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Diabetes Prevention Program Research Group.

Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. Hypertension. 2002;40(5): 679-86 No author given:

21st century heart solution may have a sting in the tail. BMJ. 2002;325(7357):184

Volume with supplement:

Geraud G, Spierings EL, Keywood C. Tolerability and safety of frovatriptan with short- and long-term use for treatment of migraine and in comparison with sumatriptan. Headache. 2002;42 Suppl 2:S93-9.

Issue with supplement:

Glauser TA. Integrating clinical trial data into clinical practice. Neurology. 2002;58(12 Suppl 7):S6-12.

Article published electronically ahead of the print version: Yu WM, Hawley TS, Hawley RG, Qu CK. Immortalization of yolk sac-derived precursor cells. Blood. 2002 Nov 15; 100(10):3828-31. Epub 2002 Jul 5.

2. Books and Other Monograph Personal author(s):

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

3. Other Published Material MaterialNewspaper article:

Tynan T. Medical improvements lower homicide rate: study sees drop in assault rate. The Washington Post. 2002 Aug 12; Sect. A:2 (col. 4).

Dictionary and similar references:

Dorland's illustrated medical dictionary. 29th ed. Philadelphia: W.B. Saunders; 2000. Filamin; p. 675.

4. Unpublished Material (In press or Forthcoming:)

Tian D, Araki H, Stahl E, Bergelson J, Kreitman M. Signature of balancing selection in Arabidopsis. Proc Natl Acad Sci U S A. Forthcoming 2002.

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Original Article

Emergence of Carbapenemase Encoding Genes in Proteus Species in Tertiary Care Hospital of Bangladesh

*Afroz S[1], Shamsuzzama SM[2], Begum N[3], Shormin M[4], Shazzad MN[5], Shahin MA[6]

Abstract

Along with different carbapenemase encoding genes, in recent year class D OXA enzymes are documented in Proteus spp which are not common in Enterobacteriaceae. The dissemination of plasmids, transposons and integrons among bacteria and species playing roles for this dissemination. So, this study was designed to observe the emergence and distribution of different classes of carbapenemase encoding genes among imipenem resistant Proteus spp. isolated from tertiary care hospital in Bangladesh. Total 15 imipenem resistant Proteus isolates were included in this study, which were collected from wound swab, pus, urine and blood samples. Identification was done by culture and biochemical test and antibiotic susceptibility test was done by disc diffusion method. MIC of imipenem (g/ml) was done among imipenem resistant P. mirabilis by agar dilution method. blaKPC, blaNDM-1, blaVIM, blaIMP, blaOXA-48 like, blaOXA-23 like, blaOXA-51 like, blaOXA-58 like carbapenemase encoding genes were detected among imipenem resistant Proteus spp. by PCR and sequencing of blaOXA-48 like, blaOXA-51 like gene done by capillary method to compare the sequences with the same gene, available in gene bank.

Among 15 imipenem resistant isolates blaNDM-1 (26.67%), blaKPC (20%), blaVIM (20%), blaOXA-484 (20%) were predominant carbapenemase encoding genes followed by blaOXA-66(6.67%).

This study finds that blaOXA-484 gene and blaOXA-66 class D carbapenemase encoding genes are emerging in Proteus spp. and may play a contributing factor in developing carbapenem resistance.

Keywords: *Proteus, blaOXA-484, blaOXA-66, carbapenemases,*

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**For Correspondence*

INTRODUCTION

The genus *Proteus,* are commonly implicated pathogens in hospitals and as a cause of community acquired infections.[1] This pathogen has various mode of transmission and causes infections in different anatomical sites.[2] It ranks as 3rd cause of health care associated infections.[3] Carbapenem antibiotics have been used as a last resort to treat infections caused by multidrug resistant gram negative bacteria till date.[4] But in recent years rampant global spread of carbapenem resistant Enterobacteriaceae members becoming a threat, including *Proteus*.[5] Acquisition of carbapenemase enzymes and loss of porins are the main mechanism of resistance to this group of antibiotic.[6] The most common carbapenemases include veronica integrin metallo-beta-lactamases types (VIM), imipenemase (IMP) types, *Klebsiella pneumoniae* carbapenemase (KPC), oxacillinase-48 (OXA-48), and New Delhi metallo-beta-lactamase-1 (NDM-1), encoded by carbapenem resistance determining genes *bla*VIM, *bla*IMP,*bla*KPC, *bla*OXA-48 and *bla*NDM, respectively.[7]

This study was designed to evaluate the carbapenem resistance pattern along with distribution of genes encoding carbapenem resistance among *Proteus spp.* isolated from tertiary care hospital in Bangladesh.

MATERIALS AND METHODS

This cross sectional analytic type of study was conducted in the Department of Microbiology, Dhaka Medical College, Dhaka, from January 2016 to December 2016. Ethical clearance was taken from the ethical review committee of the institution. A total 310 wound swabs, pus, urine and blood samples were isolated from of clinically suspected infected patients in Dhaka Medical College Hospital.

IDENTIFICATION OF *PROTEUS* SPECIES

Allthe wound swab, pus, urine and blood samples, collected from the patients were inoculated on blood agar and Mac Conkey's agar media and incubated at 37°C

aerobically for 24 hours. Primary blood culture was done in Trypticase Soy Broth followed by subculture on blood and MacConkey's agar media. Then *proteus* spp. were identified by characteristic swarming growth and fishy smell on blood agar media, non- lactose fermenting colony on MacConkey's agar media. It was glucose fermenter, oxidase negative, urease positive on biochemical reactions.

ANTIMICROBIAL SUSCEPTIBILITY TEST

Antimicrobial susceptibility testof isolated *Proteus* spp. was performed using Kirby-Bauer disc diffusion method. Commercially available antibiotic disc (OxoidLtd, Basingstoke, United kindom)[8]such as ceftazidime (30 µg), cefuroxime (30µg), ceftriaxone (30µg), cefoxitin (30µg), cefepime (30µg), imipenem (10µg), amoxiclav (amoxicillin and clavulanic acid) (20/10 µg), ciprofloxacin (5 µg), amikacin (30 µg), gentamicin (10 µg), piperacillin-ZZZZ (25µg), ampicillin (10 µg), doxycycline hydrochloride (30 µg) were used. Zones of inhibition were interpreted according to CLSI guidelines (CLSI, 2015).[8]

Screening for carbapenemases by the disc diffusion technique

Screening for carbapenem-resistance was determined using the Kirby Bauer disc diffusion method with a 10 mg imipenem disc. Three to five well isolated colonies of test organisms were emulsified into 3 mL of sterile normal saline. The turbidity of the suspension was compared with the 0.5 McFarland turbidity standard and the suspension was incubated on Mueller Hinton agar plates at 37°C for 24 hours. An inhibition zone of 19mm diameter around the imipenem disc was considered resistant, 20 to 22 mm indicated intermediate and 23 mm was considered sensitive.[8]

Phenotypic detection of carbapenemase producers

All the isolates showing reduced susceptibility to imipenem (zone diameter <19 mm) were tested for carbapenemase production using the modified Hodge test. Briefly, a lawn culture (0.5 McFarland) of *E. coli* 25922 was streaked on a Mueller Hinton agar plate.A 10µg imipenem disc was placed in the center of the agar plate. The test isolates were streaked in a straight line from the edge of the disc to the edge of the plate and were incubated overnight. A positive test was indicated by a cloverleaf-like indentation at the intersection of the test organism and the standard strain, within the zone of inhibition of the carbapenem antibiotic.[8] The detection of MBL production was performed by the double-disc synergy test.

Minimum inhibitory concentration (MIC) of imipenem among imipenem resistant *Proteus*:[9]

Minimum inhibitory concentration (MIC) of imipenem was done among imipenem resistant *Proteus*by agar dilution method in Muller-Hinton media and CLSI guidelines was followed for the interpretation.

Molecular characterization of carbapenem resistance genes

By polymerase chain reaction (PCR), Class A serine carbapenemase (*bla*KPC), Ambler class B metallo beta lactamases (*bla*NDM-1, *bla*VIM, *bla*IMP), Ambler class D (*bla*OXA-48 like, *bla*OXA-51 like, *bla*OXA-58 like, *bla*OXA-23 like) genes detection wascarried out among imipenem resistant *Proteus*isolates.

Preparation of the bacterial pellets:

Aloopful of bacterial colony was taken into a falcon tube, containing trypticase soy broth and overnight incubated at 37°c temperature. Then the tubes were centrifuged at 4,000g for 10 minutes and supernatant was discarded. A small amount of sterile trypticase soy broth was added into the falcon tubes with pellets and mixed evenly. In 2-3 microcentrifuge tubes, equal amount of bacterial suspension was taken and centrifuged at 4,000 rpm for 10 minutes. The supernatant was discarded and the microcentrifuge tube containing bacterial pellets were kept at -20°c until DNA extraction.

Bacterial DNA was extracted by the boiling method.[10]. Three hundred µl of distilled water was added into microcentrifuge tube, containing bacterial pellets and vortexed until mixed. The tubes were boiled for 10 minutes in a heat block and placed immediately into ice kept for 5 minutes. Centrifugation was done at 14,500g for 6 minutes, 10µl supernatant was used for PCR.

Amplification of DNA:

The cycling parameters followed in this study was as follows: initial denaturation at 95°C for 10 minutes, then 30 cycles of denaturation at 95°C for one minute, annealing at 58°c for blaKPC, 52°C (for bla IMP and blaVIM), 58°C (for blaNDM-1) and 52°C for (blaOXA-48 like, blaOXA-51 like, blaOXA-58 like, blaOXA-23 like) for 45 seconds, extension at 72°C for iminute, and final extension at 72°C for 10 minutes.

Visualization of amplified products:

The amplified DNA were loaded into a 1.5% agarose gel, electrophoreses done at 100 volts for 35 minutes, stained with 1% ethidium bromide and visualized under UV light.

Procedure of DNA sequencing:

For sequencing of bacterial DNA, purification of amplified PCR products were done by using DNA purification kit (FAVORGEN, Biotech Corp). Purified PCR products were sent to Malayasia (1st BATCH Laboratories) and sequencing was done by capillary method on ABI PRISM 3500. Then the sequenced DNA was compared with data in Gene Bank.

Statistical analysis:

Data were analyzed by using Microsoft Excel (2007) software.

RESULTS:

Table I shows the distribution of *P. mirabilis and P. vulgaris* isolated from different samples. Total of 42 (13.55%) *Proteus* spp. were isolated from 310 wound swab, blood and urine samples. Among 42 *proteus* spp. 32 (76.19%) were *P. mirabilis* and 10 (23.81%) were *P. vulgaris.*

Table I: Distribution of *P. mirabilis and P. vulgaris* isolated from different samples.

Organism	Wound swab n (%)	Pus n (%)	Urine n (%)	Blood n (%)	Total n (%)
P. mirabilis	18 (69.23)	6 (85.71)	7 (87.50)	1 (100.00)	32 (76.19)
P. vulgaris	8 (30.77)	1 (14.29)	1 (12.50)	0 (0.00)	10 (23.81)
Total	26 (100.00)	7 (100.00)	8 (100.00)	1 (100.00)	42 (100.00)

Out of 42 *proteus* spp. 7 (16.67%) were imipenem resistant. As the sample of imipenum resistant isolates is insufficient, additional 8 imipenem resistant *proteus* were collected from department of Microbiology of the Dhaka Medical College to detect the carbapenemase encoding genes among them.So total 15 imipenem resistant *proteus* spp. were included for further study (Table II). MIC of imipenem among these 15 imipenem resistant *Proteus* spp. ranged from 4 to 64g/ml and highest proportion (26.67%) had MIC 16g/ml.

Table II : Distribution of imipenem resistant Proteus spp. in different samples. (N = 15)*.

Organism	Wound swab n (%)	Pus n (%)	Urine n (%)	Blood n (%)	Total n (%)
P. mirabilis	8 (53.33)	3 (20.00)	2 (13.33)	1 (6.67)	14 (93.33)
P. vulgaris	0 (0.00)	1 (6.67)	0 (0.00)	0 (0.00)	1 (6.67)
Total	8 (53.33)	4 (26.67)	2 (13.33)	1 (6.67)	15 (100.00)

N = Total number of bacteria.

n = Total number of imipenem resistant bacteria.

" * " = 7 imipenem resistant *Proteus* spp. were isolated from different samples and 8 imipenem resistant *Proteus* spp. were included from department of microbiology of DMC, which were isolated from different samples.

Table III shows distribution of class metallo-β-lactamase encoding genes in *Proteus* spp. detected by PCR method. Among 15 imipenem resistant *Proteus* spp. 3(20%) were positive for *bla*KPC, 3 (20%) for *bla*VIM, 4 (26.67%) for *bla*NDM-1, 3 (20%) for *bla*OXA-48 like and one (6.67%) for *bla*OXA-51 like gene. No isolates were found positive for *bla*IMP, *bla*OXA-23 like and *bla*OXA-58 like gene.

Table III: Distribution of class metallo-β-lactamase encoding genes in *Proteus* spp. detected by PCR method (N= 15).

Genes	Wound swab n (%)	Pus n (%)	Urine n (%)	Blood n (%)	Total n (%)
*bla*KPC	2 (13.333)	0 (0.00)	1 (6.67)	0 90.00)	3 (20.00)
*bla*VIM	2 (13.33)	1 (6.67)	0 (0.00)	0 (0.00)	3 (20.00)
*bla*IMP	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
*bla*NDM-1	2 (13.33)	1 (6.67)	1 (6.67)	0 (0.00)	4 (26.67)
*bla*0XA-48 like	1 (6.67)	1 (6.67)	1 (6.67)	0 (0.00)	3 (20.00)
*bla*OXA-51 like	0 (0.00)	0 (0.00)	0 (0.00)	1 (6.67)	1 (6.67)
*bla*OXA-58 like	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
*bla*OXA-23 like	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

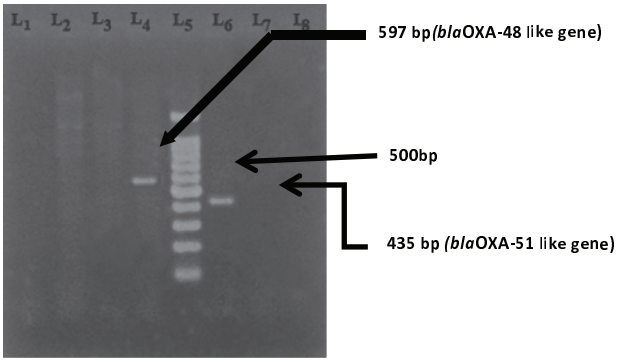

Figure 1: *Photograph of gel electrophoresis of amplified DNAof blaOXA-48 like geneand blaOXA-51 like gene.*

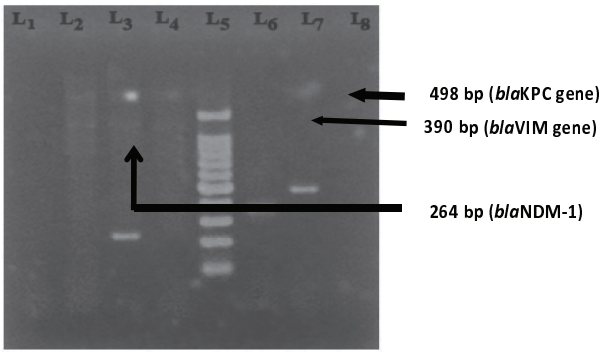

Figure 2: *Photograph of gel electrophoresis of amplified DNA of blaKPC, blaVIM and blaNDM-1 gene.*

Figure 1 is the photograph of gel electrophoresis of amplified DNAof *bla*OXA-48 like geneand *bla*OXA-51 like gene. Here lane 4 shows the amplified DNA of 597bp for *bla*OXA-48 like gene and lane 6 shows the amplified DNA of 435bp for *bla*OXA-51 like gene. Lane 1 is for negative control without DNA. Lane 2 and lane3 are for negative sample. Lane 7and lane8 are blank.

Figure 2 shows photograph of gel electrophoresis of amplified DNA of *bla*KPC, *bla*VIM and *bla*NDM-1 gene. Here lane 3 shows the amplified DNA of 264 bp for *bla*NDM-1 gene. Lane 6 shows amplified DNA of 390 bp for *bla*VIM gene and lane 7 shows amplified DNA of 498 bp for *bla*KPC gene. Lane1 is for negative control without DNA. Lane 2and lane 4 is for negative sample. Lane 8 is blank.

