A case report on Actinomycosis of kidney in a child with recurrent abdominal pain

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ABSTRACT

Actinomycosis is a chronic bacterial disease presenting as swelling with suppuration, abscess formation and tissue fibrosis. Most commonly involved areas are oral and cervico-facial regions. whereas abdominal and CNS involvement is rare. Abdomino-pelvic manifestations are only 10-20% of all Actinomycosis with difficulty in diagnosis due to tumor like conditions. Limited number of cases are reported in pediatric age group worldwide and no case reported in Pakistan till now. We are reporting a 05 years old girl with repeated history of fever, abdominal pain and weight loss whose imaging studies are in favor of renal tumor so underwent nephrectomy however histopathological studies reveal Actinomycosis. The objective of reporting the case is to consider the Actinomycosis among the differentials of abdominal mass and percutaneous drainage. The culture studies should be considered for diagnostic purposes.

Keywords: Actinomycosis, Pediatrics, Renal involvement, Abdominal mass, Percutaneous drainage, Culture

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INTRODUCTION

Actinomycosis is uncommon disease in USA and there is an incidence of 0f 1 per 300000 persons internationally. Incidence is 1 per 100000. However no data on incidence is present in developing countries. Male to female ratio of 3:1 is also found in some countries[1]. Actinomyces species are non-motile gram-positive anaerobic bacteria that are filamentous in nature. Actinomycosis often forms granulomatous lesions that spread rapidly in surrounding tissues. Organism is commonly found in oropharynx, GI Tract and urogenital tract of humans rarely it affects the central nervous system[2]. Abdomino-pelvic manifestation forms 10% to 20% of all Actinomycosis, and may be misdiagnosed as either a malignancy or chronic inflammation due to the lower correct preoperative diagnostic rate (<10%)[3].

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In humans actinomyces is caused by Actinomyces Israeli which is more common in men than women between 20-50 years of age. Surgical treatment remains the mainstay of treatment, antibiotic therapy for 3 months after surgical resection results in complete remission in 95% cases. In only 10 percent exact diagnosis is made preoperatively[4]. We are presenting a 5-year-old girl who present with recurrent history of abdominal pain and has palpable mass in abdomen. The child undergoes nephrectomy followed by histopathology of specimen which shows Actinomycosis. It can affect all age groups but infection is rare in pediatric age group. Limited studies and data are available on renal Actinomycosis first case was reported in Tehran in 2017 in 8 years old boy who present with repeated history of flank pain with no urinary complaints. Blood studies shows raised white cell count however radiological studies reveals heterogeneous mass having cystic component with involvement of perinephric fat. Child underwent nephrectomy and Actinomycosis is diagnosed histologically[5].

We are reporting the first case of pediatric renal Actinomycosis in Pakistan. Our objective of reporting the case is to consider the Actinomycosis among the differentials of abdominal mass and percutaneous drainage and culture studies should be considered for diagnostic purposes as CT and MRI are not helpful in diagnosis

CASE REPORT

A 5 year old girl from village near Rawalpindi admitted in pediatric ward throughout patient department with history of fever, abdominal pain with distension and weight loss with no history of dysuria or other urinary complaints. She was born at 38 weeks of gestation by normal delivery and achieve all developmental milestones in time. There is no significant past

and family history of any chronic disease, however there is history of repeated visits to hospital outpatient department for abdominal pain. Physical examination at time of admission revealed fever 100 F tachycardia 102/min and non-tender mass palpable in left lumbar region not crossing midline. Urinalysis was found to be normal however complete blood count reveals neutrophilic leukocytosis (WBC: 17.6, Neutrophils: 73 and lymphocytes: 24) with marked hypochromic microcytic blood picture (Hb 3.3 gm/ dl, MCV 64.6 fl, MCH 18.9 Pg). ESR was 90mm/hr. Initial ultrasound abdomen raised suspicion of left renal mass as well as distorted renal parenchyma with no evidence of obstructive pathology rendering further imaging. She underwent MRI renal scan with contrast, which showed a left nephromegaly with heterogeneously enhancing MR signal areas likely favoring Nephroblastoma and few abdominal lymph nodes as well. Initially she was managed in ward and Intra Venous antibiotics and 5 transfusion of red cell concentrate were given to raise hemoglobin. Final management plan was discussed with family and she underwent left sided nephrectomy. No involvement of surrounding viscera was found during surgery. She was transferred postoperatively to Surgical Intensive Care Unit for 24 hours and discharged later with uneventful course. Her postoperative ultrasound was unremarkable apart from reactionary minimal peritoneal fluid. She was discharged in stable state with Hb of 11 g/dl and syrup amoxicillin advised for 3 months.

