Prevalence Of Fascioliasis Among Children With Hepatomegaly

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ABSTRACT

The prevalence of fasciola hepatica among children suffering from hepatomegaly of unknown etiology was assessed using stools analysis by different techniques together with the indirect hemagglutination test (IHAT). Fasciola eggs were detected in the stools of 11 out of the studied 50 children (22%). The IHAT was positive in these eleven cases besides 3 more cases i.e. it was positive in 14 cases (28%). It was concluded that serological tests for fascioliasis should be combined with stools analysis during the investigation of any case with hepatomegaly of other manifestations suspecting fascioliasis.

INTRODUCTION

Fascioliasis is becoming a problem of increasing importance in Egypt. The recently reported increase in number of clinical cases of fascioliasis may be due to better understanding of the disease and improvement of the diagnostic methods[1-4].

Infection results from eating contaminated green vegetables or drinking water with encysted metacercaria[5]. There are three phases of infection: invasive of acute phase, latent phase and obstructive or chronic phase[6]. The main presenting clinical manifestations include hepatic pain, colic, fever, anorexia, discomfort with meals and hepatomegaly[7,8].

The present work aimed at detecting the prevalence of fascioliasis among children with hepatomegaly.

MATERIAL AND METHODS

The study was carried out on fifty children (31 males and 19 females) with hepatomegaly of undetermined cause. They were chosen from those attending the outpatient clinic of El-Shatby University Hospital and Damanhoor Teaching Hospital. They ranged in age from 14 months to 14 years (mean 5.59 ± 3.26 Y).

All studied children were subjected to:

[1] Complete history taking and clinical examination with special emphasis on the liver span to confirm the diagnosis of hepatomegaly.

[2] Blood counts including haemoglobin level, total and differential leucocytic counts and absolute eosinophilic count.

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Table I: Results of stool analysis and IHA test in the studied cases of hepatomegaly

	Positive for fascioliasis		Negative for fascioliasis		Total	
	No.	%	No.	%	No.	%
Stools	11	22	39	78	50	100
IHA test	14	28	36	72	50	100

Table II: Comparison of blood counts in positive and negative cases of fascioliasis

		Positive cases (No.=14)	Negative cases (No.=36)
Hb level (g/dl)	Range X ± SD	8.9 - 11.6 10.4 ± 0.984	8 - 13 11.8 ± 0.843
		t = 5.0315 *	
WBC (1000/Cmm)	Range X ± SD	4.5 - 29.0 9.38 ± 5.58	3.2 - 22.0 7.94 ± 3.0
		t = 1.1768	
Eosinophil count/Cmm	Range X ± SD	130 - 15900 3284 ± 4437	120 - 1250 350 ± 295
		t = 4.0103 *	

* P <0.05 (Significant).

Table III: Comparison of liver enzymes in positive and negative cases of fascioliasis

		Positive cases (No.=14)	Negative cases (No.=36)
SGOT (U/L)	Range (X ± SD)	8 - 53 22.21 ± 4.32	9 - 48 23.4 ± 3.92
		t = 0.9369 (NS)	
SGPT (U/L)	Range X ± SD	6 - 43 18.14 ± 3.13	6 - 44 18.35 ± 2.56
		t = 0.2445 (NS)	
Alkaline Phosphatase (K.A.U/dl)	Range X ± SD	6 - 27 10.0 ± 3.52	7 - 31 13.25 ± 4.13
		t = 0.1997 (NS)	

* NS = No significant difference (P >0.05).

[3] Stool examination using (a) Direct fecal smear[9], (b) Formol-ether sedimentation technique[10], and (c) Zinc sulphate centrifugation technique[11].

[4] Indirect hemagglutination test (IHAT)[12,13] for detection of fasciola-specific antibodies. A special kit was used (Fumouze Laboratories, France). Titres above or equal to 1:320 were considered positive.

RESULTS AND DISCUSSION

Out of the 50 studied children, 8 boys and 6 girls (14 cases) were positive for fasciola by IHAT (Table I), with no statistically significant difference between the two sexes. The mean age was significantly higher in positive (7.34 ± 4.0 years) than in negative (4.91 ± 2.69 years) cases. Abdominal distension, fever and right hypochondrial pain were the commonest presenting complaints. This may be attributed to the fact that all studied cases had hepatomegaly.

Nine out of the 14 positive cases (64.3%) were pale on clinical examination. The mean hemoglobin level in positive cases (10.4 ± 0.984 g/dl) was significantly lower than that in negative cases (11.8 ± 0.48 g/dl).

