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MELIOIDOSIS AND TUBERCULOSIS CO-INFECTION IN A NEWLY DIAGNOSED DIABETIC PATIENT WITH NECK ABSCESSES.

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ABSTRACT

The occurrence of melioidosis and tuberculosis co-infection is uncommon and rarely reported. We report a case of 39-year-old woman who presented with bilateral neck absceses resulting from co-infection with *Burkholderia pseudomallei* and *Mycobacterium tuberculosis*. The patient was successfully treated after drainage of neck abscesses with extensive phase of antibiotic for melioidosis and with anti-tubercular treatment. It is important to consider co-infection especially in endemic areas for both the diseases.

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The occurrence of melioidosis and tuberculosis co-infection is uncommon and rarely reported. We report a case of 39-year-old woman who presented with bilateral neck absceses resulting from co-infection with *Burkholderia pseudomallei* and *Mycobacterium tuberculosis*. The patient was successfully treated after drainage of neck abscesses with extensive phase of antibiotic for melioidosis and with anti-tubercular treatment. It is important to consider co-infection especially in endemic areas for both the diseases.

Keywords: Abscess, Co-infection, Diabetes Mellitus, Melioidosis, Tuberculosis.

INTRODUCTION

Melioidosis and tuberculosis (TB) are both common and endemic in South-East Asia. Globally, an estimated 40% of all cases of melioidosis occur in East Asia Pacific region and South-East Asia region of WHO accounts for 41% of cases of tuberculosis. [1,2] Melioidosis is a major health burden in South-East Asia, including Brunei Darussalam and its epidemiology has been a subject of a recent review.[3] While melioidosis commonly presents as pneumonia, septic shock and soft-tissue abscess, head and neck infection has also been reported.[4-8] Cervical lymphadenopathy and neck abscesses are common in tuberculosis accounting for 10% of tuberculosis cases.[9] Therefore, in endemic areas for both diseases, like South-East Asia, co-infection often pose a diagnostic challenge. Here we describe such a case in a 39-year-old woman who presented with 1 month history of enlarging neck lumps for which cultures grew *Burkholderia (B.) pseudomallei* and fine needle aspiration cytology (FNAC) of the left sided lymphnodes stained positive for acid fast bacilli (AFB) indicating co-infection of both meliodosis and TB. Both infections were picked up earlier and treated successfully with good outcome.

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CASE REPORT

A 39-year old female clerk at agriculture department previously not known to be a diabetic was referred to OtoRhinoLaryngology department with diagnosis of multiple neck lymph node abscesses for further management on the 23 May 2016. Her symptoms started 1-month prior when she presented to Accident and Emergency Department with 3-days history of sore throat, fever and neck pain. She was noted to have acute tonsillitis

with right cervical lymphadenitis, for which she was prescribed Co-amoxiclav along with symptomatic medication for 5-days. After 4-weeks she presented again to primary health center with complaint of persistent right neck swelling for 1-month which was increasing in size since the last 3 days together with fever and productive cough.

On clinical examination she was not toxic. There was a large 7x7 cm mobile right cervical fluctuant mass which was not tender on palpation with enlarged cervical lymph nodes on both sides of her neck. Upper airway endoscopic evaluation showed normal nasal cavity, nasopharynx, hypopharynx, and larynx. She was admitted to hospital for further investigations. Blood investigaions showed mild neutrophillic leucocytosis, ESR of 90 mm/hr (normal range of 0-20mm/1st hr) and blood sugar of 18 mmol/L (normal range of 3.5-6 mmol/L). Chest radiograph was reported as normal. Three consecutive morning sputum sample were negative for AFB. Blood cultures were negative for *B. pseudomallei*.

Ultrasound of the neck performed on the same day showed multiple mixed echogenic nodules suggestive of nodes with cystic changes on both sides of the neck. Two mililitres of pus was aspirated from the right sided neck abscess and FNAC of the lymph nodes on both sides were also taken.

CT scan of the neck performed on 25 May 2016 showed a 6.5 cm septated collection in the right submandibular space extending inferiorly down to the level of thyroid gland and compressing the right internal jugular vein. There was also an identical 2.5 cm abnormality in the left submandibular space (Figures 1a &1b). CT-TAP showed no intrathoracic or intra-abdominal or deep seated abscesses.

