



## Extensive pulmonary cryptococcosis in an HIV infected person: a case report

Ayandip Nandi<sup>1</sup>, Rudrajit Paul<sup>\*1</sup>, Debaditya Roy<sup>1</sup>, Ratul Ghosh<sup>1</sup>, TanmayJyoti Sau<sup>1</sup>,  
ChirantanMajumdar<sup>1</sup>, Jayati Mondal<sup>2</sup>

1 Department of Pathology, Medical College Kolkata. 88, College Street, Kolkata- 700073, West Bengal, India.

2 Chittaranjan Seva Sadan, Kolkata, West Bengal, India.

### ARTICLE HISTORY

Received: 05.06.2017

Accepted: 02.09.2017

Available online: 30.09.2017

### Keywords:

HIV; Cryptococcosis; pulmonary;  
PAS stain

### \*Corresponding author:

Email : r.paul.medicalcollege@gmail.com

Tel.: +91-9433824341

### ABSTRACT

Cryptococcus is a fungus whose disease manifestations are usually found in immuno compromised persons. In HIV infection, cryptococcal infection is usually found in the central nervous system. However, other sites like the lungs are also rarely affected. We here report the case of a 45 year old HIV infected male, who was admitted with severe dyspnoea and weight loss. HRCT thorax revealed bilateral pulmonary consolidation with cavitation. FNAC from the lung lesions revealed large capsulated budding yeast cells, suggestive of Cryptococcus. Serum cryptococcal antigen was also positive. The patient, unfortunately, could not be saved despite anti-fungal therapy.

### INTRODUCTION

Cryptococcus is a fungus associated with opportunistic infections, predominantly in severely immuno compromised individuals [1]. HIV infection is the strongest risk factor for cryptococcosis, whether localized or generalized [1]. However, now-a-days, other immunosuppressed conditions like organ transplant are also associated with this infection and sometimes, the infection is also reported in otherwise normal individuals [1].

In HIV infected persons, the commonest site of involvement in cryptococcal infection is the central nervous system [2]. However, other sites like lymph nodes, lung and liver are also affected rarely [2]. Cryptococcal infection at atypical sites may present diagnostic challenges for clinicians and often, the diagnosis is delayed. However, progressive cryptococcosis is a life-threatening condition and delay in therapy may lead to death. Thus, clinicians must be aware of the clinico-pathological presentations of this infection to help in prompt diagnosis.

We here report a case of extensive cryptococcosis of lungs in an HIV infected person.

### THE CASE REPORT

A 45 year old man was admitted to our hospital with complaints of progressive dyspnoea and loss of weight for the last three months. The dyspnoea was exertional to start with, but it progressed quickly and by the time of presentation, he was dyspnoic even at rest with grade 5 on MRC dyspnoic scale. There was infrequent dry cough and there was no history of hemoptysis. At presentation, his oxygen saturation was 67% in room air, which increased to 88% with nasal cannula oxygen. The man was also emaciated with BMI of 13.5. There was no significant past medical history, including that of diabetes or thyroid disorder. He had on and off fever over the last one month and at presentation, his temperature was 100°F. There was no lymphadenopathy, oral lesions or skin rash. There was no neck rigidity.

Initial laboratory reports revealed Hemoglobin of 8 gm/dl, total leukocyte count of 3200/ $\mu$ L (N: 78%; L: 10%; E: 8%) and platelet count of 100 000/ $\mu$ L. ESR was 40 mm in the 1<sup>st</sup> hour. Serum urea, creatinine and electrolytes were normal. Liver function test revealed bilirubin of 3 mg/dl (direct: 1.7) with normal enzymes. Serological tests revealed a positive test for HIV infection. A CD4 count came as 42/ $\mu$ L. In view of the dyspnoea, a chest X ray was done first which showed ill-defined patchy opacities in both lung fields, predominantly at the bases. An HRCT of thorax was done, which showed (figure 1) irregular patches of consolidation in both bases with cavitation on the left

side. The patient did not have any sputum production, hence sputum was induced with hypertonic saline nebulisation. It was negative for gram stain, ZN stain and fungal stain. Then, a CT guided FNAC was done from the lung consolidation which showed (figure 2) large budding yeast cells with no hyphae.

