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Microalbuminuria as Early Indicator of Renal Impairment among Sudanese Patients with Tonsillitis in Khartoum state

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Original Research Article

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Abstract: Complications of tonsillitis are rare, and usually only occur due to untreated bacterial infection, one of these complications is glomerulonephritis due to immune complex. The aim of this study was to assess the level of microalbuminuria as early indicator of renal impairment among Sudanese patients with tonsillitis Case-control study was conducted during the period from July to September 2017, forty samples from diagnosed patients with tonsillitis (admitted to Ear-Nose and Throat hospital in Khartoum state) as cases and forty samples from healthy individuals as controls, the level of microalbuminuria was measured by i-chroma device. Data analysis was carried out by SPSS version 16. The level of microalbuminuria showed a significant increase in tonsillitis patients when compared to healthy individuals with P. value = 0.000 (Mean ± SD= 28.45 ± 4.02 mg/L, 8.05 ± 2.32 mg/L in patients and controls respectively), also The level of microalbuminuria was significantly increased in patients with chronic tonsillitis when compared to patients with acute tonsillitis with P. value = 0.000 (Mean ± SD = 44.12 ± 6.07 mg/L, 11.12 ± 3.22 mg/L in chronic and acute tonsillitis patients respectively), and The level of microalbuminuria showed a significant increase in males patients with tonsillitis when compared to females patients with tonsillitis, with P. value = 0.045 (Mean ± SD = 37.38 ± 5.27 mg/L, 19.55 ± 3.04 mg/L in male and female respectively), also there was no correlation between level of microalbuminuria and ages with (R= -0.183 and P-value=0.259). The level of microalbuminuria increased in acute and chronic tonsillitis patients.
Keywords: Acute Tonsillitis, renal impairment, microalbuminuria, Sudan.

INTRODUCTION

Human tonsils include the palatine tonsils, nasopharyngeal tonsil (adenoid), lingual tonsil and the tubal tonsils [1]. The palatine tonsils are the largest ones in four types of tonsils in human beings. Histologically, tonsil tissues consist of four well-defined micro compartments, which all participate in the immune response: the reticular crypt epithelium, the interfollicular (extrafollicular) area, the mantle zone of lymphoid follicles, and the follicular germinal center [2]. The major function of tonsils is as a first line of defense against viral, bacterial, and food antigens that enter the upper aerodigestive system. Secretory dimeric IgA produced by B cells has particular hydrophilic properties and is capable of preventing adsorption and penetration of bacteria and/or viruses into the upper respiratory tract mucosa [3] Tonsillitis is inflammation of the tonsils, typically of rapid onset [4]. It is a type of pharyngitis [8]. Symptoms may include sore throat, fever, enlargement of the tonsils, trouble swallowing, and large lymph nodes around the neck [4], Complications include peritonsillar abscess [5], Tonsillitis is most commonly caused by a viral infection, with about 5% to 40% of cases caused by a bacterial infection [6, 7]. When caused by the bacterium group A streptococcus, it is referred to as strep throat.[8], Rarely bacteria such as Neisseria gonorrhoeae, Corynebacterium diphtheriae, or Haemophilus influenza may be the cause[4]. Typically the infection is spread between people through the air [7]. Confirmation may be by a throat swab or rapid strep test [6],Recurrent tonsillitis is chronic inflammatory process, it is defined as (seven episodes of tonsillitis in the preceding years,five episodes in each of preceding two years or three episodes in each of preceding three years) [9, 10], Complications of tonsillitis are rare, and usually only occur due to untreated bacterial infection, One of these complications is glomerulonephritis it is due to immune complex response [11], The urinary protein called albumin is increasingly recognized as the earliest signs of vascular damage in the kidney[12], The presence of small amount of albumin in the urine (microalbuminuria) is the first signs of deteriorating kidney function [13], therefore the aim of this study was done to assess the level of microalbuminuria as early indicator of renal impairment among Sudanese patients with tonsillitis.

MATERIALS AND METHODS

Study design this was a Case control study.

Study area and period

Ear-nose and throat hospital – Khartoum state, during the period from July to September 2017

Study population

40 Patients with tonsillitis (52% with chronic t onsillitis and 48% with acute tonsillitis) as case and 40 normal individual as control

Inclusion criteria

Tonsillitis infected subjects

Exclusion criteria

Patients diagnosed with disorders rather than t onsillitis, such as diabetes mellitus, hypertension and kn own subjects with renal impairment were excluded.

Ethical consideration

This study was approved by ethical committee of medical laboratory science –Alneelain University. Su bjects involved in this study were informed by this stud y and its importance.

Data collection

By using direct questionnaire

Sampling

Spot urine samples were collected.

Method

Immune chromatography method, by means of i-chroma device, kits was ready to use

Quality Control

The precision and accuracy were checked each time by control urine samples to ensure the accuracy of results.

DATA ANALYSIS

Statistical package for the social science comp uter program (SPSS) was used.