She underwent incision and drainage of both the neck abscesses under general anaesthesia that same afternoon. About 20 ml of pus was drained. Closure was done over corrugated drains. Her post-operative recovery was uneventful.

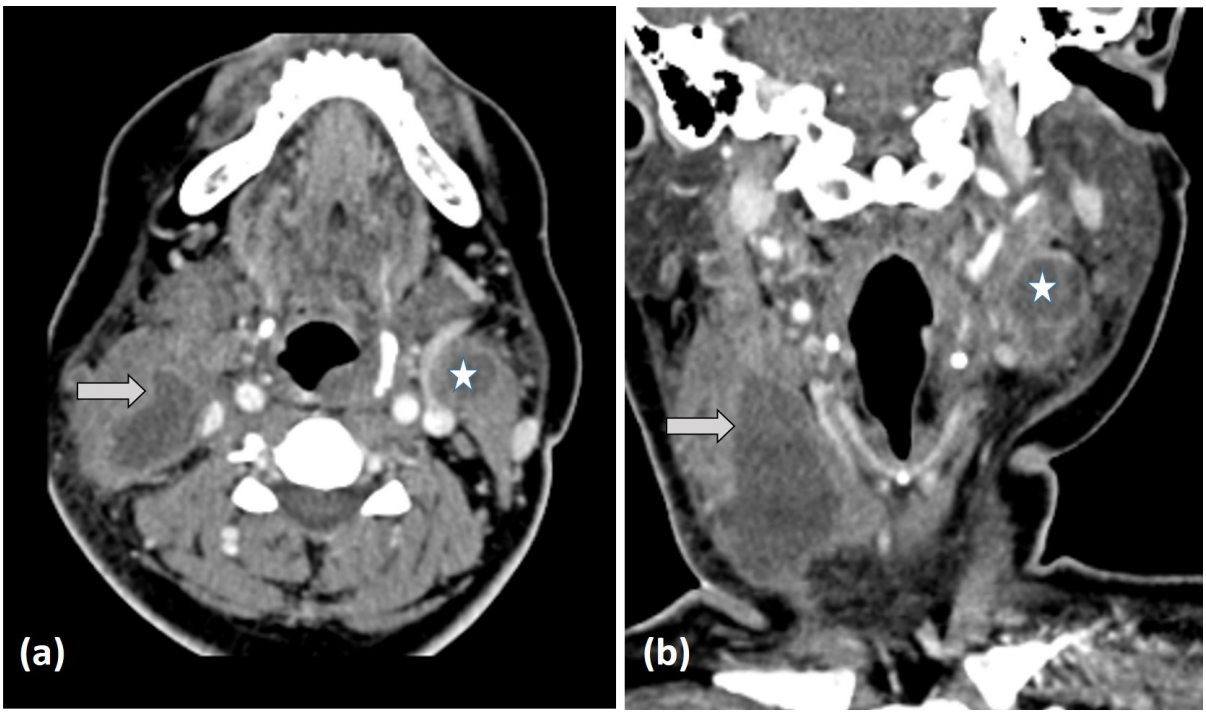

Figure 1: Axial (a) and Coronal (b) section of CT scan of the neck showing larger right sided abscess (straight arrow) and smaller left sided abscess (white star).

Results for both pus aspirated and FNAC during ultrasound became available on the 26 May, which confirmed positive for growth of *B. pseudomallei* on cultures. FNAC was reported as necrotic tissue with acute inflammatory cells and histiocytes along with lymphocytes. Ziehl-Nelson staining of the specimen was positive for AFB on the left side. Samples sent for histopathology during surgery also confirmed the presence of *B. pseudomallei.*

Subsequent She was referred to the Infectious Diseases Specialist for management of melioidosis for which she was started on intravenous Ceftazidime 1-g 8-hourly. She was reviewed by the endocrinologist for her newly diagnosed diabetes mellitus and was started on Humulin R 8 units 3 times a day with Humulin N 12 units at night.