The patient was immediately started on i.v. liposomal amphotericin B 3 mg/kg/day with a plan to start ART after 3-4 weeks. A blood for cryptococcal antigen was sent, which came positive. The patient was continued on this therapy but unfortunately, his condition deteriorated and he passed away on the 3<sup>rd</sup> day of therapy.

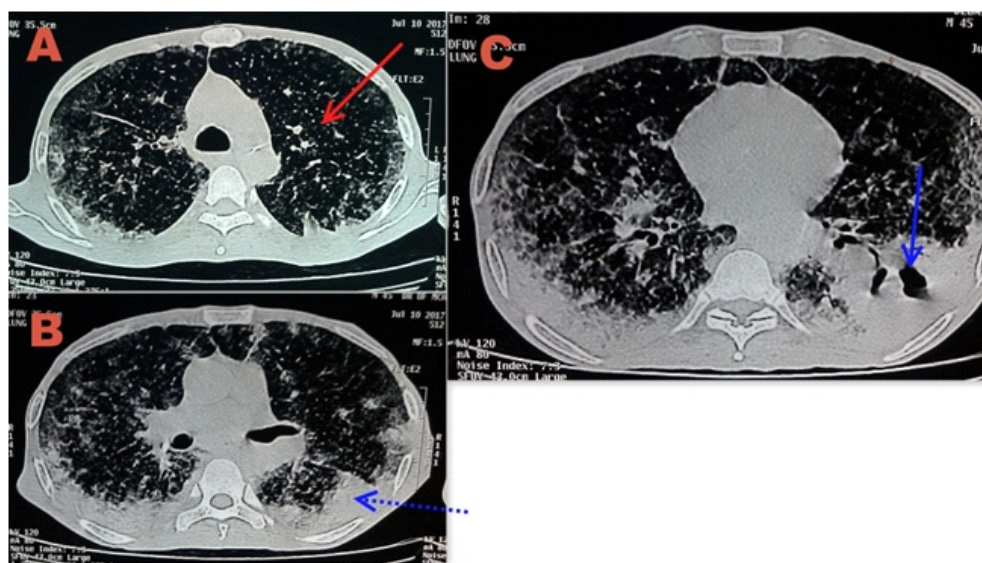
## DISCUSSION

Pulmonary cryptococcal infection is a rare entity. The presentation of this lung infection can be with pulmonary nodule, consolidation, bilateral reticulo-nodular pattern, cavity or

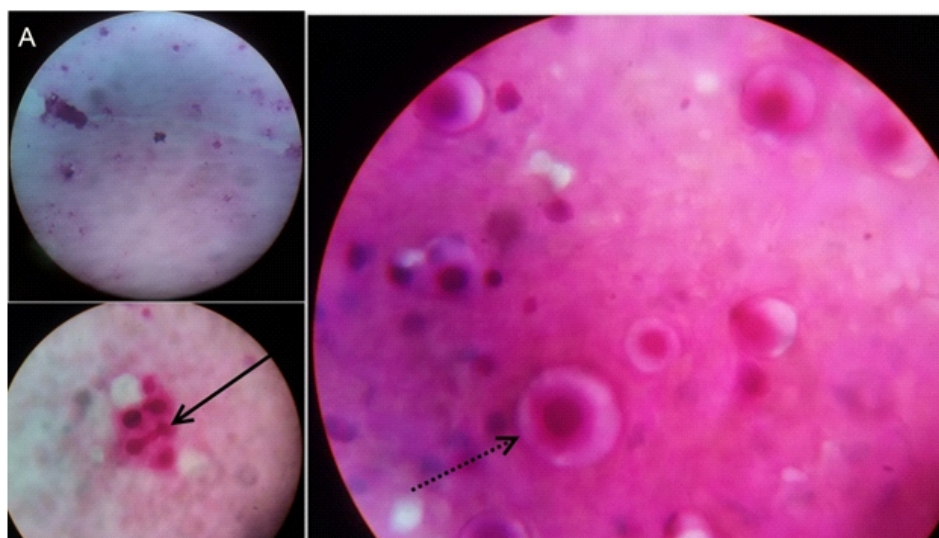
endobronchial mass [3].