GGGGGGCCCAACTCCGATGTGGGCATATCCATATTCATCGCAAAAAACCACACATTATCA
TCAAGTTCAACCCAACCAACCCACCAGCCAATCTTAGGTTCGATTCTAGTCGAGTATCCC
GTTTTAGCCCGAATAATATAGTCGCCATTGGCTTCGGTCAGCATGGCTTGTTTCACGATG
CGCTGACTACGCTCAGAAACGTGCAGCTTGTTGTGATACAGCTTGCGTAAAAAAGCGATT
TGCTGGGTAGCCGAAATGCGAATACCACCATCGAGCCAAAAACTGTCTACATTGCCCGAG
ATATCCTCATTGCCATAATCGAAGGCGTGCAGCATTTTACTCATACGTGCCTCACCAATT
TGGCGGGCAAATTCTTGATAAACAGGCACAACTGAGTACTTCATCGCGGTAATTAAGTCA
TGGTCACGATTCCAAGCGGCGATATCACGCGTCTGTCCATCCCACTTAAAGACTTGGTGT
TCATCCTTAACCACGCCCAAATCGAGGGCGATCAAGCTATTGGGAATTTTAAAGGTAGAT
GCGGGTAAAAATGCTTGTTCGGCCCCGTTAAAAAACAACC

Figure 3. *DNA sequence of amplified PCR product of blaOXA-48 like gene using specific primer.*

Score	Expect	Identities	Gaps	Strand
984 bits (1090)	0.0	556/561 (99%)	3/561 (0%)	Plus/Minus

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Query  13TCCGATGTGGGCATATCCATATTCATCGCAAAAAACCACACATTATCATCAAGTTCAACC  72
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  734 TCCGATGTGGGCATATCCATATTCATCGCAAAAAACCACACATTATCATCAAGTTCAACC  675

Query  73  CAACCAACCCACCAGCCAATCTTAGGTTCGATTCTAGTCGAGTATCCCGTTTTAGCCCGA  132
       ||||||||||||||||||||||||||||||||| ||||||||||||||||||||||||||
Sbjct  674 CAACCAACCCACCAGCCAATCTTAGGTTCGATTCCAGACGAGTATCCCGTTTTAGCCCGA  615

Query  133 ATAATATAGTCGCCATTGGCTTCGGTCAGCATGGCTTGTTTCACGATGCGCTGACTACGC  192
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  614 ATAATATAGTCGCCATTGGCTTCGGTCAGCATGGCTTGTTTCACGATGCGCTGACTACGC  555

Query  193 TCAGAAACGTGCAGCTTGTTGTGATACAGCTTGCGTAAAAAAGCGATTTGCTGGGTAGCC  252
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  554 TCAGAAACGTGCAGCTTGTTGTGATACAGCTTGCGTAAAAAAGCGATTTGCTGGGTAGCC  495

Query  253 GAAATGCGAATACCACCATCGAGCCAAAAACTGTCTACATTGCCCGAGATATCCTCATTG  312
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  494 GAAATGCGAATACCACCATCGAGCCAAAAACTGTCTACATTGCCCGAGATATCCTCATTG  435

Query  313 CCATAATCGAAGGCGTGCAGCATTTTACTCATACGTGCCTCACCAATTTGGCGGGCAAAT  372
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  434 CCATAATCGAAGGCGTGCAGCATTTTACTCATACGTGCCTCACCAATTTGGCGGGCAAAT  375

Query  373 TCTTGATAAACAGGCACAACTGAGTACTTCATCGCGGTAATTAAGTCATGGTCACGATTC  432
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  374 TCTTGATAAACAGGCACAACTGAGTACTTCATCGCGGTAATTAAGTCATGGTCACGATTC  315

Query  433 CAAGCGGCGATATCACGCGTCTGTCCATCCCACTTAAAGACTTGGTGTTCATCCTTAACC  492
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  314 CAAGCGGCGATATCACGCGTCTGTCCATCCCACTTAAAGACTTGGTGTTCATCCTTAACC  255

Query  493 ACGCCCAAATCGAGGGCGATCAAGCTATTGGGAATTTTAAAGGTAGATGCGGGTAAAAAT  552
       ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  254 ACGCCCAAATCGAGGGCGATCAAGCTATTGGGAATTTTAAAGGTAGATGCGGGTAAAAAT  195

Query  553 GCTT-GTTCGGCCCCGTTAAA  572
       |||| ||||| |||||| ||
Sbjct  194 GCTTGGTTCG--CCCGTTTAA  176
```

Figure 4: *Comparison of DNA sequence of the amplified PCR product of blaOXA-48 like gene and Klebsiella pneumoniae H141920513 blaOXA gene for OXA-48 family class D beta-lactamase OXA-484.*

Figure 4 shows DNA sequencing of *bla*OXA-48 like and *bla*OXA-51 like gene was done. The DNA sequence of the amplified PCR product of OXA-48 like gene (Figure3) which was found 99% identical to the *Klebseilla pneumoniae* H141920513*bla*OXA gene for OXA-48 family class D beta-lactamase OXA-484, which is available in the gene bank (accession number NG_049766.1). *bla*OXA-48 like gene had mutation at 108 position

CGTNCTTGAGCACCGTAAGGCAACCACCACAGAAGTATTGTAAGATGGGATGGTAAAAAAA
GGTTATTCCCAGAATGGGAAAAGGACATGACCCTAGGCGATGCCATGAAAGCTTCCGCTATT
CCAGTTTATCAAGATTTAGCTCGTCGTATTGGACTTGAGCTCATGTCTAAGGAAGTGAAGCG
TGTTGGTTATGGCAATGCAGATATCGGTACCCAAGTCGATAATTTTTGGCTGGTGGGTCCTTT
AAAAATTA CTCCTCAGCAAGAGGCACAGTTTGCTTACAAGCTAGCTAATAAAACGCTTCCAT
TTAGCCAAAAAGTCCAAGATGAAGTGCAATCCATGCTATTCATAGAAGAAAAGAATGGAAA
CAAAATATACGCAAAAAGGGGGTTGGGGAAA

Figure 5: *DNA sequence of amplified PCR product of blaOXA-51 like gene using specific primer.*

Score	Expect	Identities	Gaps
655 bits(726)	0.0	391/396(99%)	3/396(0%)

```
Query  18CTTGAGCACCGTAAGGCAACCACCACAGAAGTATTGTAAGATGGGATGGTaaaaaaaGGT  77
           |||||||||| ||||||||||||||||||||||| |||| ||||||||||||||||||
Sbjct  308  CTTGAGCACCATAAGGCAACCACCACAGAAGTATT-TAAG-TGGGATGGTAAAAAAAGGT  365

Query  78   TATTCCCAGAATGGGAAAAGGACATGACCCTAGGCGATGCCATGAAAGCTTCCGCTATTC  137
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  366  TATTCCCAGAATGGGAAAAGGACATGACCCTAGGCGATGCCATGAAAGCTTCCGCTATTC  425

Query  138  CAGTTTATCAAGATTTAGCTCGTCGTATTGGACTTGAGCTCATGTCTAAGGAAGTGAAGC  197
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  426  CAGTTTATCAAGATTTAGCTCGTCGTATTGGACTTGAGCTCATGTCTAAGGAAGTGAAGC  485

Query  198  GTGTTGGTTATGGCAATGCAGATATCGGTACCCAAGTCGATAATTTTTGGCTGGTGGGTC  257
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  486  GTGTTGGTTATGGCAATGCAGATATCGGTACCCAAGTCGATAATTTTTGGCTGGTGGGTC  545

Query  258  CTTTAAAAATTACTCCTCAGCAAGAGGCACAGTTTGCTTACAAGCTAGCTAATAAAACGC  317
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  546  CTTTAAAAATTACTCCTCAGCAAGAGGCACAGTTTGCTTACAAGCTAGCTAATAAAACGC  605

Query  318  TTCCATTTAGCCAAAAAGTCCAAGATGAAGTGCAATCCATGCTATTCATAGAAGAAAAGA  377
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  606  TTCCATTTAGCCAAAAAGTCCAAGATGAAGTGCAATCCATGCTATTCATAGAAGAAAAGA  665