She completed 4-weeks intensive treatment of intravenous Ceftazidime, followed by maintenance therapy with oral Co-trimoxazole for 12 weeks. This was later changed to second-line regimen with doxycycline and co-amoxiclav due to side effects including deranged liver function test and leukopenia. She was also started concurrently with six months of rifampicin, isoniazid, pyrazinamide, ethambutol and pyridoxine for her tuberculosis. This was further extended with another 2 months of rifampicin, isoniazid and pyridoxine upon recommendation from the National Tuberculosis Centre. For her diabetes, at discharge, she was converted to Insulin mixtard 20/18 with stat dose of Humulin R 10 units at lunch. She completed both her meliodosis and TB treatments and at 1 year follow-up, she was well with no further recurrence of her neck abscesses and her blood sugar were well controlled.

DISCUSSION

The global burden of melioidosis has been a subject of a recent special issue with review of this condition from various countries of South-East Asia including Brunei Darussalam.[3,10] In Brunei Darussalam, the most common risk factors identified were diabetes mellitus and chronic renal disease and the most common clinical presentations were acute pneumonia and septic shock. Over the study period of 2 years, only 4 of the 114 patients presented with neck abscess.[3]

There are common features in the epidemiology, patho-physiology and therapy of melioidosis and tuberculosis. The risk factors common to both include diabetes and corticosteroid use. Both are intracellular pathogens and their ability to parasitise cells is responsible for their virulence and cases of latent infection. Melioidosis may cause granulomas with central necrosis similar to tuberculosis and in the chronic form, melioidosis like tuberculosis is resistant to commonly used antimicrobials.[11]

In a large series of neck abscess, various gram positive and gram negative organisms were isolated while only in 1 of the 89 cases, *Burkholderia cepacia* was isolated.[12,13] There are a few reports of neck abscess due to melioidosis.[4-8] In cases of tuberculosis of head and neck region, cervical lymph node is the most common site and most patients present with a lump or swelling.[9]

Co-infection with *B. pseudomallei* and *M. tuberculosis* has been reported in various sites including cervical abscess,[14,15] lungs[16,17] and liver.[18] All these cases had Diabetes mellitus as a major risk factor except the cases reported by Anthony *et al* and Azali *et al*.[7,18] The present case was also a newly diagnosed diabetic and Diabetes mellitus has been confirmed to be the most common risk factor in cases seen in Brunei Darussalam.[3] In the various reports from literature, different diagnoses were considered including neck abscess,[4,5,8] cold abscess,[7] malignancy [14] and neck abscess secondary to dental infection.[6] In the

case reported by Sulaiman *et al*, the patient had co-infection with *M. tuberculosis* and *Salmonella enterica* serovar Stanley.[15] The co-infection with tuberculosis was confirmed only after 3 months of initial presentation when the patient presented with recurrent neck abscess and had biopsy done. In the present case, due to sub-acute presentation a clinical suspicion of tuberculosis was initially considered.

In the cases reported by Sulaiman *et al* and Shenoy *et al*, the diagnosis of melioidosis was confirmed on pus culture while the diagnosis of tuberculosis was confirmed only on biopsy.[14,15] Similar to these cases, in the present case the sputum and aspirate from the neck abscess did not reveal AFB. The diagnosis of tuberculosis was made on positive AFB staining of the FNAC sample. This would suggest that in a suspected case, multiple sources of sample should be subjected to staining, histopathology and culture to avoid delay in diagnosis of co-infection. Early recognition of two serious infections in a previously unknown diabetic patient with early initiation of appropriate treatments led to a rapid recovery without any serious consequences in the present case.

All the reported cases in literature including the present case have been managed by course of antibiotics recommended according to international guidelines for meiloidosis and tuberculosis. However, surgical drainage of any abscesses is still recommended as an adjunct to antibiotic therapy.

CONCLUSION

In cases of patient presenting with neck abscess, a possibility of co-infection with *M. tuberculosis* and *B. pseudomallei* should be considered. This is to avoid delay in diagnosis and appropriate prompt treatment can be started, particularly in areas where both the diseases are known to be endemic.

Financial disclosure or conflict of interest

The authors of this manuscript certify that there are no conflict of interest nor any financial interest in the subject matter or materials discussed in this manuscript.

Consent

We have acquired consent from patient for all images used in publication purpose.

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