

HISTOPLASMOSIS OF ADRENAL GLANDS STUDIED BY COMPUTED TOMOGRAPHY

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ABSTRACT

A 67-yr-old thai female presented with a history of fever and weight loss for 11 months. She had underlying diabetes mellitus with hepatosplenomegaly. CT revealed bilateral adrenal enlargement with multiloculated areas of low attenuation. Histoplasmosis capsulatum was demonstrated from FNA under ultrasound guidance. The patient was started on antifungal therapy and discharged. CT is excellent for evaluation of adrenal gland morphology and the disease. CT findings of this patient are well correlated with other 13 patients proved to be adrenal histoplasmosis from prior published studies from 1980 to 1997, most of which are bilateral enlargement of the organs with areas of necrosis.

FNA = Fine Needle Aspiration biopsy

CASE REPORT

A 67-year-old female presented with an 8 kg. weight loss, fatigue and prolonged fever in an approximately 11 months duration. This patient had an underlying diabetes mellitus for 11 years. The physical examination was significant for a temperature of 38.5 c°, mild pale and hepatosplenomegaly. Complete blood count showed mild anemia. Blood chemical screening revealed high fasting blood sugar. Chest roengenogram was unremarkable. Abdominal CT revealed bilateral adrenal enlargement, measuring 4.2x2.5x6.5 cm³ on the left, and measuring 2.2x3.8x7.5 cm³ on the right. Both adrenals were inhomogeneously enlarged with multiloculated areas of low attenuation.

Minimal post contrast enhancement was observed. Hepatomegaly was also noted. There was an area of hypodensity in the enlarged spleen.

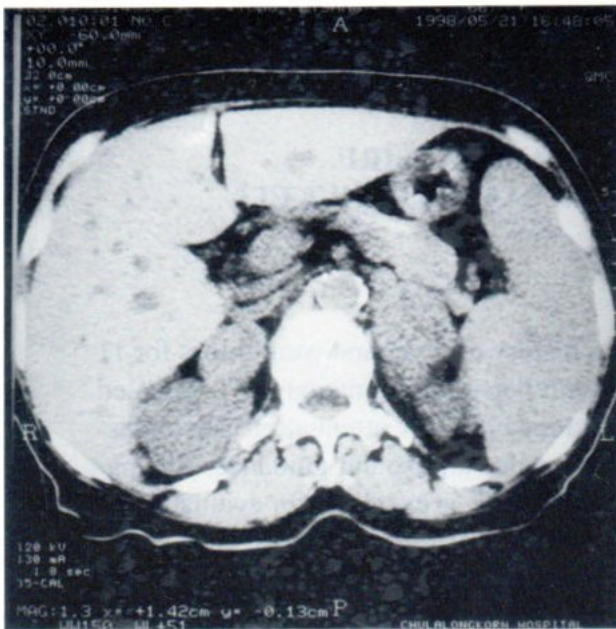
There was no evidence of abdominal lymphadenopathy.

FNA of adrenal gland's masses was performed under ultrasonographic guidance. Small necrotic tissue fragments were obtained. They were directly smeared on glass slides and prepared by Papanicolaou (PAP) and Gomori methenamine silver stains (GMS)

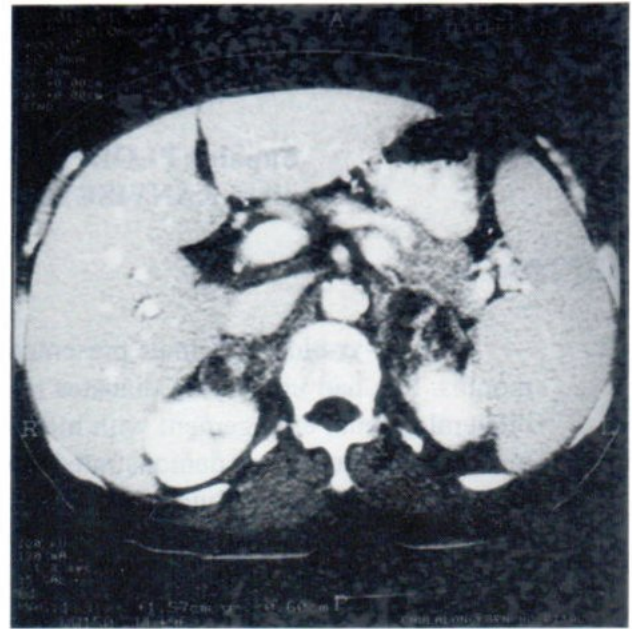
Microscopically, the PAP smears reveals abundant necrotic background mixed with granulocytes and histiocytic cells. GMS stain highlighted numerous small budding yeasts, measuring about 2-4 micron, some of which were detected in the cytoplasm of the macrophages. The cytopathological diagnosis was adrenal histoplasmosis.

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1A



1B



1C

Fig.1. A. pre-contrast study B; Post contrast study C; coronal reconstruction Study reveals bilateral adrenal enlargement with multiloculation. In post contrast study, there is minimal enhancement of the septation.

