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Case Report

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A case of post-COVID *Aspergillus fumigatus* spondylodiscitis

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ABSTRACT

Spondylodiscitis caused by *Aspergillus fumigatus* is rare, particularly in immunocompetent individuals. This case highlights a unique instance of post-COVID Aspergillus spondylodiscitis, emphasizing the potential role of COVID-19-related immune dysregulation in predisposing patients to opportunistic fungal infections. A 75-year-old man with a history of hypertension, hypothyroidism, and severe COVID-19 (requiring ICU admission and steroid therapy) presented with chronic low back pain and acute bilateral lower limb weakness. Imaging revealed L1-L2 disc space narrowing, vertebral destruction, and epidural compression. Histopathological and microbiological analyses confirmed *Aspergillus fumigatus* infection. The patient underwent surgical decompression, debridement, and posterior stabilization, followed by intravenous voriconazole therapy, resulting in significant clinical improvement. This case underscores the importance of considering fungal etiologies in spondylodiscitis, especially in post-COVID patients with persistent symptoms. A multidisciplinary approach involving radiological, microbiological, and histopathological evaluation is critical for timely diagnosis and management. Combined surgical and antifungal therapy yielded favorable outcomes, aligning with existing literature recommendations**.** Further research is needed to explore the link between COVID-19 and opportunistic fungal infections.

Keywords: *Aspergillus fumigatus*, spondylodiscitis, Post-COVID complications, fungal infection, voriconazole

INTRODUCTION

Incidence of Spondylodiscitis are rare but due to an increasingly susceptible population and the availability of more effective diagnostic tools it is rising now.[1] Aspergillus is a saprophytic fungus that mainly seen in plants and soil.[2] Aspergillosis is an opportunistic infection that usually affects the respiratory tract and can be spread through blood contact. Spondylodiscitis is an inflammatory disease of vertebral bodies and intervertebral discs.[3]

Complex mechanisms including pre-existing diseases, such as diabetes mellitus, previous respiratory pathology, use of immunosuppressive therapy, the risk of hospital-acquired infections, and systemic immune alterations of COVID-19 infection itself are the leading causes of immune suppression in post-COVID period.[4] Diagnosis and management of spondylodiscitis are challenging, requiring a multidisciplinary team. This is a case report of a post-covid aspergillus fumigatus spondylodiscitis.

CASE REPORT

A 75-year-old elderly man from Malappuram district (Kerala, India) presented with low back ache for 4 months and weakness of both lower limb for 4 days. He was apparently normal till one month back. Then he started having low back pain. Pain was insidious in onset, dull aching and progressive over time. Pain was moderate in severity and not affecting activities of daily living. Pain aggravated with movements and relieved on taking rest. He also had reduced appetite and loss of body weight. No fever/ recent trauma/ fall and hemoptysis. He noticed weakness of both the lower limbs 4 days back when he woke up and he was not able to get out of the bed. He also had difficulty in passing urine. Initially treated nearby hospital and referred our hospital for further evaluation

past history: systemic hypertension and hypothyroidism for 5 years, category C COVID-19 infection with ICU admission (history of steroid administration) –5 months back. No history of tuberculosis/ diabetes/ HIV and other immune compromising diseases. He is nonsmoker and not alcoholic.

On examination well-built and well-nourished no pallor, afebrile, diffuse tenderness present thoraco-lumbar junction with paraspinal muscle spam and knuckle deformity. Bilateral SLRT negative, Neurological examination shows bilateral paraparesis with maximum power of 2/5, sensory deficit over L1 to S3 dermatome with bowel and bladder involvement. on blood investigation Hb – 13.1, TC – 8630, DC – N70.1/ L22.3/ E1.8/ M6.5, PLC–3.2, CRP-2.6, ALP-94, ESR-66, Calcium-9.6, phosphorus-4.4 (Figure 1 and 2).

On histopathological and microbiological examination with KOH mounting and culture in SDA found *Aspergillus fumigatus* fungi. NAT and AFB staining for tuberculosis was negative.

Treatment

Laminectomy+ debridement+ cage augmentation+ posterior stabilization with moss-Miami instrumentation was done and empirical antibiotics was started after confirmation of *Aspergillus fumigatus*. Inj. Voriconazole 6 mg/kg IV q12h (loading dose for 1 day) then 4 mg/kg IV q12h was given for 5 days than 200 mg tab twice daily with other supportive therapy.

Outcome and follow-up

Patient have improvement in neurological deficit and back pain and now on follow-up.

