A CASE SERIES OF HEPATIC TUBERCULOSIS IN CHILDREN

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Introduction

Tuberculosis in children remains a public heath concern in Malaysia and other developing countries. *Mycobacterium tuberculosis* (TB) infection of the liver, known as hepatic TB, is an extra pulmonary manifestation of TB. Tuberculous bacilli can reach the liver via hematogenous dissemination through hepatic artery, or by local spread from the gastrointestinal tract via portal vein [1].

Hepatic TB commonly presented in 3 forms:

a) Diffuse hepatic involvement seen in pulmonary/military TB.

b) Granulomatous hepatitis without pulmonary involvement.

c) Focal tuberculoma/abscess in liver [2].

Objective

To review the presentation, diagnosis, management and outcome of children with hepatic tuberculosis in Sabah Women and Children's Hospital (SWACH).

Method

Children with diagnosis of hepatic TB admitted to SWACH from 1st of January 2015 to 30th of June 2016 were identified. Case notes were retrieved and data entered into a standardized questionnaire.

Disseminated TB in this case series is defined as tuberculous infection involving the blood stream, bone marrow, liver, or 2 or more non-contiguous sites, or military TB [3]. Mantoux test is considered positive if Mantoux reading $\geq 10mm$ [4].

Results

Five children were included in the study, with 3 male and 2 female. The age ranged was from 6 to 12 years old. All were Malaysian and had BCG vaccination with presence of BCG scar. Four out of five children had disseminated TB and one had solely hepatic TB without other organ involvement.

Presentation

Fever, abdominal pain and abdominal distension associated with hepatomegaly were found in 5 (100%) of the children. Other common symptoms such as lethargy, weight loss and loss of appetite were seen in 4/5 (80%) children. In those with disseminated TB, 3/4 (75%) had pulmonary involvement presenting with prolonged cough and respiratory distress. One out of four (25%) child with disseminated TB had concomitant TB meningitis, presented with seizures and signs of raised intracranial pressure on admission.

Investigations

Mantoux test was positive in 4/5 (80%) of the children. Sputum for Acid Fast Bacilli

(AFB) x3 were negative in all 5 (100%) of the children. Liver enzymes were within normal range in 4/5 (80%) of the children on admission. Albumin/Globulin ratio was low (<0.8) in 100% of the children, a common feature in hepatic TB [5]. Imaging was the main diagnostic modality for diagnosis. For the patient with only TB abdomen without other organ involvement, liver biopsy was done. Histopathological examination of liver tissue only revealed necrotic debris with no AFB seen.

CT abdomen

Figure 1. Multiple tuberculoma with features of low density lesions with central calcifications

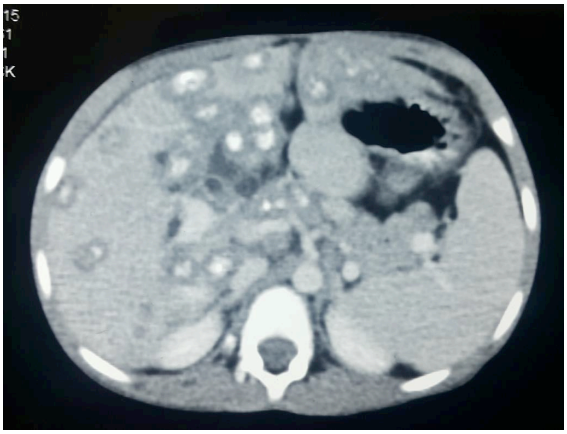
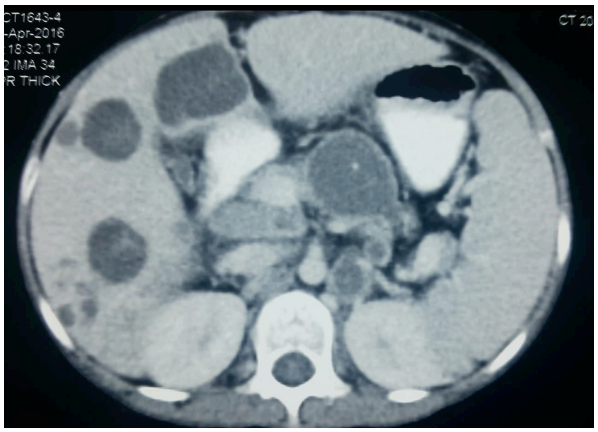


Figure 2. Multiple large liver abscesses



Treatment and outcome

All children were started on standard anti therapy comprising of rifampicin, pyrazinamide, ethambutol and isoniazid. Two out of five patients developed drug induced hepatitis and had to be switched to another different regime. Hundred percent of the patients responded to anti TB treatment. Two out of five patients had completed treatment, two of them currently still on maintenance phase and one was on intensive phase.

