

Case Report

Trichomonas tenax: A rare cause of pleural effusion

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Abstract:

Trichomonas tenax is a oral flagellated protozoa. It is a harmless commensal found in the mouth, more in person with poor oral hygiene and advanced periodontal disease. It can rarely cause pulmonary infection. Pulmonary trichomoniasis is an opportunistic infection caused by aspiration of *T. tenax* with underlying chronic pulmonary diseases, smoking, alcoholism, periodontal diseases or immunosuppression. Here we are presenting a case of 38 year old male patient with history of alcohol, smoking showing the features of pleural effusion on radiological examination. Pleural analysis revealed pale white, semi turbid, thin purulent with no coagulum. Gram and Zeilh-Neelson staining showed no organisms and acid fast bacilli. Wet mount preparation revealed moderate number of neutrophils and a many number of flagellated organisms demonstrating active motility. A Giemsa stain of a of the pleural fluid demonstrated small, pale staining, flagellated organisms resembling Trichomonas species with size and morphology most favouring with *T tenax*. The patient showed a dramatic response to the metronidazole treatment for a month, along with a course of antibiotic therapy. In spite of its rarity, pleural infection with Trichomonas should be considered in patients with high risk factors, and can be easily detected for by wet preparation and Giemsa staining.

Key words: Trichomoniasis, Pleural effusion, Wet mount

Introduction

Trichomonas tenax is of worldwide distribution, first discovered by Muller in 1773^[1]. Trichomonas tenax is a harmless flagellated protozoan commensal found in the human mouth with poor oral hygiene and advanced periodontal disease but can rarely cause pulmonary infections^[2]. It is a pear-shaped, flagellated protozoon with an undulating membrane^[3]. Trichomonas tenax, rare the cause of pleuropulmonary infection is thought to gain entry to the lower respiratory tract by aspiration

of oropharyngeal secretions ^[4]. Pulmonary trichomoniasis is an opportunistic infection caused by aspiration of *T. tenax* with underlying chronic pulmonary disease. Pulmonary infections with Trichomonads are underestimated because of difficulties in diagnosis^[5]. Bacterias mainly mycobacterium tuberculosis are the most common cause of pleural effusion however in patients with poor oral hygiene, smoking and chronic lung disease predisposed individuals other than bacteria can

be the cause. Here, we report a rare case of pleural effusion caused by *Trichomonas tenax*.

Case report:

A 38 year old moderately built male patient presented to a hospital with history of cough, chest pain, fever and breathlessness since 15 days. Cough was non-productive type, fever was mild on and off not associated with chills, rigor and sweating. Breathlessness was increasing day by day. When the patient presented to hospital he had severe breathlessness. Patient was a chronic alcoholic and occasional smoker. Patient had taken symptomatic treatments from the general practitioner and had no improvement. There was no history of hypertension, diabetes mellitus and weight loss. Blood investigations were within normal limits. He was negative for HIV antibodies. His general physical examination showed increase in temperature. Systemic examination of CVS, CNS and abdomen showed no abnormality. Respiratory system examination showed the signs of pleural effusion. Patient underwent chest X-Ray and ultrasonographic examination. The chest radiograph and USG revealed left side pleural effusion with pulmonary collapse.

Patient underwent pleural tap and about 5ml of pleural effusion was sent for pathological, biochemical and microbiological examination. Empirically patient was put on i.v antibiotics awaiting the culture report. Macroscopically the pleural fluid was pale white, semi turbid, thin purulent appearance, no coagulum and had foul smelling. Pleural fluid analysis revealed glucose level of 22 mg/dL, protein 3.4 g/dL, pH 7.2 and Lactate dehydrogenase level of 244 U/L,. The Gram stain of the pleural fluid showed no organisms. Zeilh-Neelson staining showed no acid fast bacilli. Direct microscopic examination of a wet mount of the pleural fluid showed moderate number of neutrophils and a few number of flagellated organisms demonstrating active motility.

A Giemsa stain of a centrifuged preparation of the pleural fluid demonstrated small, pale staining, flagellated organisms resembling *Trichomonas* species with size and morphology most favouring with *T tenax*. Immediately the patient was put on metronidazole (30 days, 400mg bd) therapy along oral antibiotics (Amoxicillin 500mg bd for 5 days). Within a week the patient showed improvement and he was completely alright in a month. Culture report was bacteriological sterile after 48 hours of incubation period. Hence, we confirmed our findings, *trichomonas tenax* as a cause of pleural effusion.

Discussion:

Trichomonas tenax is the smallest among the genus *Trichomona*, measuring around 5-14 µm long and 6-9 µm wide with long axostyles and tails, 4 anterior flagella, and an undulating membrane. It is a harmless flagellated protozoan commensal found in the human mouth. Adult men with chronic pulmonary disease are commonly affected with *trichomonas* causing pulmonary trichomoniasis^[1]. *Trichomonas tenax* feeds on microorganisms in its surrounding environment, infection spread through saliva, droplets, kissing, contaminated tableware, hands or using contaminated toothbrushes and drinking water^[6]. *T. tenax* is found particularly in the patients with poor oral hygiene and complex periodontal disease^[2]. Pulmonary trichomoniasis caused by aspiration of *trichomonas tenax* present in the oral cavity. Aspirated pulmonary trichomoniasis is an opportunistic infection. A Russian study revealed pulmonary trichomoniasis (17%), mostly in patients with lung disorders. It is frequently found in patients with poor oral hygiene^[3]. The discovery of trichomonal organisms as a cause of pulmonary trichomoniasis is a rare occurrence. As far we know, only few cases of have been reported with underlying conditions like lung cancer, chronic

lung disease, or immunosuppression, alcoholism, smoking was present.

