Case Report

TUBERCULOSIS WITH REVERSIBLE MYELOFIBROSIS IN A PEDIATRIC PATIENT: A CASE REPORT

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Abstract

A 9 years old nonimmunised girl presented with fever, abdominal distension and rashes. On examination child was anemic, cachetic with bilateral cervical lymphadenopathy, Mantoux test was positive. The haemogram shows pancytopenia with dry tap in bone marrow aspiration. The trephine biopsy showed myelofibrosis.

Keywords

Tuberculosis, paediatric myelofibrosis.

Intoduction

Idiopathic (primary) myelofibrosis (IMF), also known as agnogenic myeloid metaplasia (AMM), is a chronic myeloproliferative disorder most commonly seen in adults more than 65 years of age. Two types of myelofibrosis are identified i.e. idiopathic or primary and secondary myelofibrosis .

It is extremely rare in children with fewer than 100 reported cases. Approximately half of published cases of pediatric MF occurred in children younger than 3 years. These myelofibrosis were associated with Down syndrome, rickets, or a familial form of MF. Among older children, acute myeloid leukaemia, systemic lupus erythematosus, and tuberculosis are the most common associations (1).

Clinical features include anemia, low WBC count, extramedullary hematopoiesis, and variable hepatosplenomegaly. The smears show teardrop poikilocytes, hypocellular bone marrow with excess reticulin and abnormal megakaryocytes, and the absence of bone marrow karyotypic abnormalities (2,3). Strikingly, the clinical course of IMF/AMM in children is mild with less tendency to progress to acute leukemia than in adults. In these pediatric patients, a more conservative approach may be appropriate (2,3). Granulomatous diseases like tuberculosis may cause replacement of bone marrow with fibrotic material and scar tissue

Case Report

A 9 years old girl presented with history of fever, abdominal distension followed by purpuric rashes for the last 2 months.

On examination the child was ill looking with fever, pallor, edema and bilateral cervical lymphadenopathy. Per

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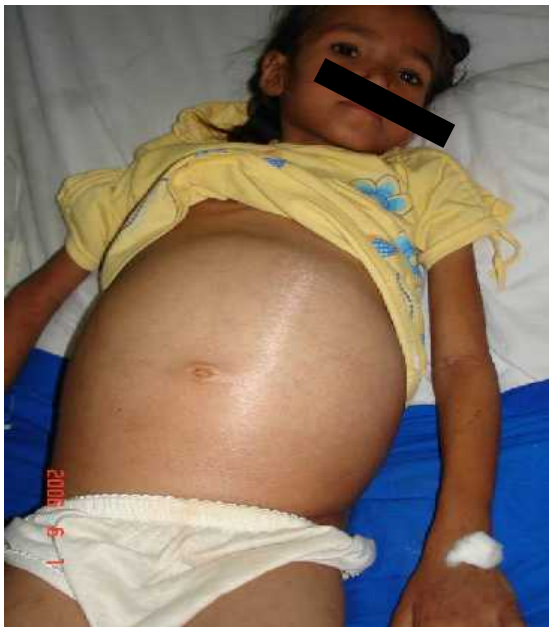
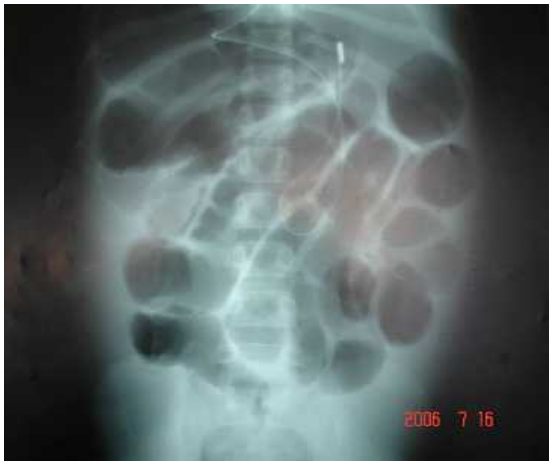
abdominal examination showed mild hepatosplenomegaly with ascitis. Other systemic examination was unremarkable. There was pancytopenia with a total WBC count 1,800/cmm Haemoglobin 4.9gm/dl ;and platelets of 14,000/cmm . The smear showed few tear drop cells ,leucopenia with relative neutrophilia . No blasts were seen. Ascitic fluid showed increased lymphocytes. Urine culture showed significant mixed infection of E. coli and Klebsiella pneumoniae.