Query  378  ATGGAAACAAAATATACGCAAAAAGGGGGTTGGGGA  413
           |||||||||||||||||||||| | |||||||||
Sbjct  666  ATGGAAACAAAATATACGCAAAAA-GTGGTTGGGGA  700
```

Figure 6: *Comparison of DNA sequence of the amplified PCR product of blaOXA-51 like gene and Acinetobacter baumannii strain AM8 blaOXA-66 (blaOxa-66) gene.*

The DNA sequence of the amplified PCR product of *bla*OXA-51 like gene (Figure 5) was 99% identical with class D beta-lactamase OXA-66, found in *Acinetobacter baumannii*strain AM8, which is available in the gene bank (accession number KY923052). *bla*OXA- 51 like gene had mutation at 28, 404 position (Figure 6)**.**

DISCUSSION

Very limited studies have been documented on *proteus* mediated infections, demographics of related patients and over all antibiotic resistance pattern of *Proteus* spp. Though the availability of a wide range antimicrobials of different categories, *Proteus* spp. mediated increased resistance to antimicrobials are documented. In recent years, researchers are giving attention to *Proteus* spp. because of high occurrence in nosocomial infections and expanding profile of antibiotic resistance.

In this study, highest proportion of imipenem resistant *Proteus* isolates were multidrug resistant and showed increased resistance to ciprofloxacin, ceftriaxone, cefepime, gentamicin, amoxiclav and sensitive to piperacillin-tazobactam (40%) in narrow range. Out of 15 imipenem resistant *Proteus* spp., 20% isolates were positive for *bla*KPC gene. Single *bla*KPC-2 positive *P. mirabilis* was reported in the studies of Pilato *et al.* (2016) and Cabral *et al.* (2014), respectively.11,12 Possibility of this gene transmission may be due to horizontal transmission by transposons, the mobile genetic elements which can transfer from one bacterium to another.[13]

Till now only a few numbers of NDM-1 producing *P. mirabilis* has been detected in different studies).[14,15] In the present study, 26.67% *bla*NDM-1 producing *P. mirabilis* were detected by PCR. Qin *et al.* (2015) and Girlich*et al.* (2015) reported single XDR *P. mirabilis* harboring *bla*NDM-1 gene, respectively.[14,15] Asian continent serves as the major reservoir of NDM-1 producers, with around 58.15% abundance of NDM-1 variant distributed mostly in China and India.

In this study, 20% *P. mirabilis* were positive for *bla*VIM gene. On the other hand, Vourli*et al*. (2006) reported, 100% isolated *proteus* were *bla*VIM positive. The proportion of MBL producers from different studies including the present one suggests that the prevalence of MBL producers varies on geographical distribution and time.[16]

One fifth of *P. mirabilis* were positive for *bla*OXA-48 like gene and validated by sequencing as *bla*OXA-484 gene. Inconsistent to present findings 23.3% OXA-48 like positive *Proteus* spp., were reported by Fursova*et al.,* (2015) which was close to the present finding.[17]Since most clinical microbiology laboratories do not test for the presence of OXA-48 like enzymes and the associated phenotype (i.e. low-level carbapenem resistance) may be difficult to recognize, the incidence of OXA-48-like gene positive carbapenem resistant *Enterobacteriaceae* is likely underestimated.

In this study, base sequence of the PCR product of OXA-48 like gene which was 99% identical to the *Klebseilla pneumoniae* H141920513 (*bla*OXA-484) gene which is available in the gene bank (accession number NG_ 049766.1). The OXA-484 gene had mutation at 108 position (Figure 4). In the present study, single *bla*OXA-51 like positive *P. mirabilis* was detected by PCR and the result was validated by sequencing. Sequencing result confirmed *bla*0XA-66 variant (Table 6). It is to be noted that in a recent study by Osterblad*et al.* (2016) reported, *Acinatobactor* type class D carbapenemase*bla*OXA-23 gene in *P. mirabilis.*[18]

The base sequence of PCR product of OXA-51 like gene was 99% identical to the *Acinatobactorbaumannii* strain AM8 *bla*OXA-66 (*bla*OXA-66) gene which is available in the gene bank (Accession number KY923052.1). *bla*OXA-66 gene had mutation at 28 and 404 position (Figure 6).

CONCLUSIONS

In this study *bla*KPC, *bla*VIM, *bla*NDM-1, *bla*OXA-484 and *bla*OXA-66 were predominant carbapenemase encoding genes among imipenem resistant *proteus.* Both *bla*OXA-484 and *bla*OXA-66 were the new variant of class D carbapenemase encoding genes among imipenem resistant *Proteus* spp. This study reflects that *bla*NDM-1 positive *proteus* are increasing and *bla*OXA-484 and *bla*OXA-66 are emerging in Bangladesh. Further study should be carried out to detect the resistant genes and proper implementation of antimicrobial policies infection control programs will surely limit the rapid dissemination of this type of infection.

Competing interests:

There is no conflict of interest.

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Original Article

Pregnancy Outcome in Impaired Liver Function in Pre-eclampsia

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Abstract

Pre-eclampsia induced liver disease is a disorder unique to pregnancy and is frequently seen in third trimester. Severe pre-eclampsia is defined by extreme elevation in systemic blood pressure and evidence of organ compromise. HELLP syndrome is a unique liver related disorder of pregnancy that was first described by Weinstein in1982 as a constellation of clinical and laboratory abnormalities in pregnant women in their third trimester. This disorder was termed HELLP syndrome with (H) for haemolysis, (EL) for elevated liver enzymes and (LP) for low platelet counts. This is a severe variant of pre-eclampsia. Objective of this study was to determine the alteration of liver function in preeclampsia and its correlation with the clinical severity as well as the perinatal outcome. This was a one-year prospective observational cross sectional study included 100 patients with pre-eclampsia. Severity of the pre-eclampsia clarified clinically. Pre-eclampsia patients having history of hepatitis, cirrhosis of liver, gallbladder diseases and other pre-existing medical disorders that altered liver function were excluded from this study. The mean age of the patients was 25.3+4.9 years ranging from 18 to 37 years. One third of the patients (33.3%) were in the age group 28 to 32 years. Out of 100 patients, 58% belongs to poor income group. Among the studied samples 17% had epigastric pain and discomfort, 13% had complaints of vomiting and 43% develop severe pre-eclampsia. Among the Patients with altered hepatic enzyme level, 8.33% had complaints of epigastric pain, 6.66% complains vomiting. Maximum patients (66.6%) with elevated liver enzyme had no major complications whereas 33.4% of patients developed major complications. Patients with severe pre-eclampsia have elevated liver enzyme whereas patients of mild symptoms had normal liver enzymes level. Cases with raised serum biochemical markers had strong association with complications of severe pre-eclampsia. Pregnancy outcome in severe pre-eclampsia with hepatic involvement is grievous. Graves sequlae of pre-eclampsia can be prevented and minimized by timely institutional intervention. Post-partum followup would help to find out other parameters of pregnancy outcome.

Keywords: *HELLP syndrome, pre-eclampsia. Inpaired liver function*

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INTRODUCTION

Abnormal liver function tests occur in 10 to20% 0f pregnancy complicated by pre-eclampsia and are associated with poor maternal and fetal outcome.[1] Blood level of liver enzymes differ from non-pregnant level to pregnant level. AST, ALT, GTT and bilirubin levels do not change during uncomplicated pregnancy from 16 to 40 weeks of gestation and are the same as the non-pregnant values. A cross sectional study of 304 women concluded that AST, ALT, GGT each show a significant increase for a gestational age of six months, but it is not clear whether this is compared with early pregnancy or to the non-pregnant control group. None of these paper define their laboratory references ranges.[2] Some author assume that LFT are not altered by pregnancy and advice using the non-pregnant laboratory reference ranges. In the absence of altered hepatic blood flow physiological haemodilution alone may result in lower reference ranges for AST, ALT, GTT and bilirubin in pregnancy if correct statistical methods are used to construct them[3].During pregnancy there is no histological changes in liver cells, alkaline phosphatase levels, other liver function tests (serum level of bilirubin, AST, ALT, LDH) are unchanged. It has been shown that pregnant women complicated with pre-eclampsia, there is marked changes in liver both structural and functional.[4] Periportal hemorrhagic necrosis of the liver occurs due to thrombosis of the arterioles. The necrosis starts at the periphery of the lobule. There may be sub capsular hematoma. Hepatic

insufficiency seldom occurs because of the reserve capacity and regenerative ability of liver cells. Liver function tests are especially abnormal in women with HELLP syndrome, is an acronym for hemolysis(H), elevated liver enzymes (EL) and low platelet (LP) count (<100000/mm3). HELLP syndrome is manifested by nausea, vomiting, epigastric or right upper quadrant pain, along with biochemical and hematological changes. Parenchymal necrosis of the liver causes elevation in hepatic enzymes (AST and ALT >70IU/L), LDH >600IU/L. Eventually liver may rupture to cause sudden hypotension, due to hemoperitoneum. This is a fatal condition both for the mother as well as for the baby which warrants urgent intervention.[5-9]

METHOD AND MATERIALS

This was a hospital based prospective observational study carried out 100 pregnant women had symptoms of pre-eclampsia admitted to inpatient department of Obstetrics and Gynecology, Rajshahi Medical College Hospital, Rajshahi from January to December 2010. After admission a thorough history was taken followed by relevant clinical examination and some base line investigations. Then patient of pre-eclampsia categorized as mild or severe. Patients having features of severe pre-eclampsia were included in this study. Number of cases were 100. The features of severe pre-eclampsia are 1) persistent rise of blood pressure more than 160/110 mm of Hg 2) protein excretion of more than 5gm per 24 hours' urine 3) oliguria 4) platelet count less than100000 percubic mm of blood 5) HELLP syndrome 6) Cerebral or visual disturbances 7) Persistent severe epigastric pain 8) Retinal hemorrhages 9) IUGR of the fetus 10) Pulmonary edema. Patients having HELLP syndrome and severe epigastric pain underwent details investigations for liver functions. For liver function e.g. SGPT, SGOT, LDH, fibrinogen level, prothrombin time and serum bilirubin level were detected. Serum total protein and albumin level are usually reduced in pre-eclampsia. So these two parameters for assessing liver function in pre-eclampsia were avoided in this study. Serum uric acid level is one of the single most important parameter to assess fetal wellbeing. In this study serum uric acid level is measured to detect fetal affection due to pre-eclampsia with impaired liver function. Patients were managed according to hospital protocol. Maternal and fetal conditions were followed up till discharge. All necessary information was collected from the responders as per pretested data collection sheet by face to face interview after taking prior informed consent from them. The data were processed by computer and statistical analysis were performed by using the SPSS version.

RESULTS

The study population consisted of 100 cases diagnosed as severe pre-eclampsia. Age range of the patients were 18 to 37 years. Most of the patients of severe pre-eclampsia were between 18 to 32 years. Relevant data were expressed as tabulated forms and figures.

Table-I Showed that the mean age of the case group was 25.3±4.9 years ranging from 18 to 37 years.33% of the cases were in the age group of 26-29 years.

Table-I: Age group distribution of studied patients (n=100)

Age in years	Case (N)	Percent (%)
18-21	14	14
22-25	30	30
26-29	33	33
30-33	13	13
34-37	06	06
Total	100	100

Table-II Showed represented that 57% of cases complained most of the ominous features of severe pre-eclampsia.

Table-II: Distribution of Complaints of the severe pre-eclampsia

Complaints	Frequency (N)	Percent (%)
Headache	15	15.00
Epigastric pain	15	15.00
Vomiting	05	05.00
IUGR	08	08.00
All the above complaints	57	57.00
Total	100	100.00

Table-III Showed represents that 23.25% patients having raised serum bilirubin, 23.25% having elevated liver enzyme. Altered biochemical markers were detected in 43%.

Table-III: Distribution of severe pre-eclamptic patients by bio-chemical markers and hematological findings

Markers	Frequency	Percent
S.Bilirubin(>2mg%)	10	23.25
SGPT (>70 IU/L)	10	23.25
LDH (> 600 IU/L)	10	23.25
Fibrinogen(<150mg/dl)	03	06.97
Platelet count(<100000/mm	10	23.25

Table-IV showed that cases with raised serum biochemical markers had strong association with complications of severe pre-eclampsia (p>.001).

Table-IV: Association of pregnancy complications with hepatic enzyme level of the patients

Bio-chemical markers	No. of patients with complications	P-value
S.Bilirubin>2mg%(n=10)	04	.01
SGPT>70IU/L (n=10)	05	.01
LDH>600IU/L (n=10)	03	.05
Fibrinogen<150mg/dl(n=03)	01	.05
Platelet count<100000/mm(n=10)	02	.01

Table-V: Distribution of patients by pregnancy outcome (n=100)

Pregnancy outcome	Frequency	Percent
No complications	65	65%
Fetal complications	20	20%
Maternal complications	10	10%
Both maternal & fetal complications	05	05%

Table-VI: Shows revealed that when serum uric acid level raised probability of fetal affection also raised (P =0.23).

Table-VI: Fetal outcome related to serum uric acid level (n=100)

Serum uric acid level	Fetal affection	P value
<6mg%(n=75)	02	0.02
>6mg%(n=25)	23	0.23

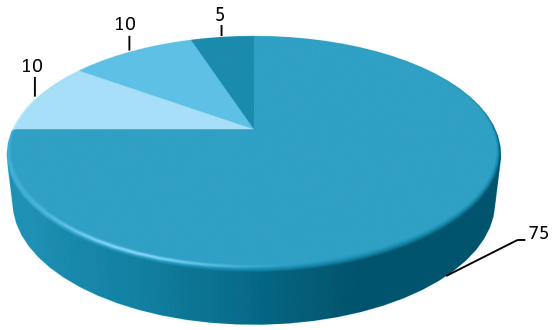

Figure 1: *Fetal outcome in pre-eclamptic patients of hepatic impairment*

- No Effect on fetus-75%
- IUGR-10%
- Perinatal Death-10%
- IUD-5%

DISCUSSION

An estimated 50000 women per year worldwide die from pre-eclampsia.[10] Most women with pregnancy induced hypertensive disorders are symptomless, which is an important point for frequent antenatal visit particularly in late pregnancy. Laboratory test are used for prediction, diagnosis and monitoring of disease process. There is no test that reliably indicates who will develop this polymorphic disease.[11] The diagnosis of pre-eclampsia is based on the laboratory test. Treatment is restricted to symptomatic and expedited delivery is only the way to resolve the disease.[12] Severe pre-eclampsia usually develops in the late second or early third trimester and accompanied by significant proteinuria. Here we studied 100 patients with severe pre-eclampsia[13]. In this study incidence was found 6.3% of hospital admission. The study was done by Hossain in 1993 showed the incidence of pre-eclampsia was 7.6%.[14] The incidence was 7.1% in 2003,a study done by Khan.[15] The incidence of pre-eclampsia in hospital practice varies from 5-15%.[16] Young primigravid and elderly pregnant patients are vulnerable to develop pre-eclampsia and eclampsia. 33.3% of studied group of patients were from 26-30 years of age. It correlates with the study done by Das, a study of 100 cases at IPGMR in 1997.[17] The incidence of severe preeclampsia was 46.7%. Patients of this group were found elevated serum uric acid level and liver enzymes.[18] Serum uric acid seems to be a sensitive indicator of fetal wellbeing.[19] 66.6% of patients having elevated liver enzyme but severe pre-eclampsia had no complications. These group of patients were admitted at 37th completed

weeks.[20] Termination of pregnancy were done timely and judiciously. So, pregnancy outcome was satisfactory without fetal as well as maternal complications. Rest of the patients were developed complications like.[21]

1) Post-partum eclampsia
2) Heart failure
3) Acute kidney injury 4) Abruptio placentae
5) Pulmonary edema
6) IUGR
7) IUD

Serum bilirubin level is elevated more than 2 mg%in 23.25% and pregnancy outcome was very poor. When SGPT level raised pregnancy complicated 10%. The prevalence of elevated liver functions in pre-eclampsia in this study was higher than previously documented. This is not surprising as it is likely that abnormal liver function reflects vasoconstriction involving the hepatic bed and thus widespread disease.[22] It is also possible that some of the AST and GTT is not of hepatic origin, both are widely distributed throughout the body and may be elevated in relation to pre-eclampsia by haemolysis or endothelial injury respectively.[23] McMahon suggested that in HELLP syndrome early changes in liver function may be due to red cells destruction and that liver damage itself only occurs later.[24] Nonetheless this would not alter the outcome variables associated with abnormal liver function tests. Alternatively, the prevalence of abnormal liver function tests may be inflated by the use of multiple ranges which itself increases the probability of classifying as abnormal a woman is in fact normal.[25-28] We recommended that pregnancy specific reference ranges were used for the assessment of liver function in the antepartum period. This may be particularly useful in the management of pre-eclampsia, where underestimation of abnormal liver function will be avoided more accurate assessment of the severity of the disease possible.[29-32]

CONCLUSIONS

Pre-eclampsia considered as high risk pregnancy. The correlation between the severity of pre-eclampsia and impairment of liver function indicates that mild or severe pre-eclampsia and eclampsia are manifestations of different maternal responses. An strong association was fund in raised serum biochemical markers due to impaired liver function and complication of severe pre-eclampsia. This study revealed that one third of the patients (33.33%) belonged to the young adult age group (21-30 years) one out third (33%) of patients with severe pre-eclampsia had hepatic involvement. Among the patients, 25% had fetal jeopardy but maternal death was not found. Most of the patient referred from remote area. Post-partum follow-up would help to find out other parameters of pregnancy outcome. Graves sequlae of the disease can be prevented and minimized by timely institutional intervention.

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Original Article

COVID-19: Effects on Eye in Bangladesh

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Abstract

