

## CASE REPORT

# Bilateral Adrenal Histoplasmosis: Endoscopic Ultrasound – guided Fine Needle Aspiration as a Method of Diagnosis and Assessment

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### SUMMARY

We report a case of a healthy 78-year-old Indonesian man who presented with chronic weight loss, poor appetite and lethargy. CT abdomen showed bilateral adrenal masses. EUS-guided FNA was performed on the left adrenal gland. Histopathology report was *Histoplasma Capsulatum*. He recovered well with antifungal treatment without any complication. In this case, we found that the role of EUS-guided FNA was not only limited to diagnosis but also helped in the prognosis of the disease since the method was able to assess the general anatomy of the adrenal gland better than other imaging modalities due to its close proximity and direct visualization.

### KEY WORDS:

Bilateral adrenal masses, EUS (Endoscopic Ultrasound) – guided FNA (Fine needle Aspiration), *Histoplasma Capsulatum*

### INTRODUCTION

Bilateral adrenal histoplasmosis is a rare infection of both the adrenal glands as a result of disseminated infection and is usually complicated by adrenal insufficiency. It occurs in both immunosuppressed and immunocompetent patient. Diagnosis is by tissue biopsy via percutaneous or EUS-guided FNA. Majority of cases developed adrenal insufficiency requiring intensive care or prolonged hospital stay. EUS-guided FNA biopsy allows detailed imaging and FNA of both intramural and extramural structures and lesions of the gastrointestinal (GI) tract and of various intraabdominal organs. This procedure combines endoscopy and ultrasonography. A small ultrasound probe is attached at the distal end of the scope in a single endoscopic unit. A special needle can be passed through the working channel of the endoscope and biopsy can be performed under ultrasonographic view with real time imaging of the target lesion.

### CASE REPORT

A 78-year-old Indonesian man with no significant previous clinical history presented with progressive lethargy, loss of appetite and weight loss of 10 kilograms over 6 months. He denied any history of nausea, vomiting, abdominal pain, or altered bowel habits. There was no history of chronic alcohol abuse, tobacco smoking, or family history of gastrointestinal

cancer. On examination, he was afebrile and slightly pale. His body mass index (BMI) was 27kg/m<sup>2</sup>. Blood pressure was 130/90 mmHg. His abdomen was soft, non tender with no palpable mass. There was also no lymphadenopathy. Laboratory results showed normochromic normocytic anaemia with a hemoglobin of 11.1g/dl. Electrolytes and liver function tests were normal. Oesophagogastroduodenoscopy and colonoscopy showed no significant abnormalities. Subsequently, a computed tomography (CT) scan of the abdomen revealed bilateral adrenal masses, measuring 5.1x3.3 cm (right adrenal) and 4.1x3.3 cm (left adrenal) in diameter (Fig. 1).

Endoscopic ultrasound (EUS) with the curvilinear echoendoscope (GF-UCT140-AL5); Olympus, Tokyo, Japan) showed a diffuse, homogenous left adrenal mass measuring 4.13cm x 2.12cm in diameter. Fine Needle Aspiration (FNA) biopsy was performed with a standard 22G FNA needle via transgastric approach (Fig 2). Cytologic analysis of the FNA specimen was histoplasma capsulatum. The organisms were easily identified using Grocott methanamine silver (GMS) stain (figure 3) which featured intracellular organisms within the cytoplasm with narrow based budding. The patient was treated as an outpatient with oral itraconazole with significant clinical improvement. Resolution of the adrenal lesions were seen on subsequent imaging after 18 months of treatment.



Fig. 1: CT scan abdomen showing bilateral enlargement of the adrenal glands (arrows).