The child was evaluated for tuberculosis with assessment for presence of Acid fast bacilli in sputum, gastric lavage , ascitic fluid and all were negative. BCG Acceleration test was done and showed an induration of more than 15mm. HIVspot test were negative.

Radiological investigation showed a normal X ray chest but fluid and air shadow were in X ray – Abdomen (KUB).





Bone marrow aspiration was dry tap. Bone marrow biopsy showed diffuse replacement of bone marrow by fibrosis. Streaming of hematopoeitic cells were seen in between fibrous tissue. Histiocytes and epithelioid granuloma were not seen. Reticulin and masson trichome stain were done, and showed diffuse coarse fiber network with collagen fibers (grade 4). Bony trabeculae (thickness and morphology) were normal.

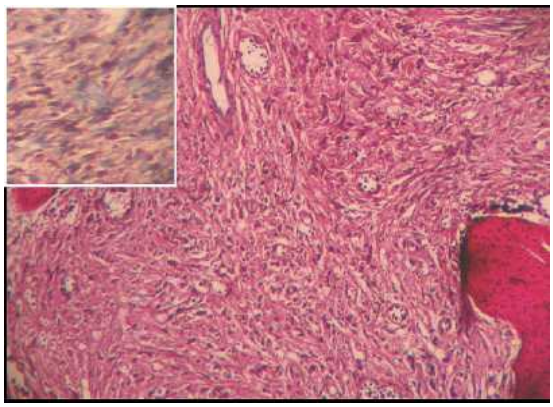


Figure 3: *Trephine Biopsy (Bone Marrow): Marrow fibrosis with decreased haemopoeitic cells , increased fibrosis with collagen bands. [H& E section, Mason trichome stain (inset) 10 X]*

Clinical scoring for the diagnosis of tuberculosis was done as per the scoring system given by .(4)

Clinical score for tuberculosis

1) Duration of illness > 4 weeks	3
2) % of weight loss- 68%	3
3) Family history	0
4) Mantoux test	0
(Bcg diagnostic test	+
5) Presence of malnutrition	3
6) Unexplained fever, night sweat	0
7) Local Ascitis	3
Total	**12**

The patient was put on AntiTuberculous Therapy started with isoniazid (75mg), Rifampicin (150mg), pyrazinamide (400 mg), Ethambutol (400 mg) and steroid.

The patient was followed up after 15 days of starting Anti tuberculous therapy. There was improvement in the clinical condition of the patient. The haemoglobin was 9 gm/dl, WBC-2500/cmm and platelet was 80,000/cmm.

Discussion

Tuberculosis and myelofibrosis are reported in conjunction with each other often enough to raise the possibility that a relationship exists between the two entities. An association between myelofibrosis and tuberculosis was first postulated to exists more than 70 years ago (5). However, whether tuberculosis stimulates a secondary fibrotic reaction or develops in patients who have preexisting myeloproliferative disorders is not clear (5). The proposed pathophysiologic mechanisms of myelofibrosis include abnormal signaling for transforming growth factor (TGF- β), platelet derived growth factor (PDGF) and fibroblast growth factor (FGF) which are produced by platelets. There may be an association between myelofibrosis and autoimmune disorders in which fibrosis occurs secondary to damage by nonhaematopoetic cells or certain molecules (6). Several reports have focused on tubercular infections in patients with preexisting chronic myeloproliferative disorders associated with myelofibrosis, such as myeloid metaplasia [6]. Large autopsy studies have indicated that the frequency of tuberculosis is 2–2.5-fold higher worldwide among patients with myelofibrosis or chronic myelogenous leukemia than in the general population (8,9).

In our case, Acid Fast bacilli was not seen in sputum , gastric lavage and bone marrow examination. However the diagnosis of tuberculosis was done using the criteria stated by Crofton , Horne and Miller . (4) The bone marrow biopsy showed myelofibrosis but no granuloma was

observed. The patient was put on Anti tuberculous therapy with diagnosis of probabletuberculosis. There was an improvement in the physical condition and hematologic parameters. On review of literatures, this type of causal relationship was observed by many others (5,9).

World Health Organisation reported 2.4 million cases in 2001, with a presumption of 8.3 million new tuberculosis cases causing 1.8 million deaths because of underreporting (4). In developing countries like Nepal, tuberculosis is common and should be considered as one of the cause for myelofibrosis and should be ruled out. Our observation strongly suggests an association between tuberculosis and myelofibrosis.

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