

Research Article**A cross sectional study on the prevalence of gross hematuria in diabetic patients: A new finding****Hameeda Begum, Madhuri Devi Thadiboina, Manohar Babu Sitty, Kannan Vadivel****Southern Institute of Medical Sciences, Department of pharmacology,**Mangaldas nagar, Guntur-522001, Andhra Pradesh, India.*

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Abstract

Objectives: The presence of erythrocytes in the urine is called Hematuria. When it is visible to the patient it is termed as gross hematuria. The main objectives of our study are to determine the prevalence of gross hematuria. To counsel and educate the subjects on the associated risk factors and the further consequences of the same. **Materials and methods:** 300 participants were enquired about the related information in the questionnaire. The evaluation sheet or the questionnaire is mainly based on the symptoms of the abnormality and the medical history of the individual. According to the data collected we have found 29 hematuria cases. They were further analyzed and results were generated. **Results:** The percentage prevalence in our study was found to be 9.66%. In our survey hematuria among males and females is in the ratio of 0.82:1.2. Out of 9.66% of hematuria positive cases, only about 3.66% of subjects were treated or under treatment, remaining 6% of subjects were untreated. 44.82% of the total subjects as per analysis were found to be between 60- 70kgs of body weight. About 55.17% of the participants were within the age group of 40-50 years. Type 2 Diabetes mellitus and renal calculi were found to be the most significant risk factors for hematuria affecting 31.035% and 17.24% of subjects respectively. **Conclusion:** It is important to educate the population regarding the effects, symptoms, control measures and importance of treatment for hematuria. Screening with proper diagnostic tool and prevention programs are therefore recommended.

Keywords: Gross Hematuria, prevalence, questionnaire, Type 2 Diabetes mellitus, renal calculi, diagnostic tool

Introduction

The presence of erythrocytes in the urine is called hematuria. The presence of erythrocytes in the urine can be evaluated through a microscopic examination. And the macroscopic hematuria i.e. if it's visible to naked eyes it is termed as gross hematuria (Walker 2012c). Hematuria can be chronic or benign. The gross hematuria is considered as one of the clinical presentations of Chronic kidney disease and lower urinary tract infection (lower UTIs) (Wells et al., 2009b) (Wells et al., 2009c). Other conditions like the sickle cell trait and sickle cell disease (Wells et al., 2009a), Alport syndrome in men (Walker, 2012b), Malignant (accelerated) hypertension have hematuria as major clinical finding (Walker, 2012a). The associated risk factors include the history of cigarette smoking, chemical exposure,

prior urologic disease, pelvic radiation other factors include patients age –generally, elder people tend to stand at a higher risk of hematuria. Males are more prone to hematuria than females.

The most common causes of hematuria are urinary tract infections, Nephrolithiasis, Polycystic kidney disease, Trauma, Cancer of the kidney, Benign prostatic hyperplasia, Indwelling urinary catheter, Vigorous exercise (Grossfeld et al., 2001). In the cancer of kidney, prostate, bladder tests have shown gross hematuria ranging 40% (Sharp et al., 2013) and the prevalence of microscopic hematuria ranging between 1-20% depending up on the population studied and the associated risk factor of the individual patient. The regular monitoring parameters of the hematuria are Urine analysis, Blood test, Renal (kidney) imaging studies, Cystoscopic examination (Durham et al., 2017).

The main objectives of our study include the determining the prevalence of gross hematuria among the population living in Guntur and Vijayawada districts. To counsel and educate

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people on the associated risk factors as well as to create awareness on the different underlying causes and monitoring measures of hematuria.

Materials and methods

This study was conducted among the citizens of the two cities Guntur and Vijayawada of south India from September 2017 to October 2017. An ethical clearance was obtained before initiating our work, the reference number being IHEC/SIMS/2017/012. A total of 300 people (20-70 years of age) were assessed in our study. Initially, the people were approached and given a brief introduction to our team and the study purpose. Later all the interested participants were considered into the study. Finally, 300 participants were obtained; all the participants were initially explained about the questionnaire later provided with enough time to answer the same. The evaluation sheet or the questionnaire is mainly based on the symptoms of the abnormality and the medical history of the individual. The questionnaire enquired regarding the individuals present symptoms of like blood in urine, painful micturition, pus discharge, abdominal pain, and other related symptoms by the individual. Later the participants were enquired about their past medical histories like type 2 diabetes mellitus, hyper/hypothyroidism, and others if any. Followed by the enquiry about the associated risk factors like renal and bladder calculi, renal failure, prostate and bladder cancer and others, a family history of each individual was collected. All the acquired data were analysed and results were generated. Out of the 300 participants approached we have found 29 participants were suffering from gross hematuria. Thus the obtained 29 participants were considered as our study subjects and preceded for results.

Results and discussion

Based on the data obtained from the 29 subjects the following results were generated.

It must be noted that condition hematuria is not a disease. But it is a sign of an acute or chronic underlying disease. Hence the

treatment for hematuria involves the identifying and treating the underlying cause of hematuria. Microscopic hematuria is to be monitored every 6-12 months for the check of signs/symptoms indicating the renal disease. Prominent among them are proteinuria, hypertension, and a decrease in renal function. The prognosis of the hematuria depends upon the evaluation of underlying primary medical condition that causes hematuria (Sokolosky, 2016).

