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Prevalence of Urinary Schistosomiasis among Clients Attending Private Medical Laboratory Diagnostic Center in Karshi, Abuja, Nigeria

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Abstracts:
Urinary Schistomiasis is one of the global public health problems. A study on the prevalence of urinary Schistosomiasis was carried out among clients attending private medical laboratory center in Karshi, Abuja, Nigeria. The study was carried out among 210 clients comprised 50 males and 70 females aged 11-50years between August 2019 to February, 2020.Single urine samples were collected from the clients between 10.00hours and 14.00hours were examined for the presence of S. haematobium in eggs using centrifuged techniques. Morbidity indicators of haematuria and proteinuria was determined using reagents strips. Out of 210 subjects examined 16(7.6%) had the eggs of S. haematobium in their urine. The results show that males were more infected than the females with 4.8% and 2.8% respectively. The infection rate varied according to age group where 21-30 years age group had highest infection rate 3.3% and age 41-50years had the least prevalence rate 1.0%.The chemical analysis carried out shows that proteinuria had highest prevalence 20.5% and haematuria had 16.7%.Distribution according to marital status show that single had higher prevalence of 5.7% and married had the least 1.9%.There was no statistically significance relationship between all the variables and prevalence of urinary schistosomiasis. From the results of this study, it was concluded that schistosoma haematobium was less prevalent in this study area. Studies strongly suggest that health education on the modes of transmission be promoted and strengthened to achieved total eradication of the disease in the area. Authors recommended the inclusion of private medical laboratory into the government health policies on urinary schistosomiasis.

Keywords: *Urinary, private, Karshi, Abuja, medical, schistosomiasi*

1. Introduction

Schistosomiasis know as bilharziasis is a major disease of public health importance in tropic and the sub tropic as a source of human morbidity cause by parasitic agent (Nanvya et al., 2011; Goselle et al., 2010). Schistosomiasis is a parasitic disease produced by the platyhelminthes worm of the class Trematode, genus Schistosoma. It is commonly known as Blood fluke or Flat worm which is common in developing countries (Gberikon et al., 2015). According to the world Health Organization(WHO), Schistosomiasis is second to malaria alone amid thevector-borne diseases in terms of public health and remuneration importance in the tropic(WHO,2016).

The World Health Organization(WHO) has estimated that 160-200 million cases of infections are acquired annually worldwide, with about 120million with symptoms and 20million with varying pathological presentation that is severe illness (Harp and Chowdhury,2011,Mafiana et al,2003, Chitsulo et al.,2000). The disease being endemic to some 74 countries and Some 400 million more people are at risk of becoming infected and an estimated 80% of most severely affected individuals is now concentrated affecting at least 200million people yearly in Africa (WHO,2015,Uweh et al.,2015,Adulugba and Omudu,2013,Chitsulo et al.,2000).The infection is acquired through contact with cercaria-polluted water during washing clothes and utensils, swimming, wading(working or bathing (Akinboye et al., 2011).

Infections rates between men and women are the same and usually with women showing symptoms, while infections in men are usually asymptomatic (Gberrikon,2015|, Francalugo and Zarzosa,2010).Urinary Schistosomiasis is a risk factor for the second most common urologic malignancy(bladder cancer) and myriads of disorders that result in morbidity and mortality 8-10 (Vennerrald,2015,Khalaf et al.,2012). In S. haematobium infection, the eggs are trapped in

tissues and cause progressive damage to the bladder, ureters and kidneys. There is dysuria(painful urination) and haematuria (blood in urine) (Muhammad et al.,2019;Bello,2014).

The disease can present as chronic, which is most common or acute. Haematuria (blood in urine) and dysuria are the main early symptoms of the disease. Most individual remain asymptomatic, although about 80% of the infected children show early symptoms and signs of disease (Muhammad et al.,2019;Olds,2000).Chronic Schistosomiasis may result in death.In sub- Saharan Africa,more than 200,000 deaths per year are caused by the disease (WHO,2015).