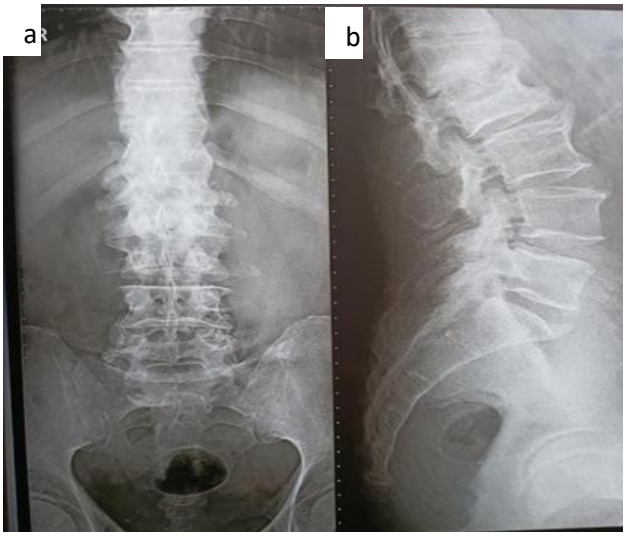

Figure 1 (a and b): In X-ray thoracolumbar spine AP and lateral view: L1-L2 disc space narrowing, destruction of lower endplate of L1 and upper endplate of L2 vertebrae also new bone formation.

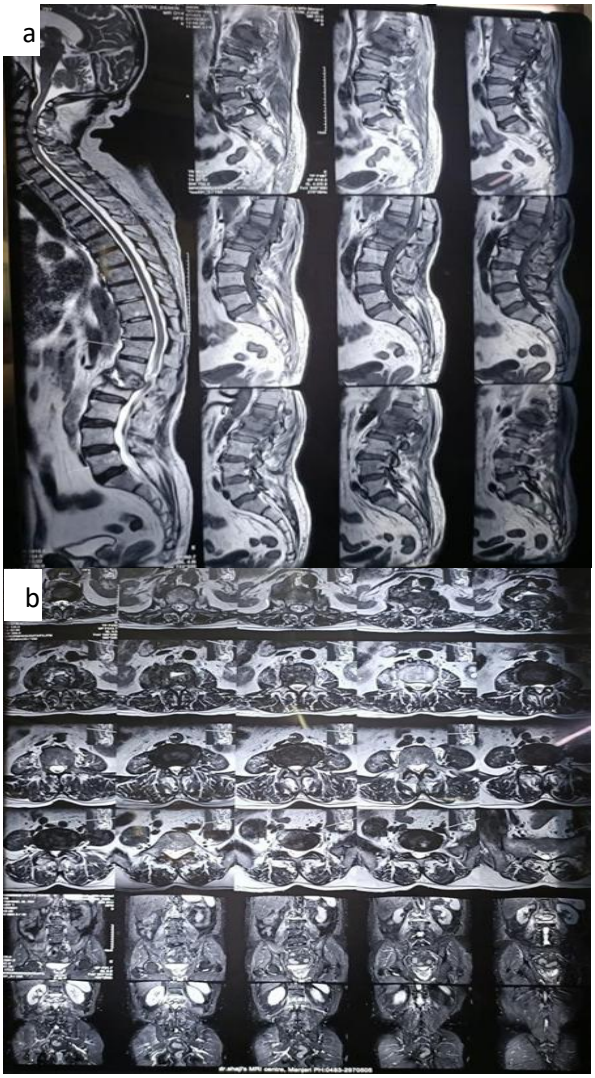

Figure 2 (a and b): MRI shows (T1&T2-sagital, T2-axial, stir-coronal) partial collapse and altered signal in L1 and L2 bodies, intervertebral collections seen. Epidural soft tissue causing compression of conus and adjacent cauda roots psoas edema at l1 and l2. Fluid collection at L1 -L2 disc space with variable intensity.

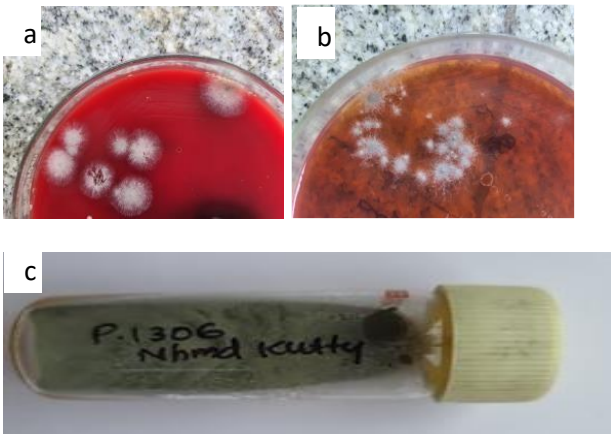

Figure 3 (a-c): Growth in blood, mcConkey, SDA medium.

