predominantly as tuberculous meningitis,[1-5] followed by tuberculomas, other forms of CNS tuberculosis include cerebral abscess, cerebral miliary tuberculosis, tuberculous encephalopathy, tuberculous encephalitis and tuberculous arteritis. Tuberculous abscess of the brain are very uncommon and that too cerebral abscess is very rare. Reddy GN & Prusiy[5] reviewed 206 cases of intracranial tuberculomas operated at the National Institute of Mental Health Neurosciences, Bangalore between 1959–1980. All these cases were analysed retrospectively. Four different types of presentations observed included tuberculoma with grape like multiple arachnoid cysts, tuberculous abscesses of cerebellum with concomitant tuberculous meningitis, tuberculoma presenting to a psychiatrist and chronic tuberculoma of more than five years duration.

Gazzaz et al.[6] reported tubercular cerebral abscess in the year 2000, which responded with surgical and antitubercular treatment. Recently, Ramesh VG & Sundar KS[3] reported a case of concomitant tuberculosis and pyogenic cerebellar abscess in patients with pulmonary tuberculosis, who responded to suboccipital craniotomy, antitubercular treatment and antibiotics. The patient came with similar complaints i.e. neck pain, unsteadiness of gait as observed in this case.

Though tuberculosis in CNS occurs due to hematogenous spread of Mycobacteria from elsewhere; TBM may occur via lymphatic spread from cervical lymph nodes. Tubercle bacilli are immobilized in end-arteries, which leads to formation of submeningeal tubercular foci, which may further lead to various presentations of tuberculosis⁴. In tuberculoma, bacilli get lodged in brain with rich blood supply. Once tuberculoma is formed, it evokes secondary reaction, leading to capsule formation. The surrounding brain edema and gliosis may resemble low-grade astrocytoma. In rare cases, there may be central caseation, liquefaction and formation of an abscess. This phenomenon is very rare, tuberculous abscess commonly occurs in patients with abnormal cell mediated immunity and are mostly focal.[5,6] These lesions are usually secondary to lung disease, as observed in the present case and at the junction of gray and white matter. Histologically and clinically these abscesses are similar to pyogenic abscesses. Tuberculous abscess is devoid of granulomatous reaction associated with tuberculosis. The criteria for diagnosis include pus within brain, bacteriological proof or histological confirmation of the abscess. All these criteria were met during diagnosis of cerebellar abscess in the present case report. The presentation is reported mostly in 3rd or 4th decade. There may be supratentorial abscess and rarely in cerebellum as observed in the present case.[1-5] As bacteriological diagnosis is the best proof of CNS tuberculosis, any cerebral manifestation in a known case of pulmonary tuberculosis should be investigated properly for early diagnosis and treatment.

References

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SALMONELLA ENTERICA SEROTYPE DUBLIN BACTERAEMIA MIMICKING ENTERIC FEVER

Salmonella enterica serotype Dublin, a bovine adapted serotype, is the commonest cause of salmonellosis in cattle. Salmonellosis in animals always presents a potential zoonotic threat. Infected cattles serves as a source of infection to humans. We present here Salmonella Dublin Bacteraemia in an elderly patient, with all the clinical details, due to the rarity of its occurrence. He was treated successfully with ciprofloxacin and his follow up period was uneventful.

Key words: Bacteraemia, S. Dublin

Introduction
Salmonella are effective commensals and pathogens
that cause a spectrum of disease in humans and animals including reptiles, birds and insects. Non typhoidal salmonellae are primary pathogens of lower animals. Infected animals are often asymptomatic. Salmonellae can be isolated from the intestinal tracts of humans and lower animals. They are the significant source of non typhoidal salmonellosis in humans. Some salmonella serotypes such as Dublin (cattle) and Arizona (reptiles) are normally adapted to an animal species and only occasionally infect humans.[1]

Among non typhoidal Salmonellae, S.Dublin and S.Cholerasuis have a greater propensity to rapidly invade the blood stream with little or no intestinal involvement.[2] We report here a case of Salmonella Dublin Bacteraemia mimicking enteric fever

**Case Report**

A 73 year old man with a history of fever with chills and watery stools since three months was admitted in the medicine ward of a tertiary care hospital, Mangalore. There was no history of diabetes and hypertension. He was a non alcoholic and non smoker. On examination, he had high fever of 103°F and his blood pressure read 120/80 mm of Hg. His respiratory system, cardiovascular system and central nervous system were normal. Per abdomen examination showed soft, non tender hepatosplenomegaly. Laboratory investigations revealed Haemoglobin 11.3 gm/dl, total leucocyte count 19,000/cumm with neutrophils-77%, leukocytes-20% and eosinophils-03% and ESR-103mm at the end of 1st hour, blood urea 34 mg/ dl, serum creatinine 1.2 mg/dl. The other biochemical parameters including liver function tests were within normal limits. Sputum was negative for acid fast bacilli. Blood sample tested for HIV, HBsAg and malarial parasites were found negative. Ultrasonography of abdomen showed chronic parenchymal liver disease with splenomegaly.

X-ray of the chest and Echocardiogram were normal. Widal test was positive only for Salmonella typhi ‘O’ antibodies with a titre of 1:360.