COVID-19 is a contagious disease which can spread person to person mainly by respiratory droplet from infected person and contact by contaminated objects or body limbs through the routes nose, mouth, and eyes. To find out the ocular manifestations that are found in Bangladesh during COVID-19 pandemic this descriptive type of cross-sectional study was conducted to detect the ocular infection and its manifestation among patients admitted at different COVID-19 dedicated hospitals. Total 26 doctor's (Eye Specialists, ICU Consultants, ICU Residents/ Medical Officers, Consultants of other Specialities, Medical Officers/ Residents) observational and examination findings were recorded in this study who have already completed one or more roster [07 days] duties in Corona Dedicated hospitals to treat the COVID-19 affected patients directly. Total 3,678 patients information from different hospitals were collected and interviews were taken directly or over telephone from the participants. Data collected from the participants based on the observations of physicians during COVID roster duties in different corona dedicated hospitals. Age sex and ocular signs and symptoms found in patients during hospitalization were recorded. Total 08 (eight) Corona dedicated hospitals; one Medical University, five tertiary level Govt. hospitals, one private Medical College hospital and one largest Isolation center of South-Asia were included as study place. Among the cases 66.2% were male and 33.8% female. Maximum patients were in age group 40-60 years [40%] and minimum of them were above 70 years [10%]. Ocular manifestations found in 48 cases and.30 in suspected, total 78 cases found with ocular manifestations. Total 2.121% patients hade ocular manifestations in confirmed and suspected cases. In COVID confirmed cases 1.316% patients hade ocular manifestations. In conclusion, we found several ocular manifestations in patients who are hospitalized as COVID-19 patients. Moreover, the ocular involvement could be the presenting finding of disease. Further studies are required in Bangladesh and this information may be valuable for future studies.

Keywords: *Ocular manifestations, SARS-CoV-2, COVID-19, conjunctivitis, conjunctival hyperemia, chemosis, epiphora.*

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INTRODUCTION

COVID-19 disease is caused by SARS-CoV-2 and it can cause mild to severe type of respiratory syndromes or illness. This COVID-19 disease was first detected in December 2019 in Wuhan capital of Hubei province of China. Now this is a pandemic disease throughout the world and World Health Organization announced this situation as Global pandemic on 11th march 2020. COVID-19 disease is highly infectious and or contagious which can spread through person to person contact mainly respiratory droplets and routes of transmission are nose, mouth and eyes.[1,2] It is proven that corona virus can occur several ocular symptoms in animals such as conjunctivitis, anterior uveitis, retinitis and optic neuritis etc.[3]

Other different types of coronavirus can cause viral conjunctivitis.[4] RT-PCR can detect SARS-CoV-2 in conjunctival secretions when it is collected by sweeping conjunctival fornices[5]. Different studies mentioned that the rate of conjunctivitis due to COVID-19 disease in human is less than three percent (<3%).[5-10] In case of COVID-19 disease ocular sign symptoms in less but not unusual at all.[11] Several reports mentioning that conjunctivitis (eye redness, irritation) can be an ophthalmic manifestation in case of COVID-19 patients.[12] As conjunctivitis is common in case of COVID-19 disease, so an Ophthalmologist have to face

those patients invariably. Li Wenliang, MD, an ophthalmologist who raised his voice first to aware Chinese government about this COVID-19 disease and during treatment he found unusual symptoms in his patients. It is thought that he was exposed in his glaucoma clinic and he was the 1st physician who died due to COVID-19 disease. [13]

Covid-19 update worldwide

On September 8, 2020 the coronavirus COVID-19 is affecting 213 countries and territories around the world and 2 international conveyances. Total Coronavirus Cases: 27,428,110. Total Deaths: 895,254 and total Recovered: 19,481,282. Among those countries USA position is 1st, INDIA2nd, BRAZIL 3rd and BANGLADESH position is 15th. In the USA total cases and total deaths are respectively 6,473,347 and 193,388. In INDIA total cases and total deaths are respectively 4,276,777 and 72,809. In Bangladesh total cases and total deaths are respectively 327,359 and 4,516. [14]

Ocular manifestations found in different countries study during covid-19 period

Conjunctivitis (either as the initial presenting illness or during the advanced phase of the COVID-19 illness) 2. Patients with conjunctivitis and confirmed SARS-CoV-2 include: Itching, Redness, Tearing, Discharge, Foreign body sensation, Periorbital pain, Photophobia, Blurred vision.[15] 3. Conjunctivitis.[16,17] That manifested as: Conjunctival hyperaemia/conjunctival congestion, Chemosis, Epiphora or increased secretions 4. Bilateral acute conjunctivitis 5. Eyelid swelling 6. Mild follicular conjunctivitis 7. Unilateral or bilateral bulbar conjunctiva injection 8. Follicular reaction of the palpebral conjunctiva.[13,18]

INFORMATION COLLECTION

Information about COVID patients collected directly or over Telephone from the participants. During the information collection the participants were doctors of COVID dedicated hospitals. They are 1. Eye specialists of Bangabandhu Sheikh Mujib Medical University 2. Consultant of other specialities 3. ICU Consultants (Kurmitola General Hospital, Dhaka Medical College Hospital) 4. ICU Medical Officers (Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital) 5. Medical Officers/ Resident doctors (Bangabandhu Sheikh Mujib Medical University, Kuwait Bangladesh Friendship Government Hospital, Kurmitola General Hospital, Dhaka Medical College Hospital, Mugda Medical College Hospital, Shaheed Suhrawardy Medical College Hospital, Bashundhara COVID Hospital, Holy Family Red Crescent Medical College Hospital).

RESULTS

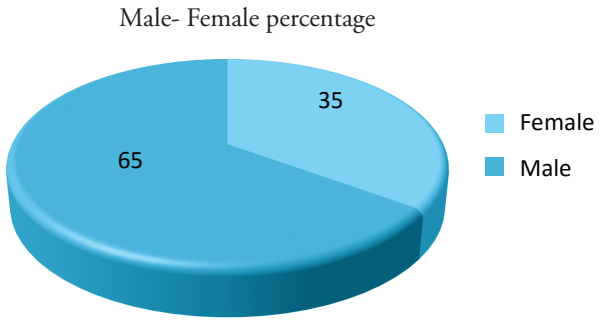

Figure-1: *Male- Female percentage of hospitalized patients*

Figure-1 shows that about 65% male and 35% female were hospitalized due to COVID-19 disease. That means male were more affected and also hospitalized more than female patients.

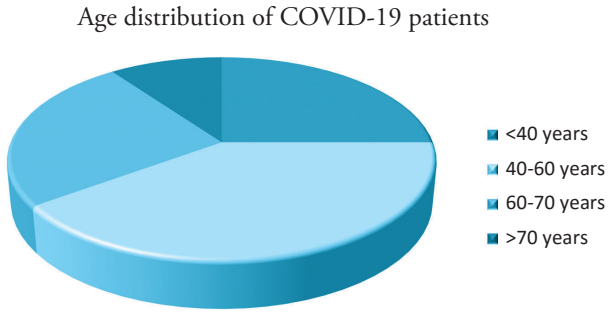

Figure-2: *Age distribution of hospitalized COVID-19 patients*

Figure-2 represents age distribution of hospitalized confirmed COVID-19 patients. Here below 40 (<40) years about 25% patients were hospitalized for COVID treatment. Age ranges 40 to 60 years cover about 40% volume of total hospitalized patients. Age range 60-70 years cover about 25% and ages above 70 (>70) years cover about 10% volume of total hospitalized patients.

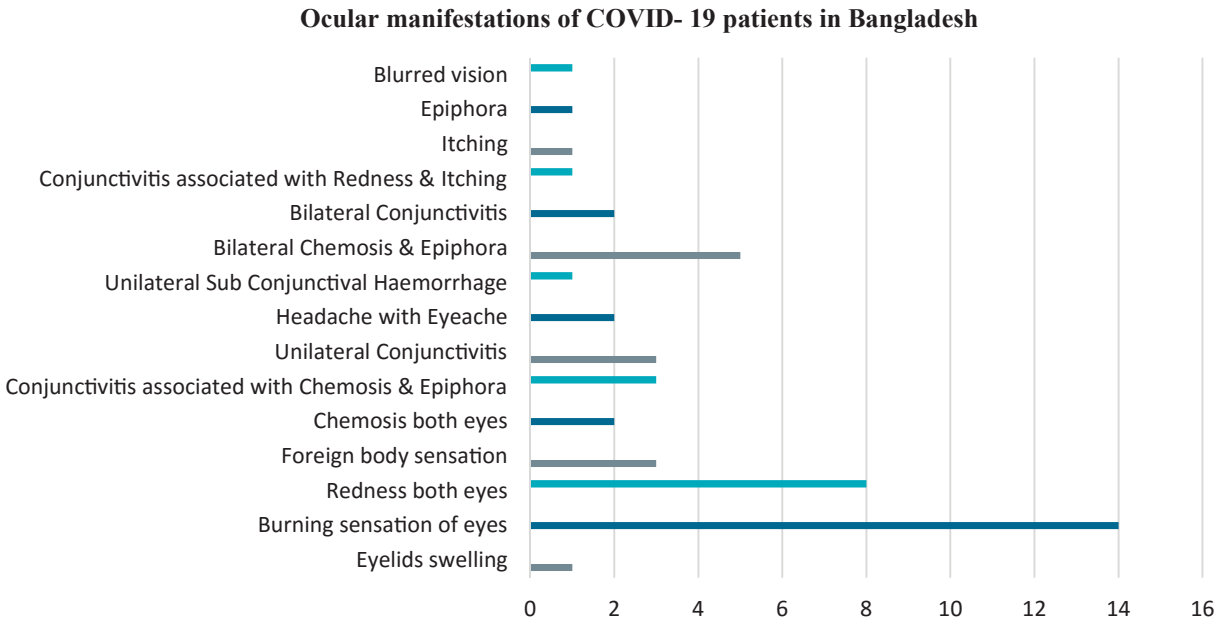

Figure-3: *Ocular manifestations of COVID-19 patients*

Figure-3 represents Ocular manifestations found in Bangladesh during COVID-19 period in case of confirmed COVID-19 patients. Here total 15 types of ocular manifestations found in different COVID dedicated hospitals in Bangladesh. About 48 cases were detected with ocular manifestations out of 3,648 confirmed COVID-19 hospitalized patients.

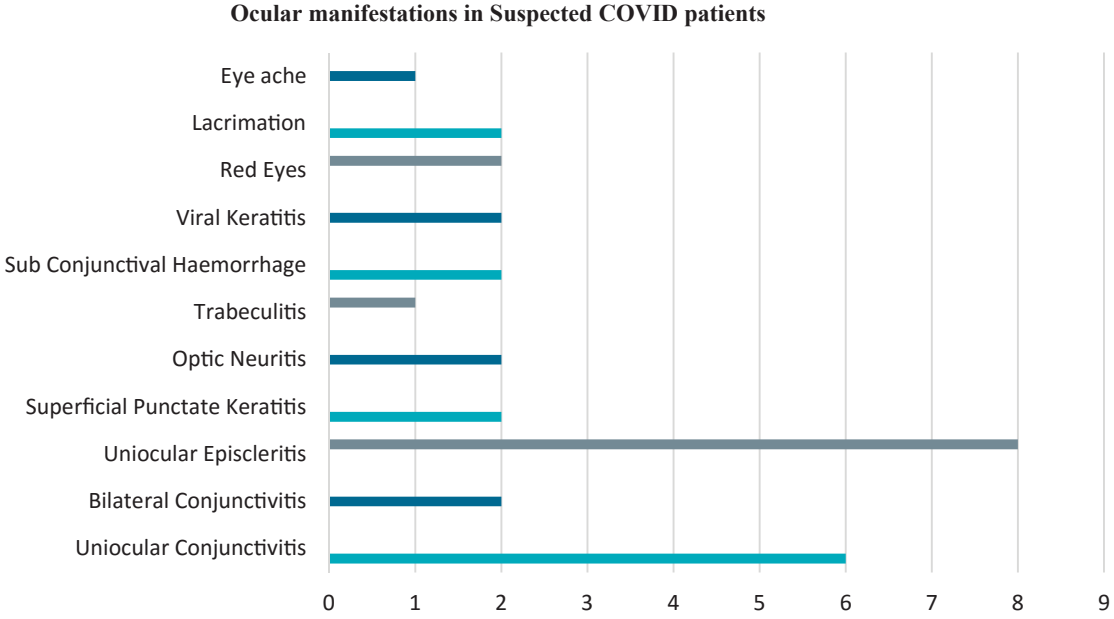

Figure-4: *Ocular manifestations in suspected COVID patients*

Figure-4 represents ocular manifestations of suspected COVID-19 patients, suspected means who have similar signs & symptoms of COVID-19 diseases. There are about 11 types of manifestations found in suspected COVID cases but those patients were not hospitalized. They were screened at Bangabandhu Sheikh Mujib Medical University's outpatients department.

DISCUSSION

Scenarios during covid-19 pandemic in Bangladesh

During data collection 26 doctors participated in this study who have completed already one or more than one roster (07 days) duties. Total 08 (eight) Corona dedicated hospitals data accommodated here. Among those hospitals one Medical University, five tertiary level Govt. hospitals, one private Medical College hospital and one largest Isolation center of South-Asia were included. About 3,648 confirmed hospitalized COVID cases and 30 suspected (BSMMU OPD) COVID cases data collected here. In total around 3,678 patients were observed. Among those confirmed cases about 66.2% male and 33.8% female patients. Ocular manifestations found in 48 confirmed cases and in suspected cases there are 30 total 78 cases found here. That means 2.121% patients have ocular manifestations in confirmed & suspected both. But in COVID confirmed cases 1.316% patients have ocular manifestations.With percentage ocular manifestations in confirmed cases are followings:

a)Eyelids swelling: 01 pt. [2.1%] in ICU b) Burning sensation in eyes: 14 pt. [29%] c) Redness both eyes: 08 pt. [16%] d) Foreign body sensation: 03 pt. [6.25%] e) Chemosis both eyes: 02 pt.[4.17%] in ICU f) Conjunctivitis associated with Chemosis & Epiphora: 03 pt. [6.25%] g) Unilateral Conjunctivitis: 03 pt. [6.25%] h) Headache with Eyeache: 02 pt. [4.17%]i) Unilateral Subconjunctival Haemorrhage: 01 pt.[2.1%] j) Bilateral Chemosis & Epiphora: 05 pt. [10.43%] in ICU k) Bilateral Conjunctivitis: 02 pt. [4.17%]l) Conjunctivitis associated with Redness & Itching: 01 pt. [2.1%] m) Itching: 01 pt. [2.1%] n) Epiphora: 01 pt. [2.1%] o) Blurred vision: 01 pt. [2.1%] .

With percentage ocular manifestations in suspectedcases are followings:

a) Uniocular Conjunctivitis: 06 pt. [20%] b) Bilateral Conjunctivitis: 02 pt. [6.67%] c) Uniocular Episcleritis: 08 pt. [26.67%] d) Superficial Punctate Keratitis: 02 pt. [6.67%] e) Optic Neuritis: 02 pt. [6.67%] f) Trabeculitis: 01 pt. [3.33%] g) Subconjunctival Haemorrhage: 02 pt. [6.67%] h) Viral Keratitis: 02 pt. [6.67%]i) Red Eyes: 02 pt. [6.67%] j) Lacrimation: 02 pt. [6.67%] k) Eye ache: 01 pt. [3.33%] .

LIMITATIONS

There is no relevant study for COVID patients on Ocular manifestations in Bangladesh. During data collection all cases didn't evaluated by Ophthalmologists. COVID-19 is a highly contagious disease transmitted through direct or indirect contact with infected people or contaminated surfaces, that's why observation of all hospitalized COVID-19 patients couldn't be evaluated thoroughly for ocular manifestations.

OPHTHALMOLOGIST- Back to New Normal life

COVID-19 pandemic when will be finished we don't know. We have to wait for months to years up to appropriate vaccine innovation and maximum hard immunity make up in community level. But our professional activities should not be infirmed. During this period, we must try to ensure our professional safety, our staffs, colleagues' safety and also safety for our families. We have to maintain this new normal life in our daily activities. During professional service we should follow standard triage system for COVID-19. We will ensure non covid service as well as COVID confirmed or suspected cases eye care service with fully standard universal precautions.[19,20]

CONCLUSIONS

In conclusion, we found several ocular manifestations in patients who were hospitalized as COVID-19 patients. Moreover, the ocular involvement could be the presenting finding of disease. Ophthalmologists may play diagnostic and therapeutic role for comprehensive management of these patients. In Bangladesh more evidence-based studies will be needed in future and this study will play a vital role for future studies.

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Original Article

Stratification and Assessment of Risk Factors of Chronic Kidney Disease in Hospitalized Patients

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Abstract:

Chronic kidney disease (CKD) has become a global public health concern. The adverse outcome of CKD are high in number in developing countries due to scarcity of facilities for renal replacement therapy and high cost of services for management of ESRD. It is one of the leading cause of hospital deaths. CKD is strongly associated with diabetes, hypertension, glomerulonephritis and elevated lipids. Therefore, identifying the preventable risk factors, pathophysiological mechanisms and stratification of CKD helps in decreasing and slowing its progression. This study was conducted for the staging of chronic kidney disease (CKD) and assessment of the risk factors with CKD in hospitalized patients of Dhaka Medical College Hospital in collaboration with Medicine and Nephrology department. This was a cross sectional observational study where 125 patients having chronic kidney diseases (CKD) were diagnosed on the basis of history, clinical examinations and investigations, who had fulfill the inclusion and exclusion criteria admitted in the department of medicine and department of nephrology from January to December 2016. Sampling method was purposive sampling. A specifically designed questionnaire were used to get the personal and medical history data. Blood and urine samples were collected and data was analyzed using SPSS (22.00). Out of 125 patients, no Stage-1 patient was found, remaining were Stage- 2 CKD 7.2%, Stage- 3 CKD 63.2%, Stage- 4 CKD was 25.6%, and Stage- 5 CKD was 4%. Among 125 participants, 52.0% had glomerulonephritis (GN), 31.2% had diabetes mellitus (DM) and 9.6% had hypertension (HTN). Mean age was 48.41 (±13.99) years, mean body weight was 50.61 (±10.73) Kg, mean BMI was 22.9 (±1.69), male female ratio was 3.6:1. Age group 51 to 60 years were suffering more. The association between CKD and other risk factors including obesity and overweight, use of tobacco, diabetes and hypertension were highly significant. The commonest risk factors for CKD like DM and HTN are also alarmingly high and obviously adding to the existing burden of CKD. Early detection of the risk factors of CKD, early referral to nephrologist, appropriate treatment of hypertension, DM, GN and other risk factors, life style modification with specific emphasis on reduction in salt intake, physical exercise, and abstinence from smoking would retard progression of kidney disease to an advanced stage.

Keywords: *CKD, DM, HTN, ESRD, Mean*

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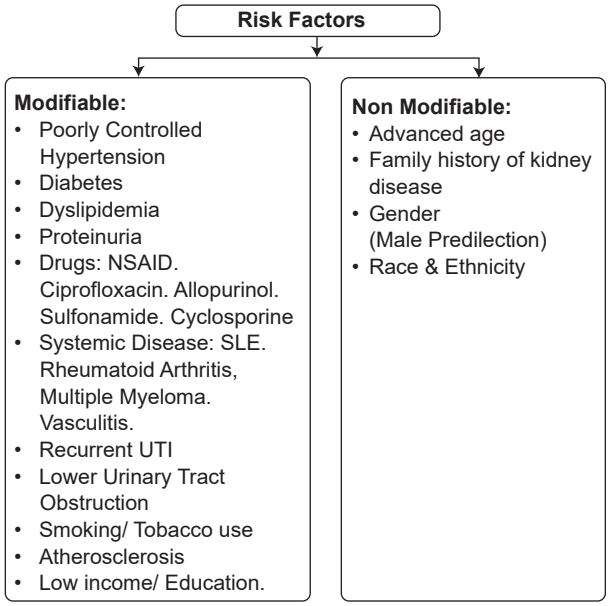
INTRODUCTION

CKD can be defined by kidney damage of more than 3 months as defined by the structural or functional abnormalities of the kidney, with or without decreased GFR, manifested by either pathological abnormalities or markers of kidney damage in blood or urine or imaging; or decrease GFR of less than 60ml/min/1.73m^2 for not less than 3 months with or without evidence of kidney damage.[1] It is a complex progressive condition that develops slowly in some individuals, but rapidly in others. It is one of the major non-communicable public health problems affecting approximately 10% of global population. In addition to the underlying cause of renal failure, the rate of disease progression may be dictated by the presence of CKD risk factors. The principal outcome of CKD includes progressive loss of kidney function leading to end-stage renal disease (ESRD) and the development and progression of cardiovascular disease (CVD)[2,3]. Globally, CKD is the 12th cause of death and the 17th cause of disability respectively.[4]. Unfortunately CKD is under-diagnosed and undetected resulting in lost opportunities for improving its clinical outcome.[5] Notably, the incidence and prevalence of CKD have shown a

dramatic increase over the past two decades. It was recently estimated that 11% of adults in the US alone have early CKD that may progress to ESRD and require renal replacement therapy (RRT), such as dialysis or transplantation. In developing nations including Bangladesh, 95% of ESRD patients die without having renal replacement therapy (RRT). In earlier studies it was shown that, in Bangladesh, each year about 30,000 CKD ultimately enter into RRT [6,7] The staging of CKD is useful because it endorses a model in which primary physician and specialist both share responsibility for the care of CKD patients. But only for kidney specialist will be tough to provide the care of whole CKD population in a densely populated region like Bangladesh. Besides, classification of CKD also offer specific clinical action plan for each stage which will help both patients and practitioners involved in the treatment of CKD. So, if we identify earlier stage of CKD, will be able to institute corrective strategies to decrease complications and also the progression to ESRD. Because, if we delay the progression of CKD in earlier stage, it is not only prevents progression of ESRD but also help measures to prevent cardiovascular complications.[8] Furthermore, if we arrange an elective vascular access at stage IV, we can avoid temporary vascular access through central venous catheter which increases later morbidity and mortality. The population of Bangladesh is 168 million and population density is over 1033/km². So, naturally the incidence of infectious disease causing post infectious glomerulonephritis is high. Moreover, the incidence of non-infectious disease like diabetes, hypertension the two most important systemic disease responsible for producing chronic kidney disease leading to end stage renal disease is also going up. According to WHO, the total number and projected number of people in Bangladesh suffering from diabetes mellitus is 3,196,000 and 11,140,000 in 2000 and 2030 respectively. So, glomerulonephritis, diabetes and hypertension are responsible for 85% ESRD in Bangladesh.[8] Improving outcome for people with CKD requires a coordinated worldwide approach to prevention of adverse outcomes through defining the disease and its outcomes, estimating disease frequency, identifying early stage of disease and antecedent risk factors and detection and treatment for population at increased risk for adverse outcome.[1] The number of CKD patients are continuously increasing all over the world including Bangladesh. Almost one quarter of world's population resides in South Asia- India, Pakistan, Bangladesh, Sri Lanka & Nepal. The commonest risk factors for CKD like DM and hypertension are also alarmingly high and obviously adding to existing burden of CKD [8,9] The association between CKD and other risk factors like age, obesity, use of tobacco, DM, HTN was also highly significant. When more than one risk factor is present the chance of developing CKD is extensively eminent. The present studies therefore proposes that a nationwide survey is inevitable and suggests to be conducted encompassing the entire cross section of population to find out the stratification of CKD and assessment of its associated risk factors, so that a preventive strategy or an entire defensive framework could be adopted or planned to reduce the disease in community. Besides large portion of Bangladeshi people live with extreme poverty and are alienated from the light of education. Hence their concern about disease is not sufficient and most of them are not capable of bearing the expenditure of treatment.[9] the relationship between kidney and hypertension is interesting because the kidney can be affected hypertensive process, or it can also cause hypertension. 80-90% of patients with chronic kidney disease experience hypertension during the course of their disease. Uncontrolled hypertension accelerates the rate of the prevalence of hypertension in urban adult population of Asia varies between 15-35%.[8] There is no nationwide survey to show prevalence of hypertension in adult population of Bangladesh. In a small community based study showed that in native Bangladesh overall prevalence rate of systolic hypertension is 14.4% and diastolic hypertension is 9.1% [10] The observation that small reductions in the decline in renal function early in the disease process can provide marked benefits later, in terms of delaying progression to RRT, suggests that substantial benefits can be gained from the early identification and treatment of individuals at risk. In order to develop effective strategies to identify such individuals and delay or prevent disease progression, a comprehensive understanding of the complex interplay between risk factors influencing the disease process is required. The present study implies that the urgent need to develop comprehensive strategies targeted reducing CKD burden and may lead to a better understanding of risk factors of CKD. However, little attention has been paid to the stratification of CKD and its risk factors assessment among the population of Bangladesh. With increasing number of CKD patients, CKD related excess CVD, ESRD and consequent financial burden of renal replacement therapy, the importance of CKD and its risk factor has to be realized. Nevertheless, it is true that adopting interventions at early stage of CKD can save a family and the entire nation as well from an intense catastrophe.



