being 41.3 years[4]. Some authors have suggested a possible autosomal recessive mode of inheritance[5]. Idiopathic colonic varices exhibit a much stronger familial association compared to non-idiopathic colonic varices and are more likely to be pan-colonic.

Colonic varices should be considered "idiopathic" after other medical conditions either or not related to portal hypertension or portal vein thrombosis have been ruled out. The most common segments of varicosities development within the lower gastrointestinal tract are cecum and rectum[6]. It has been estimated that since 1954, there have only been around 100 reports of isolated colonic varices[7]. Patients with colonic varices typically present with hematochezia or blood in the rectum, which may or may not be accompanied by pain. Idiopathic colonic varices, which cannot be explained by an underlying pathology, may also cause recurrent episodes of lower gastrointestinal bleeding[8].

It is not unusual for patients to first present with a massive gastrointestinal bleed, which is why practitioners must recognize the potential for varices within the colon, even in the absence of portal hypertension or varices elsewhere[9]. Colonic varices may present with serious complications, intermittent hematochezia or severe rectal bleeding and diagnosed accordingly, or discovered incidentally during a colonoscopy performed for gastrointestinal tract symptoms[10].

Colonoscopy is the investigation of choice and varices can be visualized as dilated tortuous venous channels. However, varices may occasionally be mistaken for polyposis or tumor. Colonoscopy during a period of hypotension, along with compression of varices due to insufflation, may cause them to be missed[11]. CT angiography may exhibit the greatest potential because it locates varices in a manner that is both precise and minimally invasive[12]. Mesenteric angiography is a useful diagnostic tool, but diagnosis of colonic varices may be missed on angiography[13,14]. Most often in practice, however, a colonoscopy is performed to identify colonic varices. Caution must be taken to ensure that the varices are not mistaken for a tumor or compressed during insufflation and missed[15].

The treatment for colonic varices is largely symptomatic management coupled with addressing the underlying pathology that may have caused the varices in the first place. To control episodes of active variceal bleeding, sclerotherapy, band ligation and surgical resection can be performed. For those with less severe bleeding, adjustments like prescribing a laxative to soften stool in addition to an oral iron supplement have been shown to be effective. Patients who remain hemodynamically stable but are refractory to conservative treatment may respond well to sclerotherapy[16]. A conservative approach is attempted in uncomplicated cases, while when presenting with major bleeding, partial colectomy is required[17, 18].

The importance of a correct diagnosis derives from a serious complication associated with colonic varices, severe lower gastrointestinal bleeding that could endanger the patient's life and represents a medical emergency.

Conclusion

Colonic varices may at times present with massive lower GI bleeding. Early diagnosis is the key to control such emergency. A differential of colonic variceal bleeding should therefore always be in the mind, even in the absence of signs of portal HTN. Because the colonic varix could be idiopathic, just like this case.

References

1. McCormack TT, Bailey HR, Simms JM, Johnson AG. Rectal varices are not piles. Br J Surg. 1984;71(2):163.
2. Miller LS, Barbarevech C, Friedman LS. Less frequent causes of lower gastrointestinal bleeding. Gastroenterol Clin North Am. 1994,23:21-52.
3. Grasso E, Sciolli L, Ravetta F, Pelloni A. A rare case of idiopathic colonic varices: case report and review of the literature. Chirurgia. 2012;25(2):111-114.
4. Francois F, Tadros C, Diehl D. Pan-colonic varices and idiopathic portal hypertension. J Gastrointestin Liver Dis. 2007;16(3):325-328.
5. Iredale JP, Ridings P, McGinn FP, Aurthur MJP: Familial and idiopathic colonic varices: an unusual cause of lower gastrointestinal hemorrhage. Gut. 1992,33:1285-1288.
6. Sato T, Akaike J, Toyota J, Karino Y, Ohmura T. Clinicopathological features and treatment of ectopic varices with portal hypertension. Int J Hepatol. 2011; 20(11):960720.
7. El-Masry M, Hu R. Cecal varices presenting as anemia: case report and review of the literature. Case Rep Gastroenterol. 2010;4(3):524-527.
8. Speicher MV, Keegan MT, Kirk KE. A case of idiopathic colonic varices. J Am Osteopath Assoc. 2014;114(1):5659.
9. Krishna RP, Singh RK, Ghoshal UC. Recurrent lower gastrointestinal bleeding from idiopathic ileocolonic varices: a case report. J Med Case Rep. 2010;4:257.
10. Francois F, Tadros C, Diehl D. Pan-colonic varices and idiopathic portal hypertension. J Gastrointestin Liver Dis. 2007;16(3):325–8.
11. Feldman MS, Smith VM, Warner CG: Varices of colon. Report of three cases. JAMA. 1962;179:729-730.
12. Haddad JD, Lacey BW. Isolated non-hemorrhagic cecal varices. Gastroenterol Rep (Oxf). 2014;2(4):316-319.
13. Shreshta R, Dunkelberg JC, Shaefer JW: Idiopathic colonic varices: An unusual cause of massive lower gastrointestinal hemorrhage. Am J Gastroenterol. 1995; 90:496-497.
14. Isbiter WH, Pease CW, Delahunt B. Colonic varices - report of a case. Dis Colon Rectum 1989;32:524-527.
15. Feldman M, Smith VM, Warner CG. Varices of the colon. Report of three cases. JAMA. 1962;179:729-730.
16. Chowdhury AMM, Yue Z, Ying C, Min L. Idiopathic colonic varices: a rare case report. Colorec Cancer. 2016;2(2):1-3.
17. Han JH, Jeon WJ, Chae HB, Park SM, Youn SJ, Kim SH et al. A case of idiopathic colonic varices: a rare cause of hematochezia misconceived as tumor. World J Gastroenterol. 2006;12(16):2629–32.
18. Grasso E, Sciolli L, Ravetta F, Pelloni A. A rare case of idiopathic colonic varices: case report and review of the literature. Chirurgia. 2012;25(2):111–4.

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8. **Dissertation & Thesis:** Rahman ASMM. Village practitioners of Bangladesh: their characteristics and role in an oral rehydration programme. London: London School of Hygiene & Tropical Medicine. 1980: 84. (Dissertation).
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