The disease is endemic in the following African countries Ethiopia, Kenya, Cameroon, Uganda, Malawi, Muozambique among others (Chitsulo et al.,2000).It is endemic in Tanzania (19%),Ghana and Dr Congo 15%Abdulkadir et al.,(2017),Brouwer et al.,(2006) reported (60%),Same et al.,(2007) reported (32.1%) in Kumba Cameroun and Bowie et al.,(2004) reported (6.9%) in Malawi.The disease is normally endemic in rice and sugar cane producing areas as well as fishing communities and others (Okechukwu,2012).

Nigeria had the highest Schistosomiasis burden in Africa (Desilva et al.,2003,Stemmann et al.,2006).Urinary Schistosomiasis has been reported to be prevalent and widely distributed in all the geographical zones of Nigeria (Ofoezie and Oladayo,2006). Akinwale et al.,(2009) using PCR technique reported 98.4% prevalence in a local community in South western Nigeria among age group 6-63years. Amuta and Houmou, (2014) reported prevalence rate of (55%) in Guma Benue State. Muhammed et al.,(2018) reported 48% among primary school pupils in Wamakko Sokoto, Nigeria. Ishaleku et al., (2012) reported (30.5%),Akpan et al.,(2017) reported 1.5% in Ikom Cross River. Several studies in Benue State have reported urinary Schistosomiasis prevalence ranging from 15%-41% (Gberikon et al.,2015,Houmsou et al.,2010,Mbata et al.,2009; Uweh et al.,2015).

Minimizing morbidity can be effectively supported through parallel preventive measures by reducing the contamination of water with Schistosome eggs and preventing exposure of humans to Schistosome-infested water (WHO,2012).Health education, water supply and sanitation programmes and snail control are important preventive measure in an integrated approach to control Schistosomiasis transmission (Muhammed et al,2019;Sturrock,2001).

The most common method of diagnosis of Urinary Schistosomiasis in epidemiological surveys carried out in Africa is the identification of eggs in the urine from the infected individual. Drug treatment is still Praziquantel (40mg/kg) is effective in reducing prevalence and in curtailing the disease (WHO,2013).

Schistosomiasis is a neglected disease and no study have described its epidemiology in the study locality of Karshi ,Abuja, Nigeria. This study was carried out to determine the Urinary Schistosomias is among Client Attending Private Medical Laboratory Center in Karshi, Abuja, Nigeria.

2. Materials and Method

2.1. Study Area

The study was carried out at Decency Amana Medical Laboratory Karshi, Abuja, Nigeria. Karshi is a satellite town situated in Abuja Municipal Area Council in Federal Capital Territory Abuja, Nigeria.Karshi geographical coordinates are 8° 49' 40" North, 7° 33' 0" East. Karshi is about 38 km to Federal capital city of Abuja and 41 km from Karshi to Apo.

Karshi has a population of about 30,000 people. The predominant tribe in Karshi is Gwandaras who constitute about 85% of the total population. Other minority tribes in Karshi are Gade, Gbagyi, Hausa, Fulani, Igbo, Idoma, and Tiv. (www.distancesfrom.com, https://en.wikipedia.org/wiki/Karshi_Abuja, NPC,2006)

2.2. Study Population

The study was carried out among 378 clients between the aged 11 and 50years attending Decency Amana Medical Laboratory Karshi Abuja. The study was carried out between August, 2019 and February, 2020.

2.3. Questionnaire

The structured questionnaires were administered to consenting clients to obtained information on the age, gender and marital status prior to sample collection.

2.4. Ethical Approval

Ethical approval informed consent was obtained from all the recruited clients. We obtained permission to carry out the study from the management of the Private Medical Laboratory.

2.5. Sample Collection and Analysis

A total of 250 urine samples were collected in a clean, dry sterile plastic, screw-capped 20ml universal urine bottles. Samples were collected between 10:00Am and 2:00pm and were examined macroscopically for colour and turbidity and was chemically using urinalysis strips (Combi-9) test strip for the presence of blood and protein. Ten milliliter of urine were transferred aseptically into centrifuge tube and centrifuged for 5minutes at 5000rpm after discarding the supernatant the entire sediment was transferred to a slide covered with cover glass and systematically examined using the 10x objective with the condenser iris closed sufficiently to give good contrast for red blood cells, pus cells and eggs of S.haematobium seen counted and reported per 10ml of urine.