Classification	Definition of risk factors
Category I	Factors for which interventions have been proven to lower risk
Category II	Factors for which interventions are likely to lower risk
Category III	Factors for which modification may lower risk
Category IV	Factors for which modification is not possible

MATERIALS AND METHODS

This cross-sectional study was carried out at indoor department of medicine and department of nephrology, Dhaka Medical College Hospital during January 2016 to December 2016. A total of 125 subjects were included having chronic kidney diseases (CKD), diagnosed on the basis of history, clinical examinations and investigations. Inclusion criteria covered both male and female patients with CKD with age > 18 years. Patients with fever and unstable hemodynamic condition, having nephrotoxic drugs in the previous two weeks and patient undergone IV contrast X-ray were excluded from the study. After taking consent from the patient detailed clinical history and relevant data were collected in a preformed data sheet for each patient and different samples were sent to Bio-Chemistry, Microbiology, pathology and Radiology laboratories of Dhaka Medical College Hospital for relevant investigations. Participants were categorized by BMI as per WHO criteria into normal (BMI 18.5-24.9), underweight (>18.5), over weight (25.0-29.9), obese (30-39.9), and morbid obese (≥40.00). Participants were considered to have diabetes mellitus if previously they had been recognized by the doctor as having DM or any documents in favor of DM or they reported taking insulin or oral ant diabetic drug or random plasma glucose≥ 11.1 mmol/L with symptom. Hypertension was defined as systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg or use of medication for hypertension irrespective of the blood pressure[13]. A random urine sample of MSU (midstream urine) had been collected from each participant using a clean catch technique and sterile container. Urinary excretion of protein and sugar was detected by multisticks named "Uripath 5" made in the UK[13]. Serum creatinine was measured by alkaline picrate method (Jaffe kinetic assay), which was not standardized by IDMS. Serum creatinine was determined as μmol/L and converted to mg/dl by conversion factor 88.4. CCR (creatinine clearance rate) and estimated GFR (glomerular filtration rate) were calculated from serum creatinine (mg/dL) by using CockCroft-Gault and MDRD (modification of diet in renal disease) equations[13]. Age, occupation, marital status and address were recorded as per statement of the participants at the time of interview. Weight was taken with light cloths without shoes by an appropriately calibrated weight measuring scale placed on a flat surface. Height was measured without shoes in erect posture on a flat surface placing the heels, buttock, scapulae and occiput touching the wall on the back while extending great toes and gazing horizontally forward to a point on the opposite wall. Blood pressure (B.P.) was measured after 5 minutes rest, being relaxed in chair with a support on the back keeping bared arm on a table at a heart level. A conventional sphygmomanometer was used ensuring 80% of the arm covered by bladder. Systolic BP was based on 1st Korotkoff sound and diastolic BP based on 5th Korotkoff sound. The averages of the two readings separated by 2 minutes were taken for analysis according to the criteria mentioned.

Staging of CKD as per K/DOQI guideline

Stage	Description	GFR (ml/min/1.73m²)
1	Kidney damage with normal or increased GFR	≥90
2	Kidney damage with slightly decreased GFR	60-89
3	Moderate decreased GFR	30-59
4	Severely decreased GFR	15-29
5	Kidney failure	<15 [or dialysis]

RESULTS

Table-I. Shows that among the participants 84 (67.2%) had family history of hypertension and 41 (32.8%) had not. Patients with CKD had higher family history of hypertension.

Table I. Distribution of participants by family history of hypertension

F/H of Hypertension	Frequency n%	Percentage n%
Yes	84	67.20
No	41	32.80
Total	125	100

Table-II. Shows that it was to be found that male and female participants suffered more in between 51 to 60 years of age. Male and female suffered more or less equally before 30 years of age

Table II: Age and sex distribution of the participants

Age group	Male n%	Female n%	Total n%
< 30 years	2 (2.04)	01 (3.70)	03 (2.40)
31 - 40 years	09 (9.18)	02 (7.41)	11 (8.80)
41 - 50 years	27 (27.55)	06 (22.22)	33 (26.4)
51 - 60 years	41 (41.83)	13 (48.15)	54 (43.20)
> 60 years	19 (19.39)	05 (18.52)	24 (19.2)
Total	98 (100)	27 (100)	125 (100)

Table-III Shows that in all age group, male suffered more than female. Among 125 participants, CKD was due to glomerulonephritis in 44 (44.89%) participants in male and 11 (40.74%) in female. CKD was due to DM in 31 (31.63%) male participants & 9 (33.33%) female participants. CKD was due to HTN in 13 (13.26%) male participants and 3 (11.11%) female participants. CKD was due to Drugs in 4 (4.08%) male participants and 2 (7.4%) female participants CKD was due to PKD in 3 (3.06%) male participants and 1 (3.7%) female participants

Table III: History of CKD patients (n=125)

Causes of CKD	Male		Female	
	Frequency n %	Percentage n %	Frequency n %	Percentage n %
GN	44	44.89	11	40.74
DM	31	31.63	9	33.33
HTN	13	13.26	3	11.11
Drugs	4	4.08	2	7.40
PKD	3	3.06	1	3.7
Others	3	3.06	1	3.7
Total	98	100	27	100

Table-IV. Shows tht among the study population, male participants suffered more than female in all age groups Out of 125 study population, creatinine clearance rate of 63.2% subjects were between 30-59.9 ml/min, 25.6% subjects were between 15-29.9 ml/min, 7.2% subjects were between 60-89.9 ml/min and 4% <15 ml/min.

Table IV: Stages of CKD of the study population (n=125)

Ccr (ml/min)	CKD stage	Frequency	Percentage
15	5	5	4
15 - 29.9	4	32	25.6
30 - 59.9	3	79	63.2
60 - 89.9	2	9	7.2
> 90	1	0	0

Table-V Shows that majority of the participants (63.2%) were in stage 3, followed by stage 4 (25.6%). 7 (7.2%) patients were in stage 2 and 5 (4%) were stage 5. No patient was in stage 1

Table V: Comorbidities of study population

Stages of CKD	Age (Years) Mean (±SD)	RBS (mg/dl) Mean (±SD)	Creatinine (mg/dl) Mean (±SD)	Ccr (ml/min) Mean (±SD)
Stage- 2 (n=9)	39.78±14.01	102.91±18.29	1.98 ± 0.22	64.78 ± 4.32
Stage- 3 (n=79)	49.44± 9.35	103.21±13.13	2.22 ± 0.52	40.31 ± 6.5
Stage- 4 (n=32)	50.28±11.02	123.99±49.15	4.79 ± 1.01	23.74 ± 2.74
Stage- 5 (n=5)	53.2±24.37	119.39±39.21	8.66 ± 1.47	10.63 ± 2.51

DISCUSSION

The present study, cross sectional in design, was done to observe various risk factors like age, gender, and socio-economic status, family history of kidney disease, hypertension and diabetes in chronic kidney disease subjects. Related medical history & clinical information of the subjects were taken by questionnaires from all the individuals included in this study. Gender was also confirmed as a key predictor of CKD in a similarly large meta-analysis of 68 studies involving 11,345 patients with non-diabetic CKD. This analysis found that men experienced a more rapid decline in renal function and worse outcomes than women. As we live in developing country like Bangladesh, most of the people are within low socioeconomic status and their GDP is 1284 US Dollar/year (Bangladesh Bureau of Statistics, 2015). Bangladesh Bureau of Statistics (2015) stated that monthly income <7000 TK. considered to be low socioeconomic status, 7000-12000 TK. considered to be middle socioeconomic status and > 12,000 Tk. considered to be upper socioeconomic status. In our study, most of participants (73.8%) were in poor socioeconomic status. Khan MIH (2006) showed that 54.2% of sufferer were from low socioeconomic condition. This finding is consistent with our finding. Regarding the underlying causes of CKD, diabetes mellitus (DM) is the most common cause followed by glomerulonephritis (GN) and hypertension (HTN) in developed countries (Simon.et al., 2006) But in our country glomerulonephritis (GN) is the most common cause of CKD (40%) followed by diabetes mellitus (DM) and hypertension (HTN) (Rashid, HU, 2007). Glomerulonephritis was diagnosed by history of swelling of the body, history of abnormalities of urine volume and or colour (e.g. Haematuria) and abnormal finding in urine routine examination (Proteinuria, RBC, WBC casts).Diabetic Kidney Disease (DKD) - was diagnosed by history of long duration diabetes (>10-15years), presence of other target organ damage e.g. diabetic retinopathy, peripheral neuropathy and proteinuria.[11] CKD due to hypertensive nephropathy- was diagnosed by history of long duration (>10 years) of uncontrolled hypertension or previous history of accelerated hypertension, onset of hypertension before proteinuria and presence of other target organ damage e.g. hypertensive retinopathy, LVH, proteinuria. [11] In our study, GN was also the cause of CKD in majority patients (44%). Other causes of CKD among the study population was DM (32%), HTN (12.8%), Drugs (4.8%), PKD (2.4%) and others (2.4%). In our study population, stratification of CKD was done by measured estimated GFR (e-GFR) by Cock Croft -Gault formula based on serum creatinine. Mean creatinine clearance was 35.09 (±12.4) ml/min, which was calculated by Cock Croft-Gault formula. Among 125 participants of CKD, most of the participants were in stage-3 which was about 63.2%, 7.2% were in stage-2, 25.6% were in stage-4 and 4% were stage-5. In Bangladesh, Huda, was conducted a study in slum areas of Dhaka to find out incidence of CKD which about 16% and most of them were in stage-3 which was about 11%. [12]Another study conducted by Muqueet, in Savar, Dhaka showed that prevalence rate of CKD in rural population was 17.4% and most of thm were in stage-3 which was about 13.1%. [13] Coresh et al. showed in their study on prevalence of CKD and decrease kidney function in the adult population that 11% population had CKD and most of the population was in stage-3 which is similar to our finding. [14] In our study we looked for assessment of risk factors like smoking, socioeconomic status, hypertension, drug induced nephropathy and diabetes mellitus with CKD. Type 2 diabetes is one of the fastest growing epidemics worldwide. The no. of individuals diagnosed with type 2 diabetes was estimated at 124 million in 1997, a number expected to reach 221 million in 2010. Significantly the presence of DM has a considerable impact on the progression of CKD. Nephropathy, a major complication of DM associated with poor glycemic control occurs in approximately one third of type 2 diabetic patients and is the single most important cause of ESRD in both the US and Europe. For example, approximately 24% of all patients in Europe beginning dialysis had diabetes in 1999. However, there is little awareness of the risk of CKD development and progression associated with DM. Smoking, a well-known risk factor for many diseases, was recently proven to play an important role in renal disease. Studies showed that, cigarette smoking is a risk factor for the development and progression of CKD. Many studies indicate that, the deleterious effects of smoking on renal function is not merely restricted to essential hypertension and diabetic nephropathy. Some of those studies found that, smoking is an independent predictor of micro albuminuria in healthy patients with primary hypertension. It is well known that, urinary albumin is a sensitive marker of glomerular injury. The fact that, there is a relationship between smoking and albuminuria indicates direct or indirect renal damage induced by smoking. The kidneys susceptible to damage by drugs because it is the root of excretion of many water soluble compounds including drugs and their metabolites. Some may reach

high concentrations in the renal cortex as a result of proximal tubular transport mechanisms. Others are concentrated in the medulla by the operation of the counter current system. Impairment of renal function may develop in patients on NSAID since prostaglandin play an important role in regulation renal blood flow. ACE inhibitors abolish the compensatory angiotensin-II mediated vasoconstriction of the glomerular efferent arteriole. In our study, out of 125 participants CKD due to drug induced nephropathy was 4.8% where male 4.08% & female 7.40%. Most of the participants suffered from kidney disease due to prolonged use of NSAIDs. In our study, 86.4% participants had hypertension among 125 participants of CKD. CKD was due to hypertension in 13 (13.26%) male participants and 3 (11.11%) female participants. The relationship between the kidney disease and hypertension is interesting because the kidney can be affected by the hypertensive process or it can also cause hypertension. Eighty to ninety percent of patients with chronic kidney disease (CKD) experience hypertension during the course of their disease

CONCLUSIONS

The association between CKD and other risk factors like age, obese and overweight, use of tobacco, diabetes and hypertension was also highly significant. The commonest risk factors for CKD like DM & HTN are also alarmingly high and obviously adding to the existing burden of CKD. Early detection of the risk factors of CKD, early referral to nephrologist, appropriate treatment of hypertension, DM, GN and other risk factors, life style modification with specific emphasis on reduction in salt intake, physical exercise, and abstinence from smoking will retard progression of kidney disease to an advanced stage.

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Original Article

Study on Effect of Magnesium Sulfate as Tocolytic Agent

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Abstract

We face many problems in diagnosis, monitoring and adopting treatment policy.There are very limited studies about preterm labour prevention in our country and few national data are available about the incidence of preterm labour. Acute tocolysis prevents preterm labor for 48 hours, which is the critical period for antenatal steroid administration or maternal transfer to perinatal centers to improve neonatal outcomes. This prospective study was conducted. To determine the effectiveness of magnesium sulfate as tocolytic agent in preterm labour to arrest the premature onset of labour. A total of 90 primigravid and multigravid with preterm labour was included in this study at 250 Beded General Hospital Tangail from January 2012 to December 2015. The mean age of the respondents was 24.13±4.67 year. The mean systolic and diastolic blood pressure were 122.47±12.64 and 71.67±12.67 mm of Hg respectively. Gestational age did not influence on the outcome of treatment with Tocolytic regime. Out of 90 pregnant women, 70% were anemic, 53.3% had vaginal bleeding and 76.7% had abdominal pain. Among 90 respondents only 6 women had premature rupture of membrane and about 40% had inadequate amniotic fluid. The three treatment regime (Antibiotic+ Tocolytic+ steroid) was found indifferent in terms of affectivity. Preterm labour is not a very uncommon pregnancy-related complication. This study evaluates, the effect of magnesium sulphate as tocolytic agent.

Keywords: *Magnesium sulfate, tocolytic agent, preterm labour.*

INTRODUCTION

Magnesium, one of the trace-element is an important cation of body. It is believed that magnesium sulfate appears to inhibit calcium uptake into smooth muscle cells and reduce uterine contractility. $MgSO_4$ is cost-effective and found to be well tolerated when given to a patient of preterm labour. Magnesium Sulfate can delay preterm labour at least 24-48 hours. This delay increases the time that may be required for the maximum beneficial effects of steroids can be achieved or for the transfer of the patient to a center capable of managing the preterm baby. At some institutions, the fetal survival rate approaches 90% at 24-27 weeks of gestation and 98% at 28-31 weeks of gestation. Patient of preterm labour who is treated with tocolytic, magnesium sulphate is often as a first line therapy as it is highly effective with fewer side effects.[2] The decision to use magnesium sulphate, the dosage to administer, the duration of use, and alternative therapies are physician judgment. These decisions should be made based on a reasonable assessment of the risks of the clinical situation (PTL) and the treatments available versus the benefits of prolonging pregnancy.[3]

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The Magnesium sulphate ($MgSO_4$) was mostly an acute medication not for prolong period and could not reasonably be expected to be efficacious after the drug was discontinued. Elliott, et al4, demonstrated the peril of an inadequate therapeutic level of magnesium by comparing the incidence of successful tocolysis at 48 hours with low dose Mg (4 gm loading dose / 2 gm per hour), medium dose (4 gm loading dose and greater than 2 gm per hour maintenance) and high dose protocols (6 gm loading dose and greater than 2 gm per hour maintenance). Low dose Mg was successful in 69.2% of treated patients. The medium dose was successful in 79.2% and 88.7% of the high dose patients were successfully tocolysed for 48 hours or more.[4] Preterm labor and delivery continues to be the most common problem in obstetrics today and a major financial burden on the health care system. It has been estimated that this problem costs $15.5 billion (2002) in neonatal cost alone.[12]