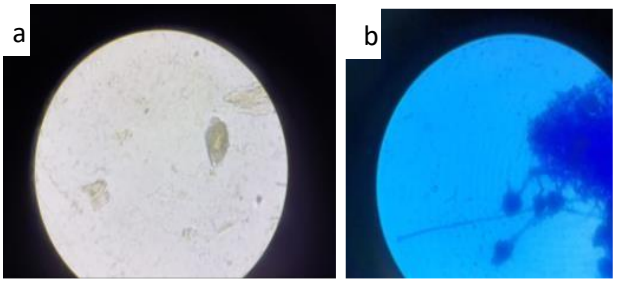

Figure 4 (a and b): Microscopic picture of fungi after koh and LPCB staining.

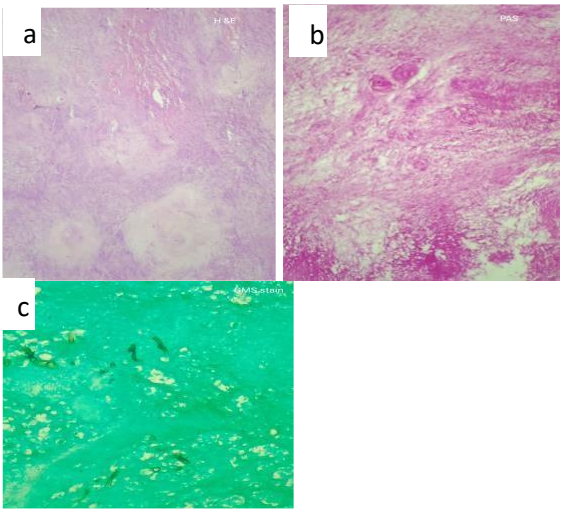

Figure 5 (a-c): Microscopic picture of H&E, PAS and GMS. Histopathological examination suggestive of a chronic inflammatory lesion in H&E staining, no fungi in pas staining, fungal hyphae seen in GMS.

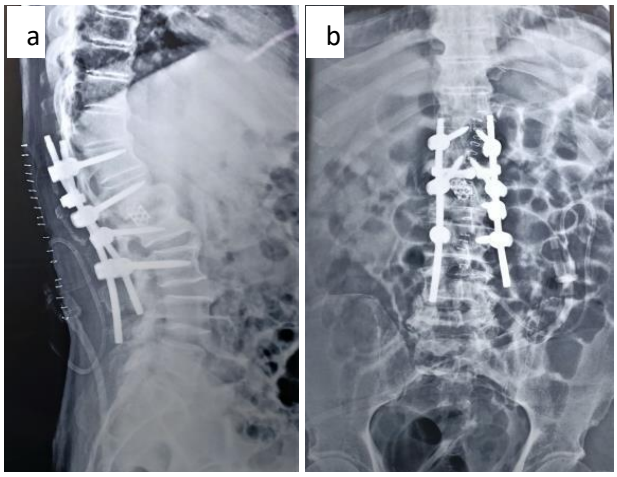

Figure 6 (a and b): Post-operative X-ray ls spine AP & lateral.

DISCUSSION

Spondylodiscitis refers to infection of intervertebral discs and adjacent vertebral bodies. The pathogenic organism reaches via hematogenous spread from a distant focus, by contiguous spread or by direct inoculation. The condition commonly affects lumbar spine followed by thoracic and cervical.[5] Most commonly encountered organism is *Staphylococcus aureus*. Other causes include Streptococci, *Mycobacterium tuberculosis* and rarely fungi. Mycotic spondylodiscitis is less common among immunocompetent individuals and rising incidence is observed among immunocompromised. Since the condition is very rare, clinical suspicion will be low and hence diagnosis as well as treatment can be delayed. Aspergillus species are saprophytic organisms and can cause opportunistic infections. Lung is the commonest site of Invasive aspergillosis.[6] Aspergillus spondylodiscitis has no specific clinical features. Symptom can be low back pain with or without fever. Later spinal cord compression and lower limb weakness can occur. Clinical features resemble to that of tubercular spine disease. High index of suspicion helps to differentiate both. The most important diagnostic methods are histopathological examination and bacterial culture. If MRI shows evidence of spondylodiscitis, CT-guided puncture biopsy should be performed as soon as possible.[7]

Treatment of choice is combination of surgery and use of antifungal drugs.[8,9] Aspergillosis treatment guidelines proposed by the American Society of Infectious Diseases 2016 (the latest version), recommends voriconazole as the main treatment for invasive aspergillosis, including Aspergillus osteomyelitis. For patients who cannot tolerate conventional antifungal treatment, itraconazole can be used as an alternative therapy for invasive aspergillosis.[11] Surgical decompression, debridement of necrotic tissue and spinal instrumentation to restore spinal stability and spinal alignment is the proposed surgical procedure.[9] Favorable outcome is observed among patients who were managed by combined medical and surgical therapy.[12]

CONCLUSION

Aspergillus spondylodiscitis following COVID-19 infection in immunocompetent individual is a rare entity and need to be studied further. Diagnosing and management of fungal spondylodiscitis need a multidisciplinary approach with radiology, microbiology, pathology departments.

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