2.6. Statistical Analysis

Chi square test was used to determine the level of significant between age, gender, educational background and marital status. P value <0.05 was considered significant at 95% confidence interval.

3. Result

This study showed that out of the 210 clients tested the overall prevalence of urinary schistosomiasis was 16(7.6%). The distribution among the clients based on gender showed that male had the highest prevalence of 10(4.8%) and female 6(2.8%). Although the difference is not statistically significant association between sexes (Table 1)

The distribution of urinary schistosomiasis based on age showed that high prevalence of 7(3.3%) was recorded among the age group of 21-30years,followed by 31-40years 4(1.9%),11-20years 3(1.4%) and41-50years had the least prevalence 2(1.0%).The result shows that there is no statistically significant relationship between the prevalence and age group (Table 2).

The distribution of urinary schistosomiasis according to marital status, the highest prevalence was recorded among the single individual 12(5.7%) and married had the least prevalence 4(1.9%). There was no statistical significance difference between the marital status in relation to urinary schistosomiasis infection (Table 3).

The detection of urinary schistosomiasis using proteinuria and haematuria verses microscopy, out of the number examined 43(20.5%) were positive for proteinuria, 35(16.7%) and 16(7.6%) were positive for the infection using microscopy. There was statistical significant difference between the proteinuria, haematuria and microscopy with urinary schistosomiasis infection (Table 4).

S.No	Gender	No.Examined	No.Positive	Positive (%)
1	Male	122	10	4.8
2	Female	88	6	2.8
3	Total	210	16	7.6

Table 1: Distribution of Urinary Schistosomiasis Prevalence in Relation to Gender
P-Value<0.05 Was Considered as Significant.P-Value=0.942

S.No	Age	No.Examined	No.Positive	Positive(%)
1	11-20	37	3	1.4
2	21-30	78	7	3.3
3	31-40	62	4	1.9
4	41-50	33	2	1.0
5	Total	210	16	7.6

Table 2: Distribution of Urinary Schistosomiasis Prevalence Based on Age
P-Value<0.05 Was Considered As Significant, P-Value=0.984

S.No	Marital Status	No.Examined	No.Positive	Positive (%)
1	Single	135	12	1.9
2	Married	75	4	5.7
3	Total	210	16	7.6

Table 3: Distribution of Urinary Schistosomiasis in Relation to Marital Status
P-Value<0.05 Was Considered As Significant,P-Value=0.687

S.No	Screening Test	No.Examined Microscopy	Microscopy (%)	No Examined Proteinuria	Proteinuria (%)	No Examined Haematuria	Haematuria (%)
1	Positive	16	7.6	43	20.5	35	16.7
2	Negative	194	92.4	167	79.5	175	83.3
3	Total	210	100	210	100	210	100

Table 4: Distribution of Urinary Schistosomiasis Using Proteinuria, Haematuria and Microscopy
P – Value<0.05 Was Considered as Significant, P-Value=0.006

4. Discussion

This finding revealed that out of 210 clients tested 16(7.6%) were positive for Urinary Schistosomiasis infection. The prevalence of 7.6% in this study was relatively lower than the 41% reported by Gberikon et al.,(2015) among patients attending general hospital in Gboko,Benue State, 10.1% reported by Nwankwo and Adebowula (2019) in semi –urban community in Gwagwalada,Abuja.48% reported by Muhammed et al., (2019) among primary school pupils in Wamakko, Sokoto State,Nigeria,18.7% reported by Damen et al.,(2018) in North central Nigeria,32.0% reported by Hassan et al.,(2017) in Kebbi State North western Nigeria.20.7% reported by Ogundeji et al.,(2019) in Kuje village Abuja,Nigeria,31.3% reported by Casmir et al.,(2010) in Federal Capital Territory, Abuja, Nigeria. It was also lower Compared to finding in other African countries 32.1% reported by Same et al., (2007) in Cameroun and Brouwer et al.,

(2006) reported 60% in Zimbabwa,45% reported by Ismail et al., (2014) in Sudan and 24.54% by Deribew et al., (2013) in Afar Region of Ethiopia.