**Bacteriological Examination**

Blood collected on the day of admission and sent for culture yielded a pure growth of non lactose fermenting colonies on MacConkey’s medium, which were motile, gram negative bacilli exhibiting the following biochemical reactions - glucose, mannitol, Dulcitol were fermented with acid and gas,lactose and sucrose were not fermented. It produced H₂S. Urease was not hydrolysed and indole was not produced. This isolate agglutinated only with the salmonella poly O (A-G) antisera (Remel Europe limited) by slide agglutination. The bacteria was sensitive to ampicillin, gentamicin, amikacin, ciprofloxacin, Ofloxacin, chloramphenicol, cotrimoxazole, nalidixicacid, cefotaxime, ceftriaxone. This serotype was identified as non typhoidal salmonella. It was confirmed as Salmonella enterica serotype Dublin (9,12; g:p) by the National centre for Salmonella and Escherichia coli, Central Research Institute, Kasauli (H.P). Stool and urine culture for Salmonella were negative.

The patient was started on I.V ciprofloxacin infusion 500 mg bd on the day of admission. Based on the antibiogram, the same treatment was continued for 10 days. The patient recovered from the illness and was discharged on the 10th day of admission when his general condition improved. His follow up period was uneventful.

**Discussion**

The recent years have witnessed an increased rate of infection with non typhoidal Salmonellosis due to change in food consumption and the rapid growth of international trade in food products. *Salmonella enterica serotype Dublin* is mainly a veterinary pathogen and rarely causes human illness. Though reports on the prevalence of this serotype of Salmonella isolated in different countries are available,[3-7] such information from India appears to be lacking. Our limited review of literature showed only one reported case of S. Dublin meningitis from India, in a child in the year 1977.[9] In a recent study conducted in Mumbai, *Salmonella Dublin* was isolated from sprouted Moong[9] which is an alarming finding as human and animal faeces may contaminate the surface of the fruits and vegetables and may not be removed by washing. It is reported that seeds soaked in 20,000 ppm calcium hypochlorite can reduce the risk of sprout associated illness to a certain extent.[10]

*Salmonella Dublin*, a bovine adapted serotype, is considered to be the most common cause of Salmonella infection in cattle. Infected cattle serves as the source of infection and transmission usually occurs from eating beef, cheese and drinking raw milk.[5-7] Raw or inadequately pasteurised milk is increasingly recognized as a potential vehicle of Salmonella infection especially *S.Dublin*. Our patient must have contracted the disease from cattle or by consuming cow’s milk and its products since he is a farmer by occupation.

Normally, non typhoidal Salmonella infection does not extend beyond the lamina propria and the local lymphatics. *S.Dublin* and *S.Cholerasuis* rapidly invade the bloodstream with little or no intestinal involvement. Specific virulence genes are related to the ability to cause bacteraemia.[2] Salmonella Dublin is known to cause high incidence of invasive disease with extra intestinal involvement as implied in the literature.[2-5] In our case, the patient had bacteraemia mimicking enteric fever and the isolation was possible only from blood sample.

Salmonella Dublin has a predilection to persons with
old age and underlying debilitating disorders.[1,2,5] In most of the reported cases, infection is seen in extremes of age[6,5,8].
In this report also the infected person was 73 years old. This bacterium is reported to exhibit low levels of single antimicrobial resistance.[4] Our isolate was sensitive to all the microbial agents routinely employed for treatment.

Cattle rearing is one of the major occupations in rural India. The transmission of S.Dublin infection is through raw milk and its products, a well known fact. Hence stringent steps should be taken to prevent the transmission of infection to humans by controlling the infection in animal reservoirs, prevention of contamination of foodstuffs and use of appropriate standards in food processing. Microbiologists should make an attempt to identify all the Salmonella isolates to serotype level. There is an urgent need for a regular monitoring system before the emerging zoonotic pathogen becomes a potential public health hazard.

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PRIMARY CUTANEOUS ASPERGILLOSOIS DUE TO ASPERGILLUS NIGER IN AN IMMUNOCOMPETENT PATIENT

Primary cutaneous aspergillosis is a rare entity, usually caused by A. fumigatus and A. flavus. Here, we present such a case, manifested by ulceration due to A. niger, which remained undiagnosed for a prolonged period. The immunological status was intact, although the patient had associated severe fungal infection. Recurrence of the lesion occurred despite repeated anti-fungal therapies. Anti fungal testing was done based on the broth dilution (M-38A, NCCLS, USA) method. The culture isolate was found to be sensitive to fluconazole and amphotericin B. Continuation of antifungal therapy improved the symptoms, reducing the size of the lesion.

Key words: Aspergillus niger, immunocompetent host, primary cutaneous aspergillosis

Introduction

Aspergillosis is an uncommon opportunistic fungal infection caused by a variety of species of which Aspergillus fumigatus, Aspergillus flavus and Aspergillus niger are the common ones.[1] It usually occurs as a complication of severe debilitating illnesses and is seen in patients suffering from malignancies, tuberculosis, silicosis and diabetes. It also occurs in patients who are receiving long-term corticosteroids, antibiotics or cytotoxic drugs and are in immunocompromised states with neutropenia. Cutaneous aspergillosis is a rare form of a locally invasive disease. It may be primary, involving the sites of skin injury following intravenous cannulation, trauma, occlusive dressing, burns or surgery. Secondary cutaneous lesions may result from widespread haematogenous seeding of the skin. In immunocompromised patients, primary cutaneous aspergillosis is most commonly caused by A. flavus and A. fumigatus.[2,3] However, this cutaneous lesion is rarely associated with Aspergillus niger. Here, we describe such an association in an immunocompetent host, and literature in this regard has been reviewed.