

## Assessment of Hyper Coagulability (activated partial thromboplastin time and prothrombin time) among Sudanese Patients with Schistosomiasis

NASIR MOHAMED IBRAHIM

AHMED SALAH AHMED

MOHAMED MUBARK OMBALLI

Department of Hematology

Al-Yarmouk College, Sudan

MAHMOUD IBRAHIM OSMAN

Department of Histopathology and Cytology

Al-Yarmouk College, Sudan

### Abstract:

*Schistosomiasis is a chronic parasitic disease; there are 200 million people affected by Schistosoma worldwide with 600 million people being exposed around 5-7% of the patients infected by Schistosoma progress to the most severe form, hepatosplenic schistosomiasis (HS). This case and control study conducted in period January 2016 to march 2016, to detect haemostatic abnormalities (activated partial thromboplastin time and prothrombin time) in individual infected schistosoma haematobium. According to the final result in this study showed significant difference between the mean of patients and control group in (PT). (p.value > 0.05) also result of (PTT) showed significant correlation result when compare case group with control group the mean of APTT was 43.64 and the mean of PTT control was 36.40sec.*

**Conclusion:** *The study concluded that, there is significant in APTT and PT in Schistosomiasis patients compare to control group the results of this work conclude that there is significantly difference in APTT and PT in Schistosomiasis patients.*

**Key words:** APTT, PT, Shistosomiasis.

## **INTRODUCTION:**

Schistosomiasis is endemic in 74 countries with a bulk of the global cases (90%) residing in sub-Saharan Africa {1, 2}. In 2007, the World Health Organization estimated 235 million cases of schistosomiasis worldwide, with 732 million people at risk of infection in known transmission areas {3}. In Sudan the risk for *S. haematobium* is widespread in the different regions {4, 5} and school age children were at a higher risk of *S. haematobium* infection than the other age groups {6}. Around 5-7% of the patients infected by *Schistosoma* progress to the most severe form hepatosplenic schistosomiasis (HS). Many of these patients exhibit high morbidity associated with periportal fibrosis, portal hypertension, Splenomegaly, upper digestive tract bleeding and cytopenia {7, 8}.

## **MATERIALS AND METHODS:**

This case control study was conducted in Khartoum state – Sudan in period January 2016 to march 2016, to detect haemostatic abnormalities (activated partial thromboplastin time and prothrombin time) in individual infected schistosoma haematobium. The geographical and clinical data were achieved from the patients files, and urine sample were collected in dry clean container labeled with code number. Five ml venous blood collected using sterile disposable plastic syringe after cleaning venipuncture area with 70% ethanol. 1.8 ml were dispensed in sodium citrate container, then separated by centrifugation at 2500 rpm in bench centrifuge and transferred the plasma in plane container.

### **Activated Partial Thromboplastin Time (APTT) Test:**

#### **Manual method:**

1. Pre-incubate the Calcium Chloride Reagent to 37°C for 10 minutes. Pipette 100µl of test or control plasma into a test cuvette.
  2. Incubate the plasma at 37°C for 2 min
  3. Pipette 100µl of the APTT reagent, into reagent cuvette containing the plasma. Maintain the suspension of the APTT reagent by magnetic stirring or mixing by inversion immediately prior to use.
  4. Incubate at 37°C for 3 minutes.
  5. Add 100µl preincubated Calcium Chloride solution and simultaneously start the timer.
  6. Record the clotting time in seconds.
- Normal range: 30-40 seconds.

### **Prothrombin time test:**

#### **Manual method:**

- Deliver 0.1 ml of plasma into glass tube placed in water bath.
  - add 0.2 ml of calcified thromboplastin.
  - start the stop watch and record the end point.
- Normal range: 11 -16 seconds.

### **RESULT:**

#### **APTT Result:**

In the current case control study the APTT was investigated among 70 people (50 schistosomiasis patient and 20 was control). The ages of the subject study ranged from(5-15years). The results obtained were critically analyzed by statistical package for social sciences program (spss) and the data obtained are summarized in tables (1.2.) detailed as fallows.

The result showed significant correlation result when compare case group with control group for mean PTT. The mean of APTT was 43.64 and the mean of PTT control was 36.40sec. the result showed significant PTT and when compared schistosomiasis patient group with control according to the gender male and female.

**The mean of PTT according of age as follow:**

In individuals less than 5 years old the mean of PTT 37.00 second.

In individual from 6-10 years old mean of PTT was 37.13 second.

In individual from 11-15 years old the mean of PTT was 42.63 sec.

In individual more than 15 years old was 42.75.

**Table 1: Mean of PTT with case and control:**

Sample	Mean\PTT	P.value
case	43.64	0.00
control	36.40	

**Table 2: Mean of PTT with gender and age:**

classification		PTT		P.value
		N	Mean	
gender	male	63	42.13	0.05
	female	7	36.57	
age	<5	1	37.00	0.9
	6-10	13	37.31	
	11-15	48	42.63	
	>15	8	42.75	

**Result of PT:**

In the current case and control study the PT was investigated among 70 people (50 schistosomiasis patient and 20 was control). The ages of the subject study ranged from (5-15years). The results obtained were critically analyzed by statistical package for social scinesc program (SPSS) and the data

obtained are summarized in detailed as follows: The result showed significant correlation result when compare case group with Control group for mean PT. The mean of PT patient was 17.44 and the mean of PT control was 13.95. The result showed significant PT and when compared schistosomiasis patient group with control according to the gender male/female. The mean of PT in male was 16.81 and the mean of female was 13.14.