Table 1. Summary of Investigations

Patient	Age	Mantoux Test (mm)	ESR (mm/ Hour)	Hepatic TB				Pulmonary TB (AFB/maging)			TB meningitis
				ALT/ AST (U/L)	Alb/ Glo(g/L) A/G ratio	Ultrasound abdomen	CT abdomen	Sputum AFBx3	Chest x ray	CT Thorax	
1	12	10	120	23/20	28/59 (0.47)	Liver abscess multiple liver abscess with calcified intrabdominal lymph node seen.	Multiple necrotic lymph nodes, abscess forming fistula to abdominal wall. *Incision and drainage of superficial abscess done, pus TB culture and sensitivity, and smear AFB negative	Negative	Peripheral haziness	CT Thorax show 'Tree in bud' appearance in posterior segment of right upper lobe with intrathoracic lymphadenopathy	
2	6	15	48	12/34	31/56 (0.55)	Multiple abscesses with enlarge lymph node	Multiple hypodense lesion in liver with lymphadenopathy.	Negative	Normal	-	
3	11	10	3	67/50	32/65 (0.49)	Multiple hypoechoic with central hyperechoic lesion with lymphadenopathy. Peritoneal lining thickening	Multiple hypodense lesion in liver with enlarge necrotic nodes. Omentum thickened.	Negative	Right lower lobe collapse consolidation	Collapse right medial lobe. Multiple intrathoracic lymph node enlargement with necrosis and calcification.	
4	8	0	68	20/34	34/47 (0.72)	Multiple target lesions seen.	Multiple lesions with calcifications in liver. Multiple calcified nodes at porta hepatis region and mesentery. No bowel wall thickening	Negative	Normal	-	CT brain: tuberculoma and Hydrocephalus
5	10	17	85	10/33	38/50 (0.76)	Hypoechoic lesion with central calcifications at right liver lobe.		Negative	Left upper lobe	Left upper lobe consolidation With lymphadenopathy.	

(CT = Computed tomography; ESR = Erythrocyte sedimentation rate; AST = Aspartate Transaminase; ALT = Alanine Transaminase; ALB = Albumin; GLO = Globulin; A/G ratio = Albumin / globulin ratio

Table 2. Summary of treatment, complication and outcome

Patient	Intensive Phase	Maintenance phase	Drug- induced hepatitis	Outcome
1	EHRZ x2/12	Still in intensive phase	nil	Alive responded
2	EHRZ x2/12	HR (currently 1st month)	nil	Alive Responded
3	HEF x8/12	HE (currently 4th month)	R, Z induced hepatitis	Alive Responded
4	EHRZ x2/12	HRx10/12	nil	Alive Responded Completed 12 months treatment
5	HER x2/12	HR x7/12	Z induced hepatitis	Alive Responded Completed 9 months treatment

*E=ethambutol, H=isoniazid, R=rifampicin, Z=pyrazinamide, F=Fluoroquinolone – ofloxacin [2]

Discussions

Hepatic TB may occurred as part of disseminated TB in children and ultrasound or CT scan should be done to confirm the diagnosis when needed. Anti TB treatment remained the mainstay of treatment.

Conclusions

1. Hepatic TB in children commonly present as part of disseminated TB with abdominal pain and hepatomegaly.

2. Liver enzyme may not be raised in hepatic TB at presentation but need to be monitored closely for possibility of drug induced hepatitis once anti TB treatment is commenced.

3. All children responded well to medical therapy i.e anti TB treatment without any surgical intervention.

References

[1] Chien RN, Lin PY, Liaw YF. Hepatic tuberculosis: comparison of military and local form. Infection. 1995;23:9-12.

[2] Spiegel C.T., Tuczon C.U. Tuberculosis liver abscess. Tubercle; 1984, 65,127.

[3] Sahn SA, Neff TA. Miliary tuberculosis. Am J Med. 1974;54:495-505.

[4] Clinical Practice Guidelines Malaysia: Management of Tuberculosis, 3rd Edition, 2012.

[5] Essop AR, Posen JA, Hodkinson JH, Segal I. Tuberculosis hepatitis: a clinical review of 96 cases. QJM. 1984;53:465-77.