Later Histopathology confirmed diagnosis of renal Actinomycosis ruling out neoplastic possibility. Histopathology section showed viable and necrotic areas, in the center of these pus filled pockets, there are Gram's positive Actinomycosis like organisms (Figure-1).

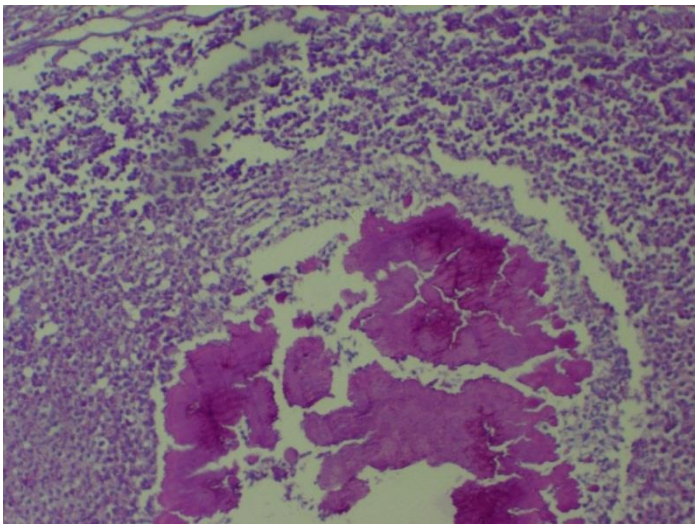

Figure-1: Histopathology section of kidney suggestive of actinomycosis

DISCUSSION

In humans Actinomycosis is caused by Actinomyces Israelii species[5]. It is a usual bacterial infection which usually affects cervical, orofacial and abdominal area, renal actinomyces is rare. In kidneys it also causes "Xantho-granulomatous pyelonephritis"[4]. The infection rate is higher in males due to trauma and poor dental hygiene and it affects all age groups. Children's susceptible to infection are those with trauma, dental caries debilitation and poorly controlled diabetes. Infection is also associated with steroids use, leukemia, congenital immunodeficiency diseases and HIV infection[1].

Renal Actinomycosis is difficult to diagnose due to its nonspecific clinical picture and resemblance to other tumor like conditions. Early diagnosis is important for urgent medical treatment and prevents unnecessary surgery[4]. In children Actinomycosis usually presents post-surgical interventions[1], however in our case child has no history of any surgical procedure. Child is failure to thrive but there is no significant history of steroid intake or HIV. Pediatric infection present with weight loss fever and palpable mass on abdominal examination[1]. Diagnosis depends on the clinical picture and the presence of sulfur granules either macroscopically or microscopically. No serologic test or skin test for Actinomycosis is available. PCR has also been used in some centers for diagnosis. CT and MRI are frequently used to see the involvement of surrounding tissues and is not the investigation of choice as MRI usually reveals it to be tumor percutaneous and CT guided biopsy has also been used to get material from site for histopathological examination.[2] Evolution of diagnostic tools 16SrRNA sequence analysis and matrix assisted laser desorption/ionization (MALDI) time of flight (TOF) mass spectrometry has improved the accuracy of detection of actinomyces from involved tissue[1].

In our case we proceeded for MRI followed by nephrectomy as MRI shows highly suspicion of Wilm's tumor due to which nephrectomy was planned to remove the entire kidney containing tumor mass. The specimen send for histopathology shows viable and necrotic areas, in the center of these pus filled pockets there are Gram's positive Actinomycosis like organisms.

CONCLUSION

Actinomycosis is a rare cause of Xantho-granulomatous pyelonephritis and should be considered in children's presenting with abdominal mass.

Recommendations: Diagnostics such as MRI and CT scan are helpful in diagnosis of tumor like conditions but are unable to diagnose Actinomycosis. Tissue histopathology and culture studies for percutaneous drainage should be done before proceeding for any surgical intervention.

AUTHOR'S CONTRIBUTION

Salman M: Manuscript writing, Literature search.
Akram M: Manuscript writing, Literature review
Jawad M: Review and final proofreading of manuscript.

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