The percentage prevalence in our study was found to be 9.66%. In our survey hematuria was found in 44.82% males and 55.17% of females subjects in the ratio of 0.82:1.2. Out of 9.66% of hematuria positive cases, only about 3.66 % of subjects were treated or under treatment, remaining 6% of subjects were not using any medication. Most of our study

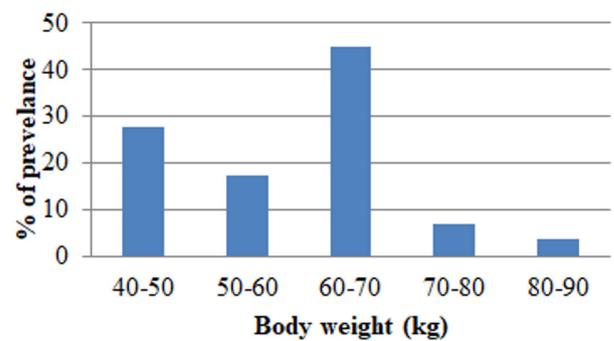


Figure 2. Prevalence of hematuria Vs Body weight(kgs)

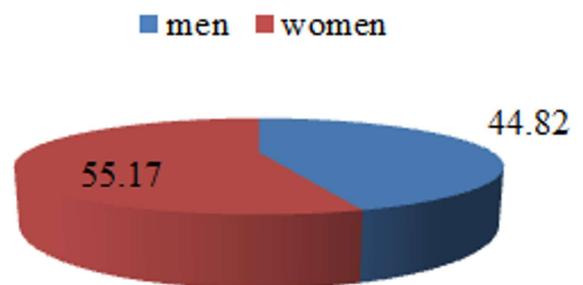


Figure 3. Prevalence of hematuria Vs Sex.

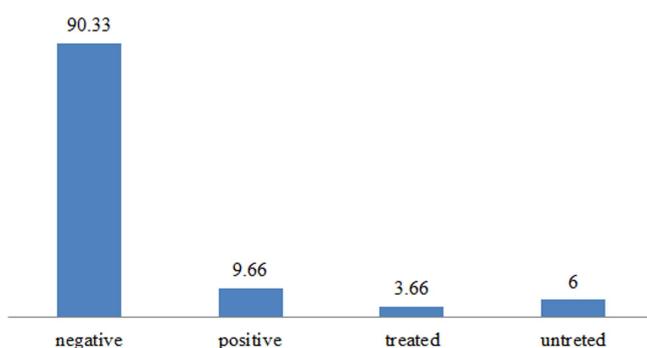


Figure 1. Prevalence of hematuria.

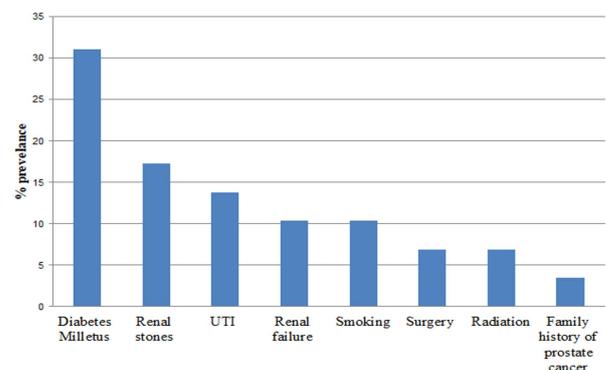


Figure 4. Percentage prevalence of hematuria Vs various conditions

subjects were within 60-70 kg of weight which is 44.82% of the total subjects analysed. About 55.17% of the participants were suffering from hematuria with the age group of 40-50 years. Type 2 Diabetes mellitus was found in 31.035% and renal calculi in 17.24% of subjects which were the most significant risk factors for hematuria. Other risk factors were UTIs among 13.79%, renal failure among 10.34%, radiation among 6.89%, social habits like smoking was found among 10.34% of the subjects, history of surgery was found among 6.89% of the subjects respectively. Family history of prostate cancer was found among 3.44% of the subjects. In our study as per the reports the number of untreated cases were more than double the number of treated cases due to various reasons which include lack of awareness about hematuria, lack of affordable medical support in the immediate surroundings, and in many cases a blind negligence of the illness among the subjects were reported as the main reasons for not taking medical support. In our study it was found that there is a positive correlation between the incidence of type 2 diabetes mellitus and hematuria in the elderly people. We found a prevalence of hematuria in women aged around 40-50 years, body weight of 60-70kg is suffering more.

Urinary tract infections (UTIs) were found to be high in the diabetic patients (Mnif et al., 2013). As the study proves that in general, patients with diabetes have worse outcomes of UTIs than those without diabetes. As per the study it is proven that mortality rate due to urinary tract infections is 5 times higher in diabetic patients aged between 65 and above, as compared to elderly non diabetic patients. Relapse and reinfection are also more frequently reported in diabetic patients (Caramori, 2017). As UTIs are one among the major causes of hematuria, it shows that the subjects with type 2 diabetes mellitus are at the higher risk. As per our study objective adequate information was provided to all the subjects regarding the different underlying causes, the other conditions where hematuria is considered as a major clinical finding like CKD (Wells et al., 2009b), accelerated hypertension (Walker, 2012a) and monitoring measures of hematuria and all the untreated subjects were counselled to attend immediate medical help.

Conclusion

As a novel survey and the first of its kind, it is proven by our survey that there is a positive correlation between diabetes and hematuria. As our survey shows that the majority of subjects were not taking medical help to treat hematuria due to various reasons and almost all the subjects including those who are going through the treatment for hematuria were found to be unaware of the condition hematuria and the related effects of the same. Thus it is very important to educate the population regarding the effects, symptoms, control measures and the importance of treatment for hematuria. Screening with proper diagnostic tool

and prevention programs are therefore recommended.

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Conflicts of interest

Not declared

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