The uses of magnesium sulfate in the context of appropriate clinical obstetric practice include, in particular, prevention and treatment of seizures in women with preeclampsia or eclampsia and fetal neuroprotection before anticipated early preterm (less than 32 weeks of gestation) delivery. Magnesium sulfate also may be used for the short-term prolongation of pregnancy (up to 48 hours) to allow for the administration of antenatal corticosteroids.[13]

RATIONALE

Magnesium sulfate ($MgSO_4$) is the agent most commonly used for the treatment of eclampsia and the prevention of eclampsia in patients with severe pre-eclampsia. Another commonly practiced off-label use of this drug is in preventing preterm labor in pregnant women where the duration of the treatment

might be more than one week. It is usually given either by intramuscular or intravenous rate whilethe survival of infants born preterm has improved, the prevalence of cerebral palsy has risen.[16,17] The incidence of cerebral palsy decreases significantly with increasing gestational age: 14.6% at 22–27 weeks of gestation, 6.2% at 28–31 weeks, 0.7% at 32–36 weeks and 0.1% in term infants.[18] Twenty-five percent of all cases of cerebral palsy are in infants born at less than 34 weeks of gestation.[19] In children born preterm the proportion whose cerebral palsy is considered to have a perinatal origin (49%) is greater than in those born at term (35%).[20,21] The harmful effect in the fetus with the shortest duration is not established. In light of the safety information, the drug label for $MgSO_4$ injection, USP 50% has also been changed, including changing the pregnancy category to D from A and denoting the effect as New teratogenic effects.[22] Patient of preterm labour who is treated with tocolytics, magnesium sulphate is often as a first-line therapy as it is highly effective with fewer side effects. With the proper clinical skill, assessment and monitoring of patient and with minimum resources, a definitive plan for the management of preterm labour by $MgSO_4$ is effective.[23]

MATERIAL AND METHODS

This is a prospective study was carried among 90 pregnant women at the department of Obstetrics and Gynaecology in 250-bed general hospital,Tangail. The study was conducted from January 2012 to December 2015 admitted cases in the hospital. Pregnant women both primi and multi with preterm labour were included in this study. After admission full history including duration of pregnancy, time and onset of labour pain were taken, Gestational age was determined fromthe first day of the last menstrual period (LMP) and early ultrasonography. Pregnancy of more than 28 weeks' duration and less than 37 completed weeks were included in this study. Examination of pulse, blood pressure, fundal height and fetal conditions were assessed for documentation of preterm labour pain, single sterile per vaginal examination done to assess cervical condition. Loading dose: 4-6 gm in Magnesium sulphate (10-20%) solution over 20-30 minutes followed by an infusion of 1-2 gm/hr to continue tocolysis for 12 hours after the contractions have stopped and we patient was wintered to it any evaluate we side effect data were analyzed by SPSS where all calculation rate of less than 0.05 was considered significant.

RESULT

Table I shows Regarding age in years, out of 90 respondents, the majority of the respondents (90%) were below 30 years of age, mean age of the subjects was 24.13±4.67 years ranging from 18 years to 33 years.

Table I: Distribution of Respondents by Age (n=90)

Age (in years)	Frequency	Percentage (%)
≤20	27	30.0
21-25	30	33.3
26-30	24	26.7
>30	09	10.0
Total	90	100.0

Table-II shows, among 90 future mothers, the highest mean systolic blood pressure was found 122.47±12.640 mmHg and that of mean diastolic blood pressure was found 71.67±12.617 mmHg. The table represented that the highest pulse rate was 76.10±19.477 beats per minute.

Table II: Distribution of mothers' by Haemo-dynamics (n=90)

Parameter	Systolic BP (mmHg)	Diastolic BP (mmHg)	Pulse rate (bpm)
Minimum	110	50	24
Maximum	160	100	110
Mean	122.47	71.67	76.10
Std. deviation	12.640	12.617	19.477

Table-III shows, distribution of respondents by parity. Out of 90 respondents, the majority of the respondents (56.7%) were primi.The mean parity of the subjects was 2.1±1.605.

Table III: Distribution of respondents by parity (n=90)

Parity	Frequency	Percentage
<2	51	56.7
2-3	24	26.7
>3	15	16.6
Total	90	100.0

Table IV shows According to table 4, out of 90 respondents 36.7% were of 28-30 weeks of gestation, 26.7% were of 31-32 weeks of gestation and 36.7% were of 33-35 weeks of pregnancy

Table IV: Distribution of the respondents by gestational age (n=90)

Gestational age	Frequency	Percentage
28-30 wk	33	36.7
31-32 wk	24	26.7
35-37 wk	33	36.6
Total	90	100.0

Table V shows, distribution of respondents by anemia, vaginal bleeding and abdominal pain. Out of 90 women, 70% were anemic, 53.3% had vaginal bleeding and 76.7% had abdominal pain.

Table V: Distribution of the respondents by anemia, vaginal bleeding & abdominal pain (n=90)

Parameter	Frequency	Percentage
Anemia		
Present	63	70.0
Absent	27	30.0
Total	90	100
Vaginal bleeding		
Present	48	53.3
Absent	42	46.7
Total	90	100
Abdominal pain		
Present	69	76.7
Absent	21	23.3
Total	90	100

According to figure 1 out of 90 respondents in 93.3% membrane was intact. The membrane was ruptured in 6 women.

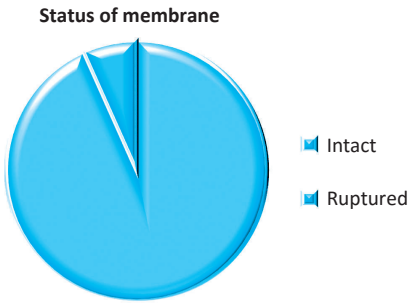

Figure 1 : Distribution of status of the membrane (n=90)

Table-VII shows, distribution of the respondents by body build and effectivity. Following the Chi-square test effectivity of treatment is found to be independent of body build or nutritional status (p>0.05). The Gestational age doesn't seem to have an influence on the outcome of treatment with the Tocolytic regime (p>0.05). In case of effectivity of Tocolytic treatment with pattern of antenatal visit, Antenatal care doesn't have statistically significant impact on pregnancy outcome (p>0.05) And the Fetal presentation which didn't have statistically significant impact on pregnancy outcome (p>0.05). But among 90 respondents, inadequate amniotic fluid almost 40% ineffective favorable outcome of their current ailment (p>0.001).

Table VII: Distribution of the respondents by the effectivity and body build, gestational age, antenatal care, presentation of fetus and volume of amniotic fluid (n=90)

Body built/Nutrition	Effectivity		Test statistics
	Effective	Ineffective	
Poor	15 (100%)	Nil	Chi sq=3.945
Average	63 (95.5%)	3 (4.5%)	df=2
Good	6 (66.7)	3 (33.3%)	p=0.139
Gestational age (wks)			
28-30	30 (90.9%)	3 (9.1%)	Chi sq=0.779
31-32	24 (100.0%)	Nil	df=2
33-35	30 (90.9%)	3 (6.7%)	p=0.677
Antenatal care			
No	12 (80.0%)	3 (20.0%)	Chi sq=2.143
Irregular	30 (100%)	Nil	df=2
Regular	42 (3)	3 (6.7%)	p=0.343
Presentation			
Cephalic	69 (95.8%)	3 (4.2%)	Chi sq=2.545
Breach	9 (75.0%)	3 (25.0%)	df=2
Others	6 (100%)	Nil	p=0.280
Volume of amniotic fluid			
Adequate	75 (100%)	Nil	Chi sq=10.71
In adequate	9 (60%)	6 (40%)	df=1
			p=0.001

Table-VIII shows statistical association was sought between different regime used and the outcome of treatment. The three treatment regime was found indifferent in terms of affectivity (p>0.05).

Table VIII: Distribution of the respondents by the efficacy with treatment paradigm (n=90)

Treatment paradigm	Effectively		Test statistics
	Effective	Ineffective	
Antibiotic+ Tocolytic	2 (100%)	Nil	Chi sq=0.917, df=2, p=0.632
Tocolytic+ steroid	7 (100%)	Nil	
Antibiotic+Tocolytic +steroid	19 (90.5%)	2 (9.5%)	

DISCUSSION

In the current study, it is shown that regarding age in years, the majority of the respondents (90%) were below 30 years of age, mean age of the subjects was 24.13±4.67 years ranging from 18 years to 33 years. Lipi et al.[2] study observed the majority of 39.13% of patients were in the 26-30 years' age group and 28.99% are in 21-25 years. This study was consistent with the findings of the study of Block et al (1977)1. According to his study, the age group was 22-35 years. In the present study, it is revealed that the majority of the respondents (56.7%) were primi-para. Compared to the study of Lipiet al.[2] 56.52 % of patients were multi-para and 43.48% patients were primi. A retrospective cohort study Lumley[5] found the incidence of preterm birth in primi-gravida women was 5.9%. In the present study, it is shown that out of 30 subjects 36.7% were of 28-30 weeks of gestation, 26.7% were of 31-32 weeks of gestation and 36.7% were of 33-35 weeks of pregnancy. A study by Goldenberg RL[6], by gestational age 5% of preterm birth occur at less than 28 weeks (extreme prematurity) , 15% at 28 – 31 weeks (severe prematurity), 20% at 32-33 weeks(moderate prematurity), and 60-70% at 34-36 weeks (late preterm). Lipi et al.[2] observed 49.28% of patients were in 31- 33 weeks of gestation and 36.23%of patients were in 34-36 weeks. In this study, it was observed that anemia was found in 21(70.0%) patients, vaginal bleeding 16(53.3%) and abdominal pain 23(76.7%). After commencement of treatment, patients were kept under meticulous follow-up. The frequency of contractions was counted as a tangible measurement of the efficacy of treatment. The outcome was coded as adverse in case of rupture of membrane. The membrane of 93.3% of subjects was left unbroken. The membrane of only six women was ruptured. Elliott et al.[3] study showed that 274 patients (77%) had a singleton pregnancy with intact membranes, 38 (11%) had a singleton pregnancy with ruptured membranes, 35(10%) had a multiple gestation with intact membranes and eight (2%) had multiple gestations with ruptured membranes. Treatment was defined as effective if uterine contractions were reduced by more than 30% in frequency compared to those occurring during the last 2 hours before magnesium sulfate infusion. Treatment was defined as ineffective if uterine contractions were not reduced by 30%, labor progressed with apparent changes in cervical findings, or the attending physician resumed ritodrine in the magnesium-alone group due to insufficient tocolytic efficacy. For the intention-to-treat analysis, women who needed to deliver before 48 hours of observation due to some complications other than preterm labor were also classified as ineffective. The statistical association was sought between different regimes used and the outcome of treatment. In this study found that 100% effective to used combination therapy and the three treatment regime was found indifferent in terms of affectivity (p>0.05). Similar results were found in Kawagoe et al study they showed after magnesium sulfate infusion, 90% prolonged their pregnancy for >48 hours. Combination therapy was effective in 95% (18/19), which was significantly higher than 50% (7/14) for magnesium alone. It is logical to speculate that there may be some additive effects that inhibit uterine contractions since both agents have different mechanisms of action. Historically, the combination therapy may[7,8,9,10] or may not[11] improve tocolytic efficacy. Kawagoe et al.[1] results agreed that combination treatment is superior to magnesium alone in prolonging pregnancy, even in the stage of desensitization during ritodrine treatment. This study showed that association was sought between different regimes used and the outcome of treatment. The three treatment regime was found indifferent in terms of effectivity (p>0.05). Kawagoe et al.[1] after magnesium sulfate infusion, 90% prolonged their pregnancy for >48 hours. Combination therapy was effective in 95% (18/19), which was significantly higher than 50% (7/14) for magnesium alone.

CONCLUSION

Labour is the process of coordinated uterine contraction leading to progressive cervical effacement and dilatation by which the fetus and placenta are expelled out. If there is no contraindication Magnesium sulfate is effective tocolytic agent to prevent premature labour.

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Original Article

Association of Father's Smoking and Neonatal Respiratory Morbidities

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Abstract

First 28 days are the most vulnerable period for every neonate. Children usually suffered from respiratory illness. Therefore it is important to observe the prevalence of neonatal respiratory sickness. However, the disease profile among the neonates in rural areas is not exactly known. Many fathers in the rural area used smoke-producing tobacco. Therefore it is important to identify any relation of passive smoking with neonatal respiratory morbidities at the grass-root level. This study was conducted to estimate the frequency and to determine the pattern of respiratory illness of neonate and also to assess the impact of fathers smoking on the magnitude of acute respiratory tract infections (ARI) of newborns. This was a descriptive type of cross sectional study. It carried out on 62 neonates for 180 days, who attended the Tungipara UHC, Gopalganj in Bangladesh between January to June 2018. Data were collected through face-to-face interviews, physical examination, relevant investigations, and data were collected by semi structured questionnaire for respiratory illness. In this observational study, out of 62 neonates, from 1st day to 28 days of age. Diseases of the respiratory system topped the list (32%). Upper respiratory tract illnesses (URTI) were 22.5% as against only 9.5% of lower respiratory tract illness (LRTI). Most (47%) newborns were 28 days aged and 2nd most common (17.5%) was 15 days. The cumulative frequency was 37 percent up to 15 days of age. In the case of the father's occupation, most (19%) were in the private service. About one third (29%) fathers were engaged in business, whereas 18% done small business among them. However, it is a village area their cultivator was only 05 fathers. Consequently parent's education more than half (51.5%, 59.5%) were up to class 8. Nearly one-fifth of the fathers studied more than 12 classes. One-tenth of the fathers had no history of schooling and it was 1.5% of mothers. Most (32%) came in the OPD due to RTI and other than the respiratory problem was 26%. Among them, 42% did not require any treatment. In the inferential statistics fathers, smoking was responsible for neonatal respiratory illness. (Fisher's exact test 21.87 df 4 P 001). The respiratory illness affected more by second hand smoking whose fathers smoked tobacco. There need more grass-root level, multicentric, control-based study to find out the real picture of neonate respiratory morbidity, and other illness.

Keywords: *Father's smoking, ARI, neonate, tungipara.*

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INTRODUCTION

There 16 million people live in Bangladesh. As the majority (61%) of the population of Bangladesh live in rural areas, most deliveries take place at home, carried out by untrained persons or trained traditional birth attendants. Existing facilities are not adequate for neonatal care in Bangladesh, other than the tertiary care hospitals. In this country, health service delivery in rural areas is governed differently than in urban areas, which poses distinctive challenges in access to and utilization of maternal and newborn health services. The neonatal mortality rate in

Bangladesh is 23 per 1K live birth (2018).[1] 1st month is the most vulnerable period for every neonate. During this time they are likely to suffer from different acquired conditions. Consequently, more than two-thirds of these newborn dies with or without proper treatment.[2]

The disease profile among the neonates in village areas is not exactly known. There are very few studies as well as data are available from rural Bangladesh regarding this. The figures available are mostly tertiary level hospital-based. The commonest illness for which newborn is admitted in the neonatal ward is a respiratory illness (37%), neonatal jaundice (30.71%) followed by perinatal asphyxia (21.98%), low birth weight (13.25%), septicemia (9.06%), bronchiolitis, pneumonia, infant of a diabetic mother, hemorrhagic disease of the newborn, meconium aspiration syndrome, congenital abnormalities, etc.[3]

The aim of this study was to determine the socio-demography, prevalence, and pattern of respiratory illness of neonate in the rural area of Bangladesh. It also investigated whether there was any relation between respiratory morbidity of neonates and 2nd hand smoking by father's cigarette smoke

MATERIAL AND METHOD

This was a descriptive type of cross-sectional study. This study was conducted in the Tungipara Upazilla Health Complex (UHC), Gopalganj, Bangladesh. The study duration was from January 2018 to June 2018. The study population was neonate selected from children attending the Pediatrics OPD of UHC, Tungipara, Gopalganj. The sample size was 62 neonates, selected from 1002 children were separated purposively for the inferential research article. Sample Size Calculation from n = Z2 pq/d2 (Z= 1.96 from 95% CI, Degree of precision was 5%, p=50%). These neonate attending pediatric OPD of Tungipara UHC included after receiving consent from their guardian during the study period. Data were collected by face to face interview, physical examination, relevant investigation. Variable was age, parent's education status, and father's smoking habit. Respiratory illness-URTI like cough, common cold, cough-common cold, cough-common cold-fever, common cold-fever, cough-fever, nasal blocked and LRTI were Broncheolitis, Bronchopneumonia, neonatal jaundice, erythema toxicum, etc were included. The data collection instrument was a semi-structured questionnaire and a chaque list. It had multiple parts, Initial part, i) particulars of the patients ii) sociodemographic information 2rd part was i) parents complaints on respiratory problems. 3rd part was i) physical examination a. General b. System wise. Study tools- stethoscope, torchlight, tongue depressor, auroscope.

RESULTS

This was an observational study. This study was conducted in the Tungipara Upazilla Health Complex (UHC), Gopalganj, Bangladesh. The study population was neonate selected from children attending the Pediatrics OPD of UHC. The sample size was 62 neonates.

Table-I shows that 47% of the neonate were 28 days aged 17.5% was 15 days. Cumulative proportions of age up to 15 days were 36.5% and age upto 24 days were 53%.

Table-I : Age of 62 neonate in days (n-62)

	Age of Neonates (Days)	Frequency of cases	Percent	Cumulative percent
1	01	01	1.5	1.5
2	07	01	1.5	03
3	09	06	9.5	12.5
4	12	04	6.5	19
5	15	11	17.5	36.5
6	18	02	03	39.5
7	21	06	9.5	48
8	23	02	03	51
9	24	02	03	53
10	28	29	47	100
	Total	62	100	100

Figure-I: shows the level of father's education 51% were completed class VIII, 18% fathers were completed XII and above; and 10% had no education.

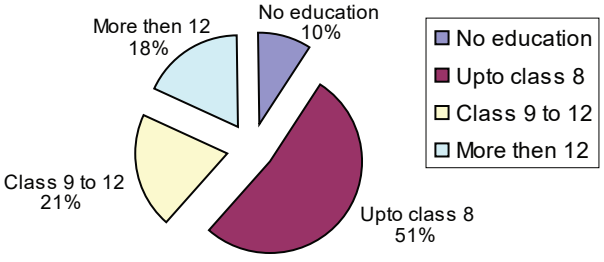

Fig.-1: Education status of father, of neonates

Figure-I, shows (n-20) 32% neonates suffered from RTI and 11 neonate suffered from other than RTI. 31 children were in normal condition.

In table-II, this non parametric test shows neonates were more sufferers (26%) whose fathers were smokers. (Fisher's exact test 21.87 df 4 P 001).

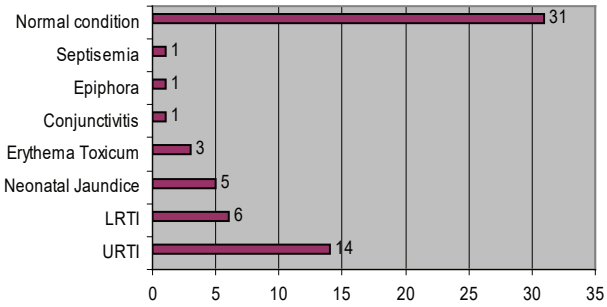

Fig.-2: Frequency for respiratory morbidities (n-62).