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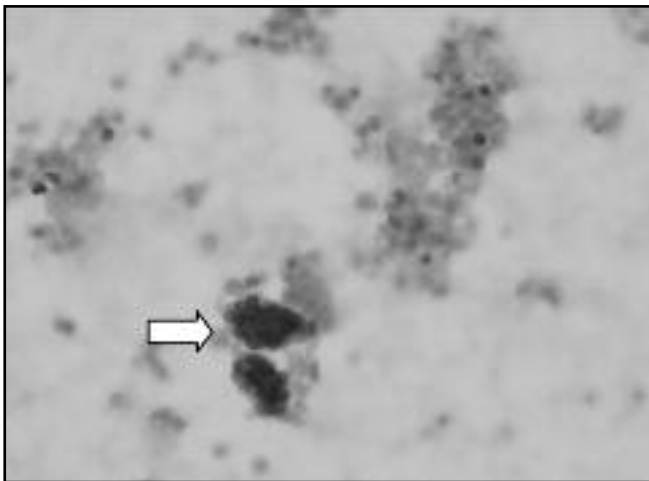
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**Fig. 2a:** Endoscopic ultrasound (EUS) view of diffuse and homogeneously enlarged left adrenal gland.



**Fig. 2b:** Real time imaging of the needle track (arrow) within the adrenal gland during FNA biopsy.



**Fig. 3:** GMS stain shows histoplasma capsulatum organism (arrows) using 22G needle.

## DISCUSSION

Histoplasma capsulatum is a dimorphic fungus with narrow based budding and a prominent pseudocapsule affecting primarily the pulmonary system. It is endemic in the Mississippi River and Ohio River valley in the USA, central and south America<sup>1</sup>. Soil contaminated with birds and bats droppings are the natural habitat. Sporadic cases have been reported in the medical literature from Europe, Africa and Asia<sup>1</sup>. However, certain parts of South East Asia, the disease may be endemic in countries such as Malaysia, Indonesia, Singapore and the Phillipines and cases may have been under reported<sup>2</sup>.

The infection is acquired by inhalation of microconidia and usually begins with mild symptoms of influenza which normally resolves without sequela. The spectrum of the disease can be asymptomatic, acute and chronic. Immunocompromised patients are susceptible to disseminated disease which can be fatal if complicated by

adrenal insufficiency<sup>1</sup>. Diagnosis by routine imaging is not easy because the lesion can be either homogenous or heterogenous on CT or ultrasound with variable signal intensity on Magnetic Resonant Imaging (MRI)<sup>3</sup>. Therefore, histological evidence is vital.

In this case, we highlighted the feasibility of utilizing EUS guided -FNA not only in the diagnosis of adrenal histoplasmosis but also in assisting the prognosis of this disease. We managed to obtain adequate tissue samples using the EUS guided-FNA with a standard 22G FNA needle via transgastric approach and achieve diagnosis using routine cytology. The close proximity and direct visualization of the left adrenal gland made the task of performing the procedure simple, quick and with a lower rate of procedure related complication compared to the percutaneous method. This patient tolerated the procedure well without any complications and treatment was instituted promptly. Previous similar cases of adrenal histoplasmosis and masses were reported by Eloubeidi *et al*<sup>4,5</sup> where EUS - guided FNA was performed using both transgastric and transduodenal approach with excellent results. The importance of on site presence of histopathologist is vital for rapid diagnosis and therefore the term - rapid on site cytopathologic evaluation (ROSE) was coined<sup>5</sup>.

Based on the previous published case reports of adrenal histoplasmosis<sup>5</sup> all the patients (immunocompetent and immunosuppressed) developed complications of adrenal insufficiency requiring prolonged hospitalisation or intensive care. All these cases showed patchy enhancement with central hypodensities of the adrenal glands. However, our patient did not have these features and did not develop any related complications. On the EUS, his adrenal glands were found to be diffuse and homogenous. Therefore, we concluded that, besides histology which was vital for diagnosis, general appearance of the whole adrenal gland anatomy was an important assessment which could help in the prognosis and this was best achieved via the EUS which provided direct visualization.

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