

## CASE REPORTS

### PARADOXICAL UPGRADATION REACTION (PUR) IN DISSEMINATED TUBERCULOSIS IN TAKAYASU ARTERITIS

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#### Abstract

Paradoxical tuberculous reaction is defined as documented worsening of pre-existing tuberculous lesions or the development of new lesions during appropriate anti-tuberculous treatment (ATT) after an initial response to treatment and that is temporally related to recovery of the immune system. We treated a case of such a paradoxical reaction in an 11 years old girl who was diagnosed a case of Takayasu Arteritis with renal TB and was being treated with ATT. On follow up after 6 weeks, she developed multiple intracranial tuberculomas and hydrocephalus. She improved after additional treatment with corticosteroids.

**Keywords:** Takayasu arteritis, disseminated tuberculosis, tuberculomas, antitubercular drugs

#### Introduction

Tuberculosis (TB) persists to be an important public health problem in our country. India has the highest burden of TB in the world, an estimated 2 million cases annually, accounting for approximately one fifth of the global incidence. (1) Renal TB is quite rare during childhood. (2) Genitourinary TB is because of late reactivation or complication of pulmonary tuberculosis, which is more prevalent in young adults and middle aged. Renal TB occurs concomitantly with the active pulmonary tuberculosis in 40% of cases and with silent TB in 60%. (3) Paradoxical reaction (PR) in TB is defined by a clinical or radiological worsening of pre-existing tuberculous lesions or the development of new lesions, in patients receiving anti-tuberculous medication who initially improved on treatment. (4) This syndrome has been recognized for some time and, although it is often self-limiting, its potential to cause serious morbidity and, on occasion, death, is increasingly being recognized. Paradoxical reaction occurs in 8% of immunocompetent patients with tuberculosis. (5) In children, 10.3% develop paradoxical reaction. (6) It occurs mostly in children with miliary tuberculosis and tubercular meningitis and very few case reports are available with renal tuberculosis. Lymphadenitis is the most common extrapulmonary manifestation of tuberculosis among immunocompetent patient followed by lung. (7)

#### Case Report

An 11 year old girl presented to emergency department with fever, left flank pain, dysuria and urinary retention. She was diagnosed to have Takayasu Arteritis 4 years ago for which she was receiving digoxin, aspirin, diuretic and steroids. There was no history of contact with a patient having TB. On this admission, she was febrile, had tachycardia (heart rate = 110/min) with oxygen saturation of 94% in room air. She was emaciated with weight 20kg and height 120cm (growth <5th percentile) and had no BCG scar. There was tenderness in left lumbar region. She was catheterized and her investigations revealed hemoglobin 5.9 gm%,

ESR of 40mm at end of 1 hour, blood urea nitrogen (BUN) 24 mg/dl and serum creatinine 1.21 mg%. Urine examination showed pus cell 40/hpf, RBC-10/HPF and urine culture was sterile. Chest X-ray was suggestive of miliary pattern. Ultrasound (USG) abdomen showed left sided pyonephrosis, right sided mild hydronephrosis and cystitis. CT intravenous pyelography (IVP) was done which showed poorly enhancing left kidney with significant narrowing of the left renal pelvis and calyces and gross pyonephrosis on left side with poor or non functioning kidney. Para-aortic necrotic lymphadenopathy was seen. It also showed multifocal areas of right ureteric narrowing leading to mild right hydronephrosis. Echocardiography and colour doppler with flow velocity of all great arteries were normal. Morning urine sample and sputum were negative for acid fast bacilli (AFB) on smear. Urine PCR and culture for mycobacterium tuberculosis (MTB) was also negative. Tuberculin test and HIV serology were negative. She was started on ceftriaxone along with symptomatic and supportive treatment. USG guided percutaneous nephrostomy was done and 100 cc pus was drained. AFB staining and TB PCR was positive on pus. A diagnosis of disseminated tuberculosis was made and anti-tuberculous therapy (ATT) was started. Patient improved and was discharged after 2 weeks. After 6 weeks, she presented with headache, vomiting and photophobia. Examination of central nervous system revealed no abnormality. CECT scan of brain revealed multiple small nodular ring-enhancing lesions in posterior fossa and bilateral cerebral hemisphere with perilesional edema leading to non-communicating hydrocephalus with periventricular ooze. (Figure 1) These were suggestive of multiple brain tuberculomas. Injection dexamethasone, mannitol and acetazolamide were started and ATT. No surgical intervention was done. She was given oral prednisolone which was tapered over the next 6 weeks. Patient is now asymptomatic and gaining weight. Follow up USG abdomen after 2.5 months revealed complete resolution of pyonephrosis. CT brain was not done on follow up due to financial constraints.

#### Discussion

Genitourinary TB, a form of secondary TB accounts for less than 3% of all cases of TB during childhood. (6) Renal TB is a secondary tuberculous infection which is caused due to the hematogenous dissemination during primary infection or reactivation. The cortex of the kidney is an appropriate place for lodging of bacilli since the rate of oxygenation is high. Afterwards, the infection is transmitted from the cortex to the medulla and numerous tubercles form. At this point, cell-mediated immunity (CMI) will stop bacilli proliferation and fibrous tissue increases and then scar will form. But different causes such as stress, old age, immune deficiency will cause reactivation. In our patient, severe malnutrition was the predisposing factor for the disseminated TB. (8) A causal relationship between

Takayasu arteritis and TB has been suggested. Both diseases show similar pathological changes in the form of chronic inflammatory lesions and, occasionally, granulomas on the arterial walls. (9) In a case series from India, patients with Takayasu's arteritis were 46.6 times likely to have active tuberculosis compared with general population. (10) (Paradoxical reaction in TB may be evident with the development of intracranial tuberculomas, expansion of lymph nodes, appearance of worsening findings on chest radiography and other varied presentations.) (5) This paradoxical response in form of tuberculoma is rarely associated with renal TB (11,12) The use of corticosteroids in the adjunctive management of paradoxical reaction is common. Our patient had renal TB and on treatment with ATT, she developed tuberculoma as a result of paradoxical upgradation reaction which is a rare phenomenon that responded to steroids.

### Conclusion

Paradoxical upgradation reaction with renal tuberculosis in pediatric age group is extremely rare and requires treatment in form of continuation of ATT and addition of steroids.

**Funding: None**

**Conflict of Interest: None**

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**DOI No.** 10.7199/ped.oncall.2014.68

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