Table II: Fisher's exact test for 62 neonate

	Father's smoking habit	Clinical conditions		
		Respiratory Problems (%)	Other then Respiratory (%)	Total
1	No smoking habit	32 (51.5)	06 (9.5)	38 (61)
2	Smoker	05 (08)	16 (26)	21 (34)
3	Other than smoking habit	02 (3)	01 (1.5)	03 (5)
	Total	**39(60)**	**23(40)**	**62(100)**

DISCUSSION

In this observational study, conducted in a grass root level area, out of 62 neonates, age variability was 01 to 28 days (Table-1). Upper respiratory tract illnesses (URTI) were 22.5% as against only 9.5% of lower respiratory tract illness (LRTI) (Barchart-1). In this study there 62 cases were found variable morbidities of a neonate. ARI is the number one problem. The overall prevalence of respiratory illness was found to be 32% (Barchart-1). A near about incidence of 6.7% was found by Kumar A et al.,(2) 22.4% admission with a respiratory problem. Swarnkar K et al.,[3] found that 16.37% of admission was ARI. Santosh S et al., found an incidence of 13.7%.4 Haque A et al.,[5] found a very high incidence of 34.1% among the admitted babies. Therefore the last one was near to similar to our study whereas previous study two was a lower prevalence than the new study.

While evaluating the causes of respiratory problems, upper RTI was the most common cause (22.5%). URTI was also found to be a common cause in many studies.[2,3,5] Kumar A and Bhat BV,[6] found an incidence of 42.7% which is similar to our study. Swarnkar K et al.,[3] found it to be 40.7%. The second important cause of the respiratory illness was LRTI bronchiolitis and pneumonia, which was found to be 9.5%. Similarly, bronchiolitis was found to be the second cause of respiratory distress with an incidence of 24.35% by Dutta A et al.,[7] But Mathur NB et al.,[8] in a study done in 2003, found bronchiolitis to be the commonest cause of respiratory distress in newborns with a very high incidence of 68.7%.

In this study there septicemia, epiphora, conjunctivitis were 1.5% (Bargraph-1), 5% neonates suffered by erythema toxicum, neonatal jaundice was 8%. There another study was done by N.Islam in Bangladesh, their commonest illness for which newborn is admitted in the neonatal ward is a respiratory illness (37%), neonatal jaundice (30.71%) followed by perinatal asphyxia (21.98%), low birth weight (13.25%), septicemia (9.06%), bronchiolitis, pneumonia, infant of a diabetic mother, hemorrhagic disease of the newborn, meconium aspiration syndrome, congenital abnormalities, etc.(1) This is not similar of disease prevalence but near to similar of respiratory illness.

In this study, passive smoking from dried wood found 37% of cases (Table-2). In the non-parametric analysis, we found those newborns were more vulnerable to ARI whose fathers were a smoker. It indicates that there is a correlation between a father's smoking and a newborn's respiratory illness. Those neonates suffered respiratory sickness more whose fathers were a smoker. We found that lower respiratory tract infection is the 2nd most common

illness of neonates. Its prevalence was 9.5% and bronchiolitis was 8% and bronchopneumonia was 1.5% (Table-2). The prevalence was found to be 9.3%,10.7%, and 13.5% by S.warnkar K et al.,(12), Kumar A et al.,[2] and Dutta A et al.,[7] respectively. However, Mathur et al.,(8), in their study found that neonatal bronchopneumonia was 4% of the cases.

CONCLUSIONS

The respiratory illness affected more by 2nd hand smoking whose fathers smoked tobacco. There need more grass-root level, multicentric, control-based study to find out the real picture of neonate respiratory morbidity, and other illness.

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Review Article

Sports Injury: Rehabilitation Updates

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Abstract

Sports injuries occur as a result of physical activities carried out either for general recreational purposes or with more professional goals in mind. Sports injury can be defined as a pathologic process that adjourns training or competition and leads the athlete to seek medical treatment. Athletes of all levels suffer from injuries and experience a variety of acute and overuse syndrome that may range from minor to carrier-ending. The ever changing pattern of sports relevant injury, as well as limited available resource for rehabilitation in many areas of Bangladesh, is a matter of concern. Few sports clubs have some facilities; most of the athletes is often left to fend for himself. Key determinants of a successful sports injury rehabilitation program include the application of modern rehabilitation protocol under pertinent supervision, judicious application of appropriate pharmaceutical agents and prompt surgical interventions when required. A Physiatrist would be the most logical choice to lead the rehabilitation team, holistic approach to injuries with conservative manner, proper guidance of physiotherapist and referring complicated injuries to the most appropriate specialist in a timely manner. Worldwide practiced rehabilitation protocols are sports injury based but this need to be developed according to the nature of injuries as well as available resources. The main focus are safe return to sports and minimizing re-injury on return to sport; this involves application of rehabilitation intervention in acute and chronic phases of injury. A key factor in all sports injury rehabilitation protocols is injury prevention; this involves data maintenance by teams or trainers, which is still not yet developed completely in Bangladesh. This review is an endeavor to elucidate some issues that are important and routinely practiced world-wide, with the aim to improve sports injury rehabilitation protocol for the developing world.

Keywords: *Sports injury, rehabilitation, sports rehabilitation.*

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INTRODUCTION

The ever flourishing of sports across the globe has made the "sports arena" extremely competitive and financially lucrative for the athletes, with many striving for elite professionalism.[1] That has consequently escalate the physical and emotional burden of sports, increased the intensity of training session and exposed those involved in this quest magnify risk of injury. In any competitive sports, injured athletes have pressure to return to game as early as possible, which is often a urging for both the team management and athletes. Sportsman also faces a chance of losing his position in the team due to the highly competitive attitude in sports arena and naturally come under higher pressures to return.[2]Rehabilitation of sports injuries in compare to other rehabilitation is little different. Sports injury rehabilitation requires holistic approach of highly structured and sports-specific program, where both the athlete and the pattern of injuries are important to make a plan of rehabilitation program. Participation in sports is widespread all over the world, with well described physical, psychological and social consequences for involved athletes.[3]The benefits associated with physical activity in both youth and elderly are well documented. Participation in sports regularly is related with a better quality of life and which minimize the risk of several illnesses, allowing people involved to enhancing cardiovascular fitness.[4] In addition to the beneficial aspects related to sports activities, injuries can counter these if an athlete is unable to continue to participate because of residual effects of injury. Negative consequences of musculoskeletal injuries sustained during sports may compromise function in later life, limiting the ability to experience pain-free mobility and engage in fitness-enhancing activity.[5]

Woefully, there is few research regarding structured sports injury rehabilitation programs focusing on sports injury management, rehabilitation and prevention in Bangladeshi athletes. We are lacking behind in research and evidence in comparison to developed countries. A PubMed search using key words such as "Sports Injury AND Rehabilitation AND Bangladesh" gave 1 citation, which was neither relevant, nor gave enough information about the topic under review. A PubMed search using key words such as "Sports injury And Management AND Rehabilitation updates" found 48 articles, few of them were certain to sports injury rehabilitation, and none of which was focused on Bangladeshi athletes or published by any Bangladeshi author. This article attempts to update the physiatrist, sports rehabilitation personnel about available management options and problem oriented interventions for athletes, which could be applied even in the developing countries.

EPIDEMIOLOGY

Sports injuries may result from contact or noncontact movement and present as two types of injury, acute or overuse syndrome.[6]Muscles and ligaments are most commonly involved in sports injury, but bone also injured with stress fractures or direct contact being somewhat unique to sports. There are no significant changes in sports-relevant injuries over the past two decades, despite the heightened insight into injury mechanisms, prevention programs, and load monitoring techniques in athletes. Hootman et al. observed in a study over 16 years' collegiate athletes in fifteen different sports in the United State.[7]They concluded that lower limb injuries were predominant among all sports injuries that were more than fifty percent, with the knee and ankle joints frequently being involved. Contact injuries were the most common form of injuries with remarkably increase numbers being observed during any competitive games compared to training session. Out of the fifteen sports, they analyzed that soccer had the highest injury rate and competitive wrestling being the second largest. Over the 16-year period, the authors also revealed that intensify physical demand, competitive attitude, and frequent changes of rules had an essential effect on injury trends.[8]

According to international studies, the overall injury incidence for competitive amateur soccer players ranges from 5.2 to 9.6 per 1000 hours of play.[9-11] The overall injury rate in NCAA (National Collegiate Athletic Association) men's soccer is 7.7 per 1,000 athlete exposures (games and practices combined).[12] Soccer players are more than three times more likely to be injured in a game (16.9 injuries per 1,000 athlete exposures) than in practice (5.1 injuries per 1,000 athlete exposures). Ligament sprains of the lateral ankle (12.2%), hamstring muscle strains (7.5%), concussions (5.5%), and adductor (groin) muscle strains (5.5%) are the most common specific types of injury in men's soccer.[13]

Injury site could be related to sports type, upper limb injuries observed predominantly in throwers and bowlers, while lower limb injuries predominate in games like as football and hockey. Dhillon et al.found that among all the injured athletes, only 39.8% returned to the sport, a figure significantly lower than a recent meta-analysis that showed 83% of athletes return to their respective sport.[14, 15]

It is obvious that injuries and returning to the sport are utmost concerns among athletes and their treating physician, safe return to the competition with complete fitness being compelling of rehabilitation.[16] This review focus to precise an evidence-based approach for rehabilitation of sports injuries, embrace with problem oriented interventions initiated immediate after an acute injury to complete returns to competition.

MATERIALS AND METHODS

The online literature search was conducted between January 2020 and July 2020 using Medline, Google Scholar, PubMed and Bangladesh Journals OnLine (BanglaJOL), restricted to English language January 2010 – July 2020. The keywords included "Sports injury", "Sports injury management", and "Sports rehabilitation". Information's were gathered and analyzed to synthesis the article for the updated management of sports related injuries and rehabilitation.

Principles of sports injury management

Prevention is the best treatment of sports injury. When injuries do occur, an organized plan of management, assessment and after-care is mandatory.[17]

The corner stones of core management interventions of sports injury is mentioned in a tabulated format (Table - I).[18-20]

Table I: Core management interventions

Rapid assessment
Immediate treatment (PRICE Protocol)
Prompt referral
Sports rehabilitation
Prevention

Prompt Referral

Improvisation for a prompt referral in certain situation is a corner stone for a successful sports injury management. A specialist opinion should be sought urgently in any of the circumstances mentioned in Table III by appropriate referral. Injured athletes should seek a specialist opinion within 24-48 hours in case of persistent symptoms arising from injuries to muscle, tendon, joint or ligament and severe pain.[23]

Rapid Assessment

Patent Airway, Breathing, Bleeding, Intact Circulation, Consciousness, Extremities, Fracture, Position & Movement of the injured athlete is assessed rapidly immediately after an injury.

Immediate Treatment (PRICE)

P-Protection, R-Rest, I-Ice, C-Compression, E-Elevation. Protection, relative rest, ice, compression, and elevation (PRICE) are the proposed mainstay of initial treatment and are introduced immediately.[21] After an on-the spot assessment of extent of injury, PRICE Protocol should be instituted to minimize haemorrhage and oedema.

The details of PRICE Protocol is summarized in Table II.[22]

Table II: PRICE Protocol

What	How	Why
Protection	Protect the injury and prevent further damage by using a brace or splint to support the injured joint.	This may allow for an earlier return to function.
Rest	Injured Athlete should cease activity immediately.	Continuation of play will further injure the Athlete.
Ice	Crushed ice in wet towel or plastic bag.	Ice reduces
	Sponge in icy water.	Pain.
	Commercialized cold packs Ice application should	Swelling.
	be for 24 hours and 20 min every 2 hours.	Bleeding at injury site.
	Never apply Ice direct to the skin.	Muscle spasm
Compression	A firm elastic bandage over the injured part both during and after ice application.	Compression
		Minimizes bleeding.
		Reduces swelling.
		Provides support to the injured part.
Elevation	Raise the injured part above the level of the heart.	Elevation reduces
		Bleeding.
		Swelling.
		Pain.

Table III: Conditions requiring urgent referral

Unconsciousness or persistent headache, nausea, vomiting or dizziness after a head injury.
Breathing difficulties after blows to the head, neck or chest.
Pain in the neck after impact, whether or not they extend to the arms.
Abdominal pain.
Blood in the urine.
Fracture or suspected fracture/dislocation.
Severe joint, ligament, muscle or tendon injury.
Eye injury.
Deep wound with bleeding.
Any injury in which there is doubt about its severity, diagnosis or treatment.

Rehabilitation

Rehabilitation of an Athletic Injury is the process of returning the Athlete to sport to pre-injury level of Athletic performance. The primary aim of Athletic Rehabilitation is to enable the Athlete to return to Sport with full function in the shortest possible time. The treatment described earlier may lead to an athlete becoming pain-free and able to return to Activities of Daily Living, but Rehabilitation is mandatory to return the Athlete to pre-injury level of Athletic performance.[24]

A well-trained Physiatrist would appear to be the most logical choice to direct the Rehabilitation Team, addressing the majority of non-operative injuries in conjunction with Athletic Trainer, Physical Therapist and referring other conditions as needed to the most appropriate specialist in a timely manner.[25]

Keys to a successful rehabilitation program

Every Athlete is an individual, explanation, provide precise prescription, make most of the available facilities and begin as soon as possible.

Important components of rehabilitation

Muscle conditioning, flexibility, neuromuscular control, functional exercise, sport skills, correction of abnormal biomechanics, cardiovascular fitness, and psychology.

Soft tissue response to injury[26]

Understanding thePathophysiology, Phases and Time Frames of Soft Tissue Healing is important for a successful athletic rehabilitation program, which are described in Table IV.

Rehabilitation Program[27]

Rehabilitation program of a sports injury isconceptually divided into phases. Phases can be correlated to stages of tissue injury. There are phase specific goals and therapeutic intervention.

Table-IV: Soft tissue response to injury

Phase	Time frame	Histopathology
Acute inflammatory	0-72 hours	Erythrocytes and inflammatory cells Phagocytosis of necrotic cell within 24 hours Fibroblasts slowly lay down collagen Scar
Proliferation/Repair	2 days-6 weeks	Predominant cells are Fibroblast Collagen scar with cross-links
Remodelling/Maturation	4 weeks-12 months	Collagen content slowly reduced Scar tends towards pre-injured tissue

The Rehabilitation program of an athletic injury is detailed in Table V.

Table V: Rehabilitation Program

Phase	Goals	Therapeutic intervention
Phase 1: Acute Phase	Relief Pain. Prevent further injury. Minimize hemorrhage and edema.	PRICE Protocol
Phase 2: Recovery Phase	Promotion of reparative process. Avoid further damaging to injured tissue. Correct biomechanical deficits. Improve muscle control and balance. Retrain proprioception. Start sport specific activity.	Gradual and careful mobilization Physiatric modalities: Superficial heat Ultrasonic therapy Electro therapy Therapeutic exercise: Range of motion Static and dynamic flexibility Closed chain PNF Dynamic strengthening

Table V: *(Cont'd)*

Phase	Goals	Therapeutic intervention
Phase 3: Functional Phase	Increase power and endurance. Improve neuromuscular control. Work on entire kinematic chain.	Plyometric exercise, Diagonal and Multiplanar motion. Multiple-plane neuromuscular control. Maintenance in flexibility, strengthening, Power and Endurance exercise. Sports-specific progression to return to sport.
Phase 4: Return to competition	Begins when the Athlete return to competition.	

Table VI: Roles and responsibilities of the Target Groups for preventive intervention

Governing bodies	Goals	Athletes (Risk factors)
Game philosophy Laws of game Facilities and equipment Fair play Environmental conditions Exposure levels Doping control Education	Tackle assessment Physical fitness Perceptual-cognitive interpretation Application of laws Interpersonal skills	Age, Gender, Behaviours, Cultural issues, Biomechanics, Tackling techniques and skills, Medical History, Previous injury, Drugs

Table VII: Roles and responsibilities of the Target Groups for preventive intervention

Coaching team	Medical team
Physical preparation Mental fitness Nutrition Rehabilitation Return to competition guidelines	Medical support, services and techniques Systemic medication and doping control On/Off-Pitch injury assessment On/Off-Pitch medical treatment Rehabilitation Return to training guidelines

Criteria for return to competition[28]