The infection is caused by inhalation of cryptococcal spores [3]. However, in immunocompetent individuals, usually the infection remains dormant. The infection is common in areas contaminated with bird droppings and decayed wood [3]. *Cryptococcus neoformans* is the commonest species infecting humans. However, other species, like *Cryptococcus gattii*, have recently been found to be pathogenic too [4]. But these rare species are generally confined to certain geographical regions till now.

The radiological features of pulmonary cryptococcosis are non-specific and cannot pinpoint the diagnosis. The imaging features vary between immunocompetent and immuno compromised patients [5]. In HIV-infected persons, *Cryptococcus* infection of the lungs cause nodules, pulmonary infiltrates and pleural effusions [5]. The imaging features also



**Fig 1 :** HRCT thorax of the patient showing nodular infiltrates in upper lobes (A; red arrow), peripheral consolidations in lower lobes (B, dotted line) and cavitation (C; blue solid line)



**Fig 2 :** Microscopic picture of pulmonary Fine needle aspiration showing yeast cells visible in 10× magnification (A), budding yeast cells (arrow) and large capsules in PAS stain (dotted arrow) suggestive of cryptococcosis

vary with the level of immune compromise. In our patient, HRCT revealed bilateral consolidations and one cavity. Also, there were diffuse infiltrates in the upper zones.

The diagnosis of *Cryptococcus* infection is by various means like fungal culture, serology, histopathology and/or fungal stain like India ink: singly or in combinations [6]. Fungal culture is the best method, but it takes a lot of time and patient can deteriorate in the meantime. Blood or other body fluid serology, which is easily available, is a sensitive method of diagnosis. Actual demonstration of the organism, as in our case, by biopsy or needle aspiration is also a sensitive method [7]. Mucicarmin stain is the ideal stain for demonstrating the fungus, but PAS stain is also good, as shown in our case. The fungus is identified by the large size of its cell (the cells are visible at 10× power also) and the large capsule, seen as a halo around the cell.

Treatment of pulmonary cryptococcosis is with amphotericin B with or without 5-FC [8]. Duration of therapy will depend on the physician's assessment of improvement. Therapy for cryptococcal meningitis is more standardized [8]. For severe cryptococcosis at other sites like the lung, the therapy is extrapolated from CNS disease and other case reports. In cases like ours, where the patient is ART naïve, the treatment for cryptococcosis is started first, followed by ART.

## CONCLUSION

In HIV positive persons, cryptococcal infection of the lungs may be a cause of progressive dyspnoea and pulmonary imaging abnormalities. Prompt diagnosis and treatment is essential to save the patient.

## REFERENCES

1. Pappas PG. Cryptococcal Infections in Non-Hiv-Infected Patients. *Trans Am Clin Climatol Assoc.* 2013; 124: 6179
2. Philip KJ, Kaur R, Sangeetha M, Masih K, Singh N, Mani A. Disseminated cryptococcosis presenting with generalized lymphadenopathy. *J Cytol.* 2012; 29: 2002
3. Babu AK, Gopalakrishnan R, Sundararajan L. Pulmonary cryptococcosis: An unusual presentation. *Lung India.* 2013; 30: 34750
4. Kwon-Chung KJ, Fraser JA, Doering TL, Wang Z, Janbon G, Idnurm A et al. *Cryptococcus neoformans* and *Cryptococcus gattii*, the Etiologic Agents of Cryptococcosis. *Cold Spring Harb Perspect Med.* 2014; 4: a019760
5. Hu Z, Chen J, Wang J, Xiong Q, Zhong Y, Yang Y, et al. Radiological characteristics of pulmonary cryptococcosis in HIV-infected patients. *PLoS ONE* 2017; 12: e0173858
6. Perfect JR, Bicanic T. Cryptococcosis diagnosis and treatment: What do we know now. *Fungal Genetics and Biology* 2015; 78: 49-54
7. Thambidurai L, Prabhuradhan R, Singhvi P, Ilanchezhian S, Ramchandran R, Shankar H. Cryptococcal pneumonia: the great mimicker. *BJR|case reports* 2017 3:2
8. Saag MS, Graybill RJ, Larsen RA, Pappas PG, Perfect JR, Powderly WG et al. Practice Guidelines for the Management of Cryptococcal Disease. *Clin Infect Dis* 2000; 30: 710-718