Jaundice was not detected in any of our positive cases of fascioliasis, although jaundice has been reported by several authors[14,15] to be present in fascioliasis. Splenomegaly was present in 4 out of the 14 IHAT positive cases for fasciola (28.6%). Splenomegaly has been reported in cases of fascioliasis by many authors[16,17]. Ascites was present in 2 out of the 14 positive cases in our study (14.3%). During the course of the acute phase, ascites has been reported in many studies[18,19]. The pathogenesis of ascites was considered to be an inflammatory response to a large number of juvenile flukes penetrating the intestinal walls, irritating the peritoneum and penetrating the liver capsule during their migration rather than hepatic failure per-se[19].

Leucocytosis was detected in 4 of the 14 positive cases, while leucopenia was present in only one of these cases. The difference between the mean leucocytic count in positive and negative cases was not significant. The eosinophilic count was significantly higher in positive cases than in negative ones (3284 ± 4437/c mm and 350 ± 295/c mm respectively) (Table II).

The liver enzymes SGOT and SGPT were high in 2 of the positive cases while alkaline phosphatase was high in 4 cases. The mean levels of these enzyme however, were not significantly different from those of negative cases (Table III).

Although the IHAT was positive in 14 out of the studied 50 cases of hepatomegaly (28%), fasciola eggs were detected in the stools of only 11 of these IHAT positive cases (78.6%) (Table I). Makled et al.,[20] reported positive stools in 61.53% of serologically proven cases of fascioliasis. Fasciola is mainly a parasite of sheep and cattle which are the original host, hence there is poor adaptation and imperfect egg laying by the parasite in accidental human infection. In addition, most of the worms do not attain sexual maturity and accordingly fasciola eggs may not be detected in the stools of infected individuals. The sole dependence on stool examination for diagnosis of fascioliasis will miss many cases. So, it is recommended to carry out serological tests for fasciola together with stools examination for every

case of hepatomegaly or other suspicious manifestations of fascioliasis.

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الملخص العربى

معدل أنتشار الدودة الكبدية (الفاشيولا) فى الأطفال المصابين بتضخم الكبد

أجرى البحث بهدف دراسة معدل أنتشار الدودة الكبدية فى الأطفال الذين يعانون من تضخم الكبد. وقد تم أختيار ٥٠ طفلاً من المترددين على العيادات الخارجية لمستشفى الأطفال الجامعى بالشاطبى ومستشفى دمنهور التعليمى وكانوا جميعاً يعانون من تضخم بالكبد دون سبب واضح تراوحت أعمار هؤلاء الأطفال بين ٢٤ شهراً و١٤ سنة (متوسط ٥,٥٩ سنة) وقد تم عمل عد دم لكل هؤلاء الأطفال بالأضافة الى تحليل للبراز بعدة طرق للبحث عن بويضات الدودة الكبدية كما تم أخذ عينة دم من كل منهم للكشف عن وجود أجسام مضادة فى مصل الدم ضد الدودة الكبدية بأستخدام طريقة تخثر الدم الغير مباشر. وقد تبين من البحث وجود بويضات الدودة فى براز ١١ من الذين شملهم البحث (٢٢٪) بينما كان أختبار تخثر الدم غير المباشر إيجابياً فى ١٤ حالة (٢٨٪). كانت أكثر الأعراض شيوعاً بين الأطفال المصابين بالدودة الكبدية هى أنتفاخ البطن وأرتفاع درجة الحرارة وألم بالجانب الأيمن من البطن. كانت نسبة الهيموجلوبين فى الأطفال المرضى بالدودة الكبدية أقل بطريقة مؤثرة أحصائياً عنها فى الأطفال الذين لم تثبت أصابتهم بها. كذلك كان عدد الخلايا الحمضية (الايزينوفيلية) أعلى فى الحالات الإيجابية عن الحالات غير الإيجابية بطريقة مؤثرة أحصائياً.

وقد ترجع الزيادة فى عدد الحالات التى تم تشخيصها بأختبار تخثر الدم غير المباشر عن الحالات التى وجدت البويضات فى برازها الى أن بعض الديدان تفقد طريقها ولاتصل للقنوات المرارية حيث ان الأنسان ليس هو العائل الأساسى للدودة كما أن البعض الأخر لا يصل للنضج الجنسى. وعلى ذلك فأنه يمكن أستخلاص أن الأختبارات المناعية أدق من تحليل البراز لتشخيص الأصابة بالدودة الكبدية ولذلك ينصح بعمل هذه الأختبارات الى جانب تحليل البراز فى أى طفل يعانى من تضخم الكبد غير معروف السبب أو من الأعراض الأخرى الشائعة فى حالات الأصابة بالدودة الكبدية مثل زيادة عدد الخلايا الايزينوفيلية أو أرتفاع درجة الحرارة.