- Time constraints for soft tissue healing.
- Pain-free full range of motion.
- No persistent swelling.
- Adequate strength and endurance.
- Good flexibility.
- Good proprioception and balance.
- Adequate CVS fitness.
- Skills regained.
- Coach satisfied with training form.

Prevention[29]

The easiest injuries to treat are the injuries that do not occur. This, however, is much easier said than done. There are data to indicate that the incidence of Athlete injuries can be reduced.

Target Groups for Preventive Intervention are governing bodies, referees/umpires, athletes, coaching team and medical team. The roles and responsibilities of the target groups are mentioned in Table VI and VII.[30, 31]

Important factors for injury prevention[32]

Warm-up/cool-down, stretching, taping and bracing, protective equipment, suitable equipment, appropriate surfaces, proper training, adequate recovery, psychology and nutrition.

CONCLUSIONS

Rehabilitation plays a key role after a sports injury for complete recovery, to minimize injury period and to prevent further injury. Update rehabilitation methods have excelled conventional treatment protocols and are based on problem oriented rehabilitation framework that involved the athlete and other rehab members equally. The role of

surgical interventions and pharmaceuticalrequirements is need based and beyond the scope of this manuscript, rehab team give highest effort to return game as soon as possible for any athletes. In addition, all physiatrist give emphasis on nutritional supplementation and psychological counseling if needed, which have a major role in getting the athlete back with complete fitness, along with injury-free return to sports at the same level when he was injured.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest to reveal.

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Case Report

Diagnosing of Small Vessel Vasculitis Might be a Challenge – A Rare Case Report

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Abstract

The term vasculitis refers to the inflammation of vessel walls. It may range in severity from a self-limited disorder in one single organ to a life-threatening disease due to multiple organ failure. Most patients with small vessel vasculitis present with constitutional symptoms like fever, malaise, weakness, fatigue and weight loss. To diagnose small vessel vasculitis, serology like ANCA, serum cryoglobulin and biopsy play an important role. Despite the serology and biopsy, diagnosing small vessel vasculitis occasionally remains challenging in resource constraint countries. Here we are reporting a case of a 26-year-old female who presented with purpura and neuropathy. The patient lacks clinical features like constitutional symptoms, renal involvement, upper airway involvement and her ANCA was negative. Depending on biopsy finding and skin and neurologic involvement, we diagnosed her as a case of small vessel vasculitis (unclassified). The patient improved with IV methylprednisolone followed by oral glucocorticoid treatment along with methotrexate. Although small vessel vasculitis has some typical features, diagnosis may often remain challenging even after biopsy.

Keywords: *Small vessel vasculitis, unclassified purpura, neuropathy*

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*For correspomdance

INTRODUCTION

Small vessel vasculitis typically involve small blood vessel. It is of two types, ANCA associated and not ANCA associated. ANCA associated vasculitis are microscopic polyangitis, granulomatosis with polyangitis and eosinophilic granulomatosis with polyangitis.[2] There is also some small vessel vasculitis with ANCA negative but immune complex mediated. These vasculitides are cryoglobulinaemic vasculitis, IgA vasculitis, hypo-complementaemic vasculitis and urticarial vasculitis etc.[3]

ANCA associated vasculitides typically involve skin, kidney, lung and nervous system and upper airway.[4] The most common presentation is palpable purpura. Upper airway involvement is the most common for GPA whereas renal involvement is mostly for MPA and neuropathy is most common presentation for EGPA and MPA.[5] New onset asthma or worsening of asthma is common for EGPA.[6] Mononeuritis multiplex is the common neurological manifestation. About 80-90 % of patients with GPA or MPA are ANCA positive whereas few patients may be ANCA negative.[7]

Immune complex mediated vasculitides are ANCA negative. These patients may have purpura, joint pain, abdominal pain and most patients are younger aged consistent with IgA vasculitis.[8] Purpura, Reynaud's, joint pain, renal disease, peripheral neuropathy, weakness are typical features of cryoglobulinaemic vasculitis.[9] Serology like ANCA, serum cryoglobulin and biopsy may be conclusive for small vessel vasculitis. But sometimes it is difficult to categorize small vessel vasculitis in a resource constraint country.

Here we present a case of small vessel vasculitis but the patient had ANCA negative, no immune deposit on skin biopsy and serum cryoglobulin cannot be performed due to lack of facilities. So categorizing small vessel vasculitis is difficult for this patient.

CASE PRESENTATION

A 26-year-old female came to the hospital with history of recurrent purpuric skin lesions in both lower limbs for the last 5 years. Each episode lasted for 10-15 days then resolve spontaneously. She had no history of fever, joint pain,

abdominal pain, cough, shortness of breath, nasal crusting, tingling or numbness, high colored frothy urine. Her past history and family history was insignificant.

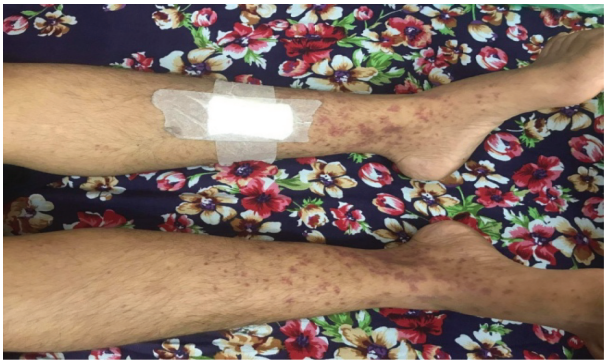

Figure 1: *Purpura in both lower limbs (before treatment)*

On examination, her vitals were stable. There was maculopapular rash in both lower limbs up to the buttocks which were erythematous, various shapes and sizes, some were coalesced, some were palpable and some were non palpable and non-tender (Fig-1). On neurological examination, there was wasting of thigh muscles, thenar and hypothenar muscle. All jerks were absent in both upper and lower limbs. All other systemic examinations were unremarkable.

Investigation reports revealed- Hb was 12.2 gm/dl, total leucocyte count was 8 $X10^9$ /µL, platelet was $320X10^3$ /µL and RBC count was 4.76 $X10^6$ / µL. Her ESR was 33 mm in 1st hour, CRP was 21.7 mg/dl, SGPT was 13 U/L, S. creatinine was 0.59 mg/dl. Lipid profile revealed - total cholesterol- 168 mg/dl, HDL - 44 mg/dl, LDL - 96.2 mg/d and TG was 139 mg/dl. Urine RME showed pus cells 0-1/HPF. RA test, ANA, Anti-ds-DNA, P-ANCA and C-ANCA were negative. C3 was 1.21 g/l (0.9-1.8g/l); C4 was 0.45g/l (0.1-0.4g/l). HBsAg and Anti HCV were negative.

Biopsy from the skin showed mild hyperkeratosis with follicular plugging and thinning of epidermis. The dermis showed mild endothelial swelling with infiltration of chronic inflammatory cells in the vessel wall and increased collagen deposition. Cryostat sections of skin did not show any deposition of IgG, IgM, C3, and fibrinogen. NCS was suggestive of mixed sensory motor demyelinating and axonal polyneuropathy.

The patient was considered to be a case of small vessel vasculitis (unclassified). She had purpura and senorimotor axonal and demylanating neuropathy. There was no renal involvement or constitutional symptoms and this makes the diagnosis challenging.

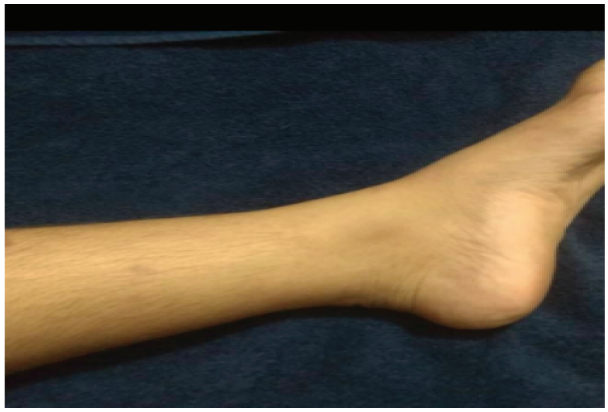

Figure 02: *Improvement of purpura (after 3 months of treatment)*

The patient was put on IV methylprednisolone 1 gm for 3 days followed by steroid 1mg/kg and methotrexate. The skin manifestation improved significantly three month of treatment (Fig-02).

DISCUSSION

Vasculitis refers to a heterogeneous group of disorders in which there is inflammation and damage in blood vessel walls, leading to tissue necrosis.[10] It can result in different degrees of stenosis or damage to the vessels and ischemic damage to the innervated tissues or organs.

Small-vessel vasculitis is responsible for a wide variety of diseases that affect vascular structures such as venules, capillaries, arteries and arterioles with classic inflammation. The ANCA associated vasculitides include Wegener's granulomatosis; microscopic polyangiitis and its renal limited form, idiopathic necrotizing crescentic glomerulonephritis; and Churg-Strauss syndrome.[11] There is also some small vessel vasculitis with ANCA negative but immune complex mediated which include cryoglobulinaemic vasculitis, IgA vasculitis and hypocomplementaemic urticarial vasculitis

Immune complex mediated vasculitis is associated with immune complex deposition in the vessel wall and is usually ANCA negative. These patients may have purpura, joint pain, Reynaud's, renal disease and peripheral neuropathy. Serology like ANCA, serum cryoglobulin and biopsy may be conclusive for small vessel vasculitis. But sometimes it is difficult to categorize small vessel vasculitis in a resource constraint country.

Here we have presented a case of small vessel vasculitis but the patient was ANCA negative, no immune deposit on skin biopsy. Serum cryoglobulin cannot be performed due to lack of facilities. So categorizing small vessel vasculitis was a challenge for that particular case.

The patient had purpura and senorimotor axonal and demylanating neuropathy. Nerve biopsy and serum cryoglobulin could not be done due to lack of fascilities. There was no renal involvement or constitutional symptoms and this makes the diagnosis challenging. The patient was considered to be a case of small vessel vasculitis (unclassified).

CONCLUSIONS

Patients with vasculitis may present with atypical clinical findings. Several times clinical findings do not correlate with laboratory findings. Sometimes routine laboratory test as well as skin biopsy may be inconclusive. Strong clinical suspicion, rare diagnostic tests and specific drug therapies may be helpful to reach the diagnosis.

Conflict of interest

The authors have no conflicts of interest to declare.

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Case Report

Primary Tracheal Papilloma: A Case Report

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Abstract

Solitary papilloma in the respiratory tract is a rare benign epithelial tumor which is complete surgical excision of the current standard treatment for this type of tumor. Here a case of solitary tracheal papilloma treated by surgical resection is reported. Due to rarity and non-specific symptoms, tracheal papilloma always subjected to misdiagnosed and suffer from delayed treatment. In this case, a forty two years male has been presented with a recurrent non-productive irritative cough, a progressive shortness of breath, expiratory stridor and occasional hemoptysis. The patient was previously diagnosed as a case of bronchial asthma by a Pulmonologist and wrongly treated as well. CT scan revealed an intraluminal tracheal mass arises from the right side of the tracheal wall opposite c6-c7 vertebrae. The tumour was removed by endoscopic excision. The histopathological result confirms the diagnosis of squamous cell papilloma. No complications occur during surgery and no recurrence was observed in six months after surgery on followup.

Keywords: *Trachea, papilloma, excision.*

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INTRODUCTION

Tracheal papilloma is a rare neoplasm in the respiratory system approximately 0.38 % of all lung tumors.[1] Most of the cases 90% of all cases of primary tracheal tumors are malignant. Most of these tumors are squamous cell carcinoma and adenoid cystic carcinoma.[2] A tracheal papilloma is characterized by the papillomatous growth from the bronchial epithelium which in response to HPV infection, most commonly HPV-6 & 11.[3] Tracheal papilloma can be classified into three categories according to histological type: squamous cell papilloma, glandular papilloma and mixed.[4] Here a case of primary tracheal papilloma in distal trachea treated by surgical resection is reported.

CASE REPORT

Mr. Masud, 40 years old male presented with cough for two years which was initially non- productive and intermittent but gradually became irritative and occasionally associated with hemoptysis. The cough was aggravated by exertion and relieved by taking rest. The patient also gave the history of dyspnoea and expiratory stridor during cough or exertion. He was a smoker and took 10-15 cigarettes per day for the last 15 years. He did not give any history of fever, common cold, chest pain, diurnal variation of cough, weight loss, any change of voice or difficulty in swallowing. He was treated for those complaints as bronchial asthma though the symptoms did not relive.

On fibre optic laryngotracheal examination, found there is pale irregularly surfaced mass in the tracheal lumen about 1.5 cm distal to the vocal folds almost occluding the tracheal lumen and moves with respiration. Other parts of larynx appear normal with normal vocal cord mobility. On examination, he did not have any hoarseness of voice. Other ENT and systemic examination reveals no abnormality.

Figure-1: *Photograph of the patient with kind permission*

X-ray Soft tissue neck lateral view reveled irregular soft tissue shadow occupying tracheal lumen opposite c6-c7 vertebra. (Figure-2).

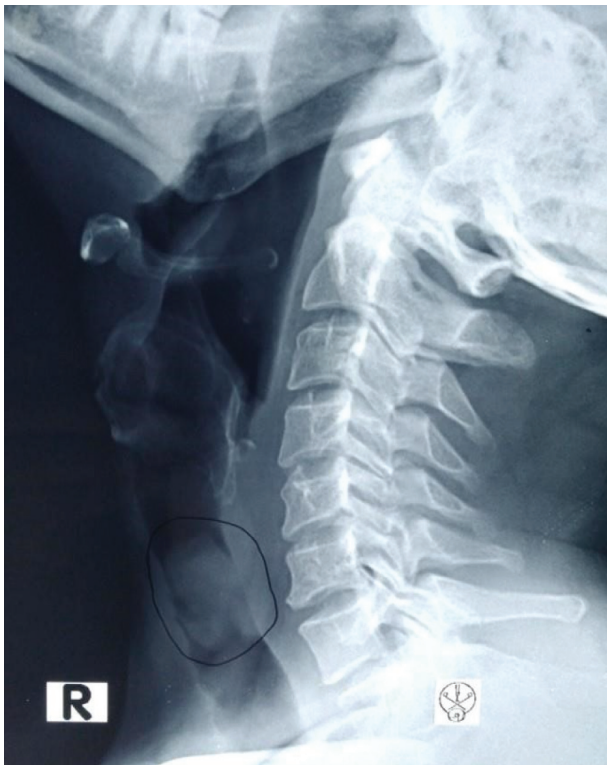

Figure-2: *X-ray Soft tissue neck lateral view*

CT scan revealed heterogeneously enhancing irregular lesion measuring about 2.1×2×1.4 cm is seen at the right side of the tracheal lumen opposite the level of c6-c7 vertebrae, occupying most of the tracheal lumen (figure 3, 4). Decision was made for surgical intervention. Tracheostomy was done for ventilation, followed by endoscope assisted excision of the mass.

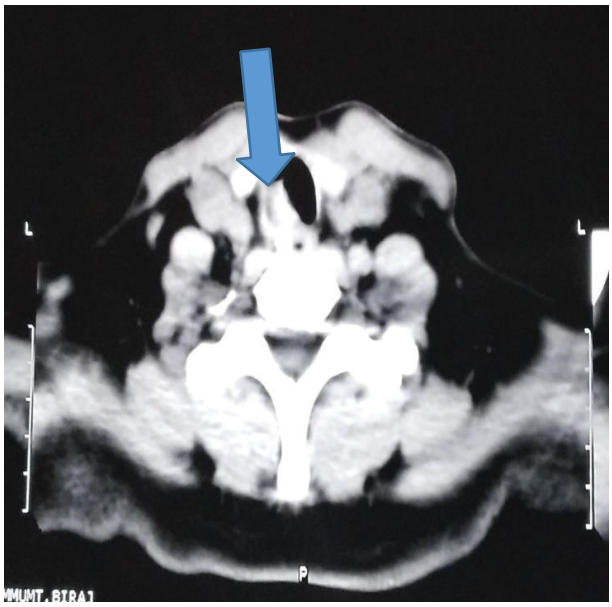

Figure-3: *CT Axial View*

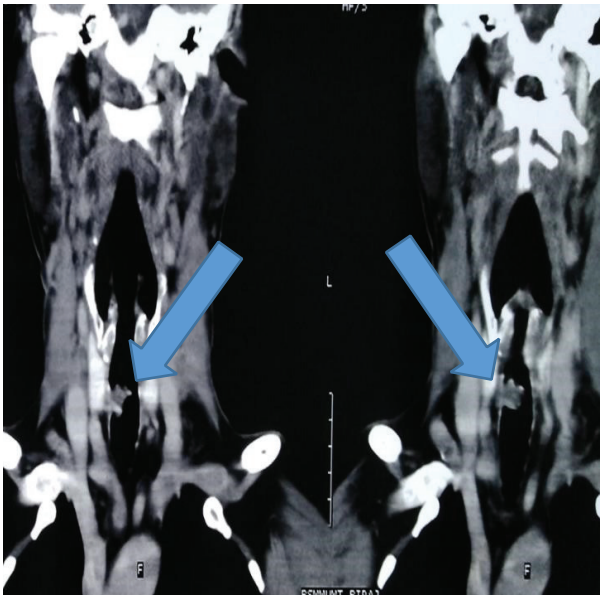

Figure-4: *CT Coronal view*

Histopathological examination of the specimen was reported as Squamous cell Papilloma

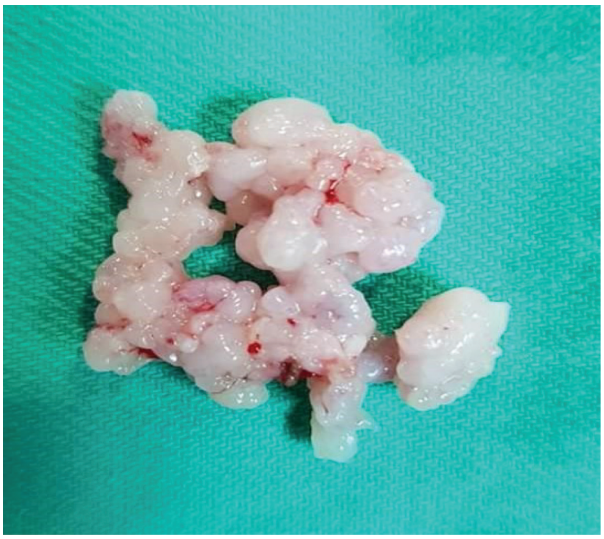

Figure-5: Specimen after excision

DISCUSSION

A tracheal papilloma is an uncommon tumor of trachea consisting of 0.38 % of all lung tumours.[1] It may affect any part of the trachea but a proximal and distal third are most frequently affected.[5] It can be solitary, multiple or as few of recurrent respiratory papillomatosis. Respiratory papillomatosis is common in the larynx, although it can affect any part of the tracheobronchial tree. It is uncommon in the trachea. Distal trachea involvement was reported only in the 5% of recurrent respiratory papillomatosis cases.[6] In a study tracheal papilloma was reported in only 5 cases of 15,000 bronchoscopies.[7,8] Tracheal papilloma present in two forms - adult-onset or juvenile-onset. Adult-onset types are mostly to be malignant whether juvenile-onset are benign. Adult-onset types affect male and female at a ratio of 4:1.[6] Most of the tracheal papilloma are due to HPV-6 and HPV-11. It is thought that HPV manifested by a vertical transmission during vaginal delivery of an infected mother.[9]

In this case, 42 years old male had no previous history of recurrent respiratory papillomatosis in childhood or maternal HPV. The clinical presentation of tracheal papilloma is non-specific. Symptoms may vary from cough and dyspnea to stridor and upper airway obstruction.[10] In this case the presenting complaints was a non-productive cough, shortness of breath and occasional hemoptysis. He was initially treated as bronchial asthma by a chest specialist. On chest X-ray, they could not identify the tracheal mass. When the patient comes to Bangabandhu Sheikh Mujib Medical University ENT OPD, initially, he was advised X-ray soft tissue neck lateral view. Then found irregular shaped soft tissue lesion on tracheao-oesophagal region opposite c6 & c7 vertebrae. Then the patient was advised for CT scan and found heterogeneously enhancing irregular mass lesion measuring about 2.1×2×1.4 cm seen at the right side of the tracheal lumen opposite the level of c6-c7 vertebrae, occupying most of the tracheal lumen. The case diagnosed as a primary tracheal mass and decided to excise the mass surgically.

The histopathological report revealed squamous cell papilloma.

Squamous cell papilloma may transform squamous cell carcinoma and it is reported in 3 to 5% of all cases of tracheal papilloma.[11] Risk factors for malignant transformation is smoking, HPV infection (types 16 & 18), radiotherapy and chemotherapy .[12]

Treatment of tracheal papilloma is challenging and often required for recurrent manipulation. Treatment modalities dependon the type, severity, number and location of papilloma.[13] There are a variety of treatment modalities like endoscopic surgical method, excision by CO_2 laser, cryotherapy, photodynamic therapy , laser vaporization, electrocautery, argon laser coagulation, open approach etc.[14]

In this case, endotracheal intubation was not possible as the mass was almost occluding more than 70% of the lumen and there was anticipation for bleeding as was not confirmed about the mass. So tracheostomy was performed for ventilation and by properly securing the lower respiratory tract excision of the mass was done by endoscopically. Low lying tracheostomy was performed as the mass was opposite cervical 6 & 7 vertebrae.

Local recurrence is very common in papilloma after treatment. This patient is followed every 3 months interval and still, there is no recurrence.

CONCLUSIONS

As tracheal papilloma is a rare disease. A Surgeon should have a high index in suspicion in patients presenting with obstructive symptoms, hemoptysis, persistent non-productive cough and history of exposure to HPV. Early diagnosis, proper surgical excision and close follow-up is mandatory for this type of patient.

Conflict of interest: The authors declare that they have no conflict of interest.

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Obituary News May-2020

BMA would like to express deep condolence on deaths of the following notable physicians in recent past:

Sl.No.	Name & Address	Age	Date of Death
1	Dr. Samsuddin Ahmed Assistant Civil Surgeon (Rtd), Patuakhali	92	10/01/2020
2	Dr. Mozammel Hossain Freedom Fighter Ex-Parliament Member, Bagerhat -4	80	10/01/2020
3	Dr. Md. Akter Hossain Member of Executive Committee, BMA, Chapai Nawabganj Branch	57	27/02/2020
4	Freedom Fighter Dr. Amio Vhushan Chowdhury Member of BMA Gaibandha Branch		11/02/2020
5	Dr. Mobarak Hossain Anesthesia Specialist, BIDEM-2 Hospital, Dhaka	33	14/2/2020
6	Mst. Samsunahar Begum Mother of Prof. Dr. Golam Moktadir, ENT specialist		24/7/2019
7	Mrs. Mahbuba Hai Mother of Dr. Ehsanul Kabir Joglul Ex Treasurer, Central Executive Committee, BMA	82	25/07/2019
8	ANM Safiqul Haque Ex-President, Sylhet Zela Awami League		14/8/2019
9	Lutfunessa Mother of Dr. Hasanat Jahan, Life Member, BMA, Pabna Branch		27/12/2019

May Allah bless the departed souls.
Our heartiest commiseration to the deceased's family, our prayers are with them during this difficult moment of their life.

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