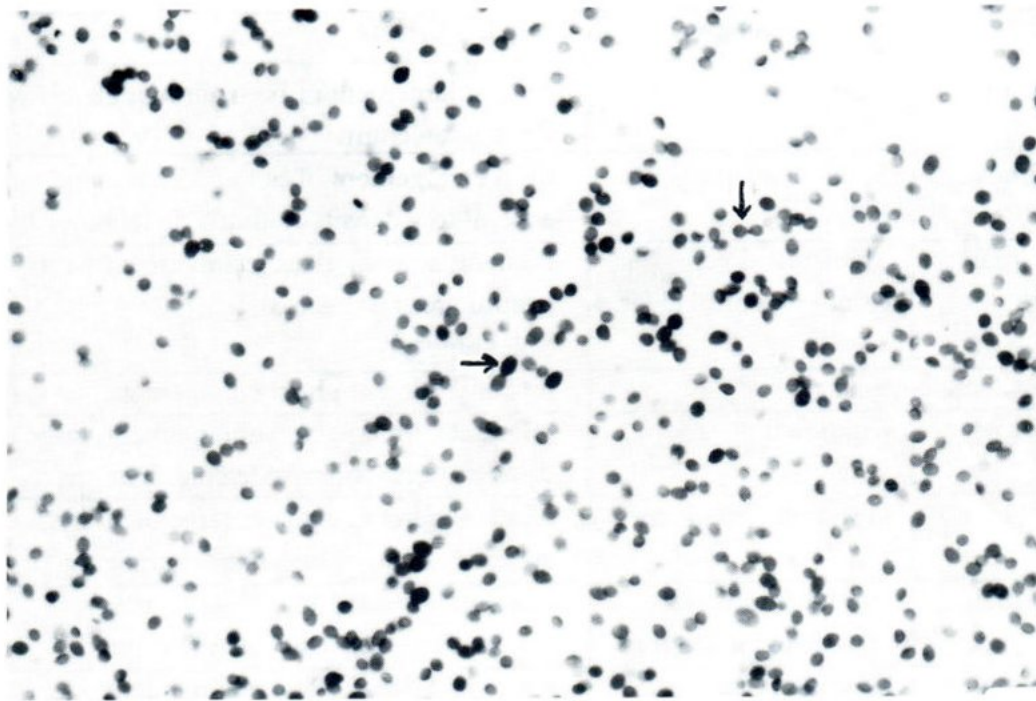


Fig. 2. Photograph shows numerous round yeasts with occasional buddings. (arrows) (Gorreri methenamine silver stain ; x400)

DISCUSSION

The soil fungus *Histoplasma capsulatum* has been estimated to infect 90% of the people who live in the endemic regions of southeastern and south central united states but is quite uncommon in Thailand. Approximately one in every 1000 cases of acute pulmonary histoplasmosis will lead to dissemination.¹ The people most susceptible to this occurrence are the very young, very old² and those who have immune deficiency.⁶ Disseminated histoplasmosis if untreated is usually fatal.³

The fungus has an affinity for the mononuclear phagocytes (histiocytes) that compose the reticuloendothelial system. There is a high incidence of liver, spleen, lymph node, bone marrow and adrenal gland involvement.⁴

Computed tomography (CT) is excellent for the evaluation of the abdominal organs involvement and has been proved especially useful in

determining adrenal gland morphology and disease such as metastasis, granulomatous lesion, infection or cyst.¹¹

FNA (fine needle aspiration biopsy) has been found to be a safe, reliable and economical procedure for diagnosis of mass lesions of the adrenal glands.^{3,5}

The differential diagnoses of bilateral adrenal masses in a patient with significant weight loss are metastatic tumor and glaucomatous disorders of the adrenal glands. Disseminated histoplasmosis is rare but when it does occur, the adrenal glands are the organ that can be involved.

Review of the previous reports studied between 1980 and 1997^{1,3,5,7,8,9,10} showed 13 patients finally proved to be adrenal histoplasmosis.

Case	age /sex	Predisposing factor	CT finding
1 ¹	51 male	Unknown	mild enlargement of both adrenal glands with small fleck of calcium
2 ¹	72 male	Small cell carcinoma of lung	mild enlargement of both adrenal gland with several low density nodules. Splenomegaly
3 ¹	65 male	Transitional cell carcinoma of bladder	bilateral adrenal gland enlargement with central areas of necrosis. Splenomegaly
4 ¹	77 female	old age	bilateral adrenal gland enlargement
5 ¹	45 male	Unknown	bilateral adrenal gland enlargement, large central areas of necrosis; splenic calcifications
6 ¹	64 male	miliary tuberculosis	bilateral adrenal gland enlargement, large central areas of necrosis, hepatosplenomegaly
7 ¹	44 male	parenteral steroid and nitrogen mustard	bilateral adrenal gland enlargement, diffuse dense, adrenal calcification
8 ³	60 male	no underlying	bilateral adrenal gland enlargement
9 ⁵	67 male	Tuberculosis	bilateral adrenal gland enlargement
10 ⁷	54 male	no underlying	bilateral adrenal enlargement hepatosplenomegaly
11 ⁸	44 male	no underlying	extensive bilateral adrenal gland enlargement
12 ⁹	Not given age/sex	Unknown	bilateral adrenal enlargement
13 ¹⁰	67 male	Unknown	bilateral adrenal enlargement

The CT findings varied from minimal to massive enlargement of the adrenal glands. Most were bilateral symmetrical enlargement. Other findings were faint fleck of calcium to dense calcification, focal low attenuation nodules to large area of necrosis. Adrenal gland shape was usually preserved. No evidence of contrast enhancement was reported except in one case which was described to be minimal enhancement.

In this reported case, both adrenal glands are enlarged with multiloculated areas of low attenuation, possibly necrosis, with minimal enhancement. These findings are correlated well to the findings in the prior reports.

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