In individuals <5 years old the mean of PT was 16.81.

In individuals from 6-10years old the mean of PT was 14.38.

In individuals from 11-15 years old the mean of PT was 16.96.

In individuals >15 years old was 16.88.

**Table 1: Mean of PT with case and control:**

Sample	Mean\PT	p.value
case	17.44	0.00
control	13.95	

**Table 2: Mean of PT with gender and age:**

Classification		PT		p.value
		N	Mean	
gender	male	63	16.81	0.01
	female	7	13.14	
Age	<5	1	16.00	0.3
	6-10	13	14.38	
	11-15	48	16.94	
	>15	8	16.88	

## DISCUSSION:

The current study showed significant difference between the mean of patients and control group in (APTT). Which agree with Osman et al {9} who state that there significant difference between the mean of patient and control in (APTT) (p.value>0.05). While this study disagree with Nora Manoukian anil Durual R. Borges et al{10} who state that APTT were also normal compared with control group in patient with

hepatosplenic schistosomiasis and said. It must be emphasized that global clotting tests are not sensitive to minor deficiencies of clotting factors. Also this study agree with Manal Ragab et al {11} who state that there significant difference between the mean of patients and control group in (APTT) (P.value>0.05) And disagree with Ata Almanan et al {12} also he state there are no significant difference between patient and control in (APTT) (P.value >0.05).

According to the final result in this study showed significant difference between the mean of patients and control group in (PT). (P.value > 0.05), which agrees with Osman et al {9} who state that there significant difference between the mean of patient and control in (PT) (P.value > 0.05). Also this study which agree with Nora Manoukian et al{10}Who state that PT was significant when compared with control group in patient with hepatosplenic schistosomiasis (p. value <0.05). Also this study agree with Manal Ragab et al{11}who state that there significant difference between the mean of patients and control group in (PT) (P.value>0.05). It disagrees with Ata Almanan et al {12} also who state there are no significant difference between patient and control in (PT) (P.value 0.05).

## **REFERENCES:**

1. Steinmann P, Keiser J, Bos R, Tanner M, Utzinger J: Schistosomiasis and water resources development: systematic review, meta-analysis, and estimates of people at risk. *Lancet Infect Dis* 2006, 6:411–425.
2. WHO: Prevention and control of schistosomiasis and soil-transmitted helminthiasis: Report of a WHO expert committee. In WHO Technical Report Series No. 912. pp. 1–57. Geneva: World Health Organization; 2002.

3. WHO: Preventive Chemotherapy Data bank. 2009. available online at: [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/databank/en/Index.html](http://www.who.int/neglected_diseases/preventive_chemotherapy/databank/en/Index.html).
4. Mohammed EH, Eltayeb M, Ibrahim H: Haematological and biochemical morbidity of *Schistosoma haematobium* in school children in Sudan. *Sultan Qaboos Univ Med J* 2006, 6:59–64.
5. Deribe K, Eldaw A, Hadziabduli S, Kailie E, Omer MD, Mohammed AE, Jamshed T, Mohammed EA, Mergani A, Ali GA, Babikir K, Adem A, Hashim F: High prevalence of urinary schistosomiasis in two communities in South Darfur: implication for interventions. *Parasit Vectors* 2011, 4:14.
6. Ahmed AA, Afifi AA, Adam I: High prevalence of *Schistosoma haematobium* infection in Gereida Camp, in southern Darfur, Sudan. *Ann Trop Med Parasitol* 2009, 103:741–743.
7. Ross AG, Bartley PB, Sleigh AC, Olds GR, Li Y, Williams GM, et al. Schistosomiasis. *N Engl J Med*. 2002;346(16):1212-20. Comment in: *N Engl J Med*. 2002;347(10):766-8; author reply 766-8.
8. Ferraz AA, Albuquerque PC, Lopes EP, Araújo Jr JG, Carvalho AH, Ferraz EM. The influence of periportal (pipestem) fibrosis on long term results of surgical treatment for schistosomotic portal hypertension. *Arq Gastroenterol*. 2003;40(1):4-10.
9. Osman Moala Almahi(2012), evaluation of some hemostatic parameters among schistosomiasis parameter in Algleea – shendi, MSC. of medical laboratory science, Sudan University of Science and Technology.
10. Nora and Manoukian Durval (1984), detection of prothrombin time in hepatosplenic schistosomiasis, institute medical tropic sao paulo.

11. Manal Ragab Hassan (2010), effect of schistosoma haematopium in hemostatic parameter, Bsc of medical laboratory science, Sudan university of science and technology.
12. Ata Almanan Osman Ibrahim (2012) Evaluation of Some Coagulation Tests among Sudanese children with schistosomiasis in river Nile, MSC. of Medical laboratory Science, Sudan University of Science and Technology.