In the present case also we found the association of alcohol, smoking with pulmonary trichomoniasis. The bacterial and mycobacterial as a cause of pleural effusion was rule out by Gram stain, Zeilh-Neelson staining and aerobic bacterial culture. Differentiation between the species of trichomonads can be difficult in the clinical setting.

Direct wet mount method, Eosin wet mount, Loeffler's alkaline methylene blue wet mount and iodine wet mount, Giemsa staining can be used for detection of trichomonas tenax. Morphological characteristics on stained specimens (Giemsa staining) are helpful but not definitive in many cases, due to presence of debris in stained specimens.

Cultural identification is superior to microscopic examination of wet-smear, gram-stained and Papanicolaou-stained preparations¹⁷¹. Quite lower result by Abualqomsaan et al. (2.17%)¹⁸¹ and higher result by Ghabanchi et al (6%)¹⁹¹ reported by Giemsa stain for detection of trichomonas tenax. This may be due to that Trichomonas go through artificial changes that make diagnosis difficult. El Sibaei et al affirmed that sensitivity and specificity of wet mount microscopic examination was 55% and 100% respectively and Athari et al¹¹⁰¹ reported higher sensitivity for wet mount (84.8%). In our study we observed wet mount is enough to detect trichomonal infections of lung even than the

Giemsa staining as we can appreciate the typical motility. More recently, polymerase chain reaction techniques have made speciation more precise. The absolute requirement of accurately detection of trichomonal species is not necessary, since metronidazole is very effective in eliminating the infection. Walzer *et al*, Ohkura *et al*, Radosavljevic *et al*, Wang *et al* identified alcoholism acts as a predisposing factor in the causation of trichomonal pulmonary infections¹⁵¹

Conclusion:

The presently diagnosed case of pulmonary trichomoniasis (*Trichomona tenax*) in immune-competent patient with a history of alcohol and smoking with recent pleural effusion indicates that clinicians should be aware of this infection and its treatment. Addition of metronidazole to his antibiotic regimen is sufficient for the effective treatment. In spite of its rarity, pleural infection with *Trichomonas* should be considered in high-risk patients like with history of smoking, alcoholism, chronic lung disease, cancer, immunosuppression, or poor oral hygiene and can be easily detected by wet preparation and Giemsa staining. We can perform PCR for molecular characterization but wet mount preparation is enough to diagnose pulmonary trichomoniasis because, there is no need to speciate for treatment purpose. The presented case had a dramatic response to the metronidazole treatment for a month.

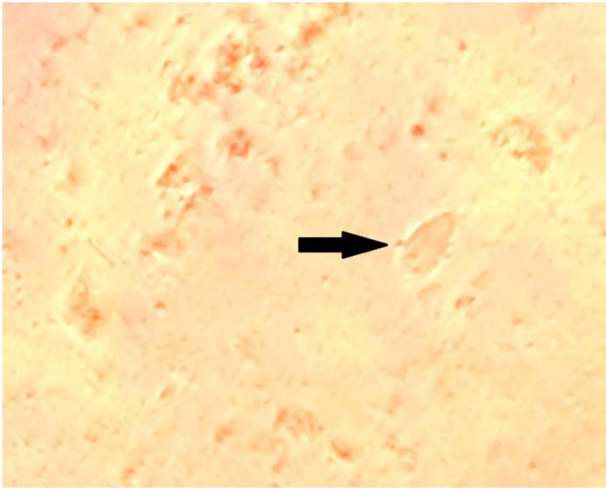


Figure 1. Wet mount preparation showing refractile T. tenax (wet mount, 400x)

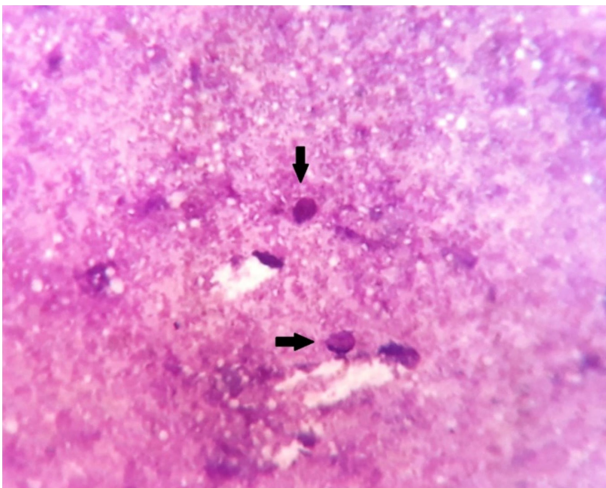


Figure 2. Giemsa showing ovoid T. tenax (Giemsa, 1000x oil)

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