RESULTS

Statistical analysis showed a significant increa se in level of microalbuminuria among tonsillitis patient s when compared to healthy individuals (figure 1), also showed a significant increase in level of microalbuminu ria in patients with chronic tonsillitis when compared to those patients with acute tonsillitis (figure 2), and also there was a significant increase in level of microalbumi nuria in male with tonsillitis versus female with tonsillit is (figure 3), statistical analysis also showed no correlati on between level of microalbuminuria and ages group (f igure 4).

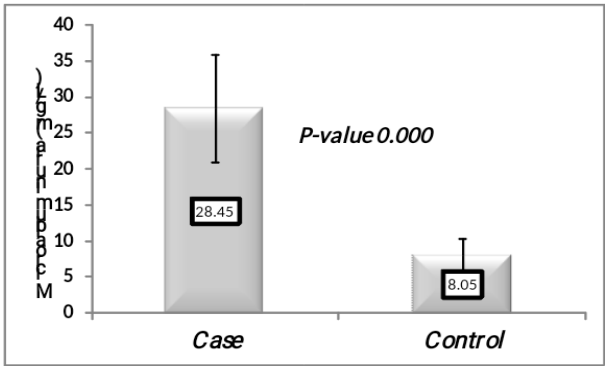

Fig-1: The level of microalbuminuria in case versus control

P-value less than 0.05 considered significant.

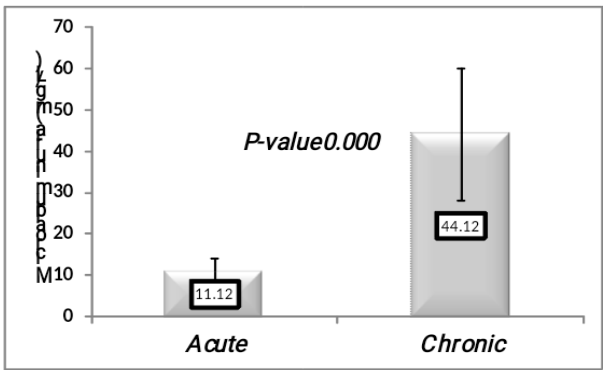

Fig-2: Comparison of the level of microalbuminuria between acute and chronic tonsillitis

P-value less than 0.05 considered significant:

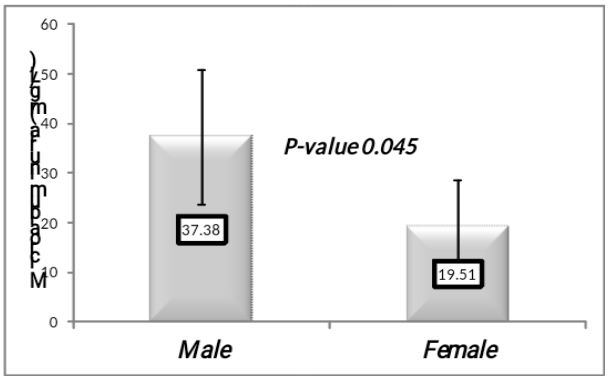

Fig-3: The level of microalbuminuria in male and female with tonsillitis

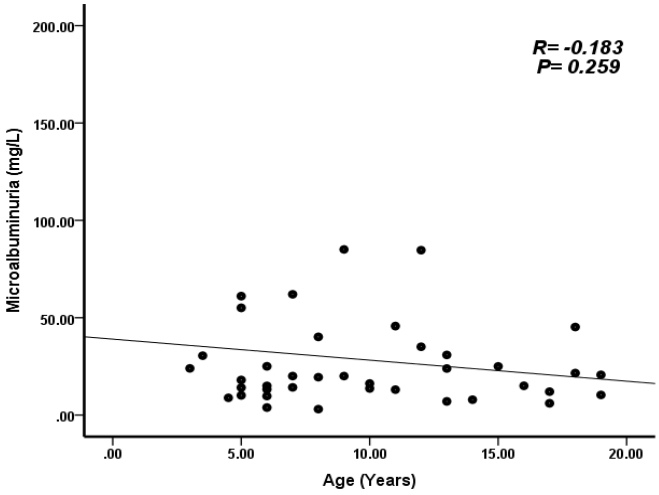

Fig-4: Correlation between level of microalbuminuria and ages group

DISCUSSION

In this study The level of microalbuminuria in patients with tonsillitis showed a significant increase when compared to healthy individuals ,this finding was in agreement with previous study done by M. ALopez-Gonzalez *et al*. which reported increase level of microalbuminuria in patient with recurrent tonsillitis, raised level of microalbuminuria pointing out glomerular abnormality and indicate renal damage, Glomerulonephritis is caused by immune reaction leading to the formation of circulating immune complexes that are deposited on the basal membrane of the glomerulus [14]. Also the present study showed a significant increase in level of microalbuminuria in patient with chronic tonsillitis when compared to those with acute tonsillitis. The results showed a significant variation in level of microalbuminuria in tonsillitis patients when compared according to gender. There is no correlation between increase level of microalbuminuria and age.

CONCLUSION

The level of microalbuminuria increased in tonsillitis patients with significant variation in level of microalbuminuria between tonsillitis patients according to gender and onset of disease.

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