This report is higher than 5.0% reported by Bashir et al., (2016) among patient attending Shekoni Hospital Dutse, Jigawa state,1.5% as reported by Akpan et al., in Ikon Cross River. Compared to other Finding in other African countries 6.9% reported in Malawi and 5.3% reported by Liao et al., (2011) in Swaziland. The difference could be explained as a result of difference in environmental factors that can in turn lead to differences in transmission.

The prevalence of urinary Schistosomiasis infection with respect to gender was found high in male (4.8%) than the female (2.8%). However, there was no statistical significance different between the sexes. This finding is in consistent with the finding of Bashir et al.,(2016),Hassan et al.,(2017), Ogundeji et al.,(2019),Mohammed et al., (2018), Ofoezie et al.,(2013) which reported a high prevalence rate among male and no significance association between gender and Schistosomiasis. ($p>0.05$).But in contrast with the finding of Kehinde et al.,(2017) and Nwibari et al.,(2016) which reported high prevalence rate among female.

In relation to age, high prevalence of (3.3%) was recorded among age group of 21-30years while those between 41-50years had the least prevalence rate of (1.0%).This findings disagreed with the report of Kande et al.,(2017) who reported ages 13-15years in Ogun State Southwestern Nigeria, Kabiru et al., (2013) who reported between the age of 11 and 20years.Although no statistical significant differences was observed between the different age groups ($p>0.05$).The lack of significant association of S. haematobium infection with age is an indication that regardless of age, all client are equally exposed to cercaria contaminated water bodies (Mohammed et al.,2019).This agreed with the finding of Joseph et al.,(2010) in Maiduguri, Borno State, Dawet et al.,(2012) in Jos North, Plateau State, Damen et al.,(2018) in North central and Nwachukwu et al., (2018) in Ebonyi State were they reported no significant association in the occurrence of S.haematobium infection with age.

The prevalence according to marital status, there was high prevalence of Urinary Schistosomiasis among the single (5.7%) and married (1.9%). But there was no statistical significance difference between the marital statuses. This may imply that marital status is not really a risk factor for the infection, since single people may tend to have many sexual partner or unprotected sex.

Prevalence according to detection of Urinary Schistosomiasis using haematuria and proteinuria verses microscopy shows that proteinuria had high prevalence (20.5%) followed by haematuria (16.7%) and microscopy (6,7%).There was statistical significance between the proteinuria, haematuria and microscopy with the urinary Schistosomiasis infection ($p<0.05$).This finding is in line with Hassan et al.,(2017),Mohammed et al.,(2018) and Bashir et al.,(2016) who reported low prevalence in microscopy and higher value in haematuria and protinuria. Haematuria and proteinuria can be an indicator of infection with Schistosma.haemotobium especially in field survey so they can provide a semi quantitative result(Gressels et al.,2006).

This study could serve to direct any national effort toward reducing the Urinary Schistosomiasis burden of our private health facility. This study will be of immense value as a public health tool to include private medical laboratory for planning, delivery, monitoring and evaluation of urinary schistosomiasis intervention.

5. Conclusion

This study recorded a low prevalence rate of urinary schistosomiasis infection among clients attending private medical laboratory center in Karshi, Abuja, Nigeria. This study suggested the need for compulsory urine screening for schistosomiasis among all patients attending any private and public health facility for the first time. It is recommended that prevention and control measures should be adopted such as provision of adequate portable drinking water, snail control, improved personal hygiene habit, sanitation and health education on modes of transmission should be promoted and strengthened by the concerned authorities. An integrated approach involving all stakeholders on health involving all stakeholders on health should be adopted with inclusion of private medical laboratory into government health policies on schistosomiasis.

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