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MEDICAL CENTER

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**DEPARTMENT OF IMAGING SCIENCES**

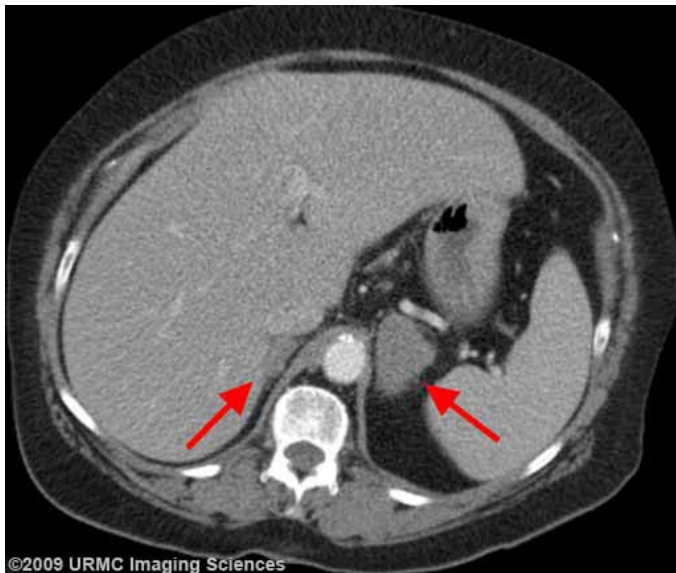
**Imaging Sciences Interesting Cases**

**CASE 349**

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**CLINICAL PRESENTATION:** Patient is a 69-year-old female, with history of pulmonary sarcoidosis, Crohn's disease, rheumatoid arthritis, breast and cervical cancer, now presenting with left upper quadrant abdominal pain.

**IMAGING FINDINGS:** Contrast enhanced CT demonstrates a 4.8 x 3.1 cm left adrenal mass and a 1.2 cm right adrenal nodule. There are multiple enlarged mesenteric nodes. At MRI the left adrenal mass enhances diffusely, is T2 hyperintense despite fat saturation technique, and does not show a drop in signal on the out-of-phase sequence.



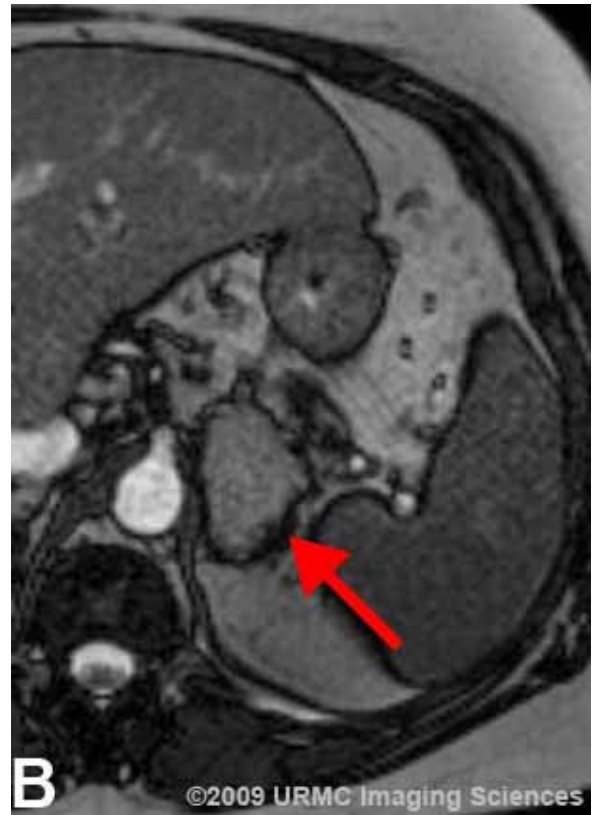
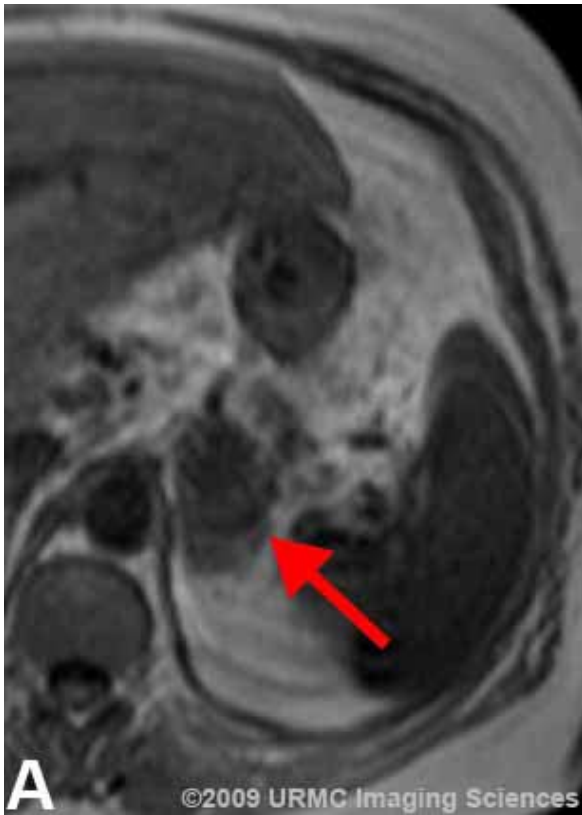
**Figure 1:** Axial contrast enhanced CT shows a homogeneous left adrenal mass measuring 40 Hounsfield units. There is also a 1.2 cm right adrenal nodule.



**Figure 2:** Axial T1 weighted MRI.



**Figure 3:** Axial T2 weighted MRI with fat saturation shows a hyperintense left adrenal mass confirming the lack of macroscopic fat.



**Figure 4:** Axial MRI (A) in phase sequence demonstrates low signal intensity comparable to the spleen, (B) out-of-phase sequence demonstrates an increase in signal intensity confirming the lack of microscopic fat. This is not characteristic of an adrenal adenoma which should demonstrate a drop in signal intensity on out-of-phase imaging.

**DIAGNOSIS: Adrenal histoplasmosis**

**DISCUSSION:** Histoplasma capsulatum is a dimorphic fungus that flourishes in regions of the United States like the Mississippi and Ohio River valleys, as well as other humid parts of the world where soil is contaminated with bird droppings or in caves rife with bat guano [1]. Histoplasmosis primarily involves the lungs, however every organ system can be affected. The infectious microconidia are inhaled when the soil

is agitated and the host immune system may contain the infection through fibrosis or by forming granulomas especially in the lung parenchyma or lymph nodes. Over time the granulomas may caseate and calcify. Alternatively, *H. capsulatum* can proliferate and effectively evade the host response when ingested by cells of the reticuloendothelial system [1]. The resultant asymptomatic fungemia lasts until immunosuppression permits reactivation of disease. This is the likely scenario for the above patient who was taking immunosuppressive medication.

Findings that may occur with high incidence in disseminated disease are nonspecific and include bilateral adrenal masses often with central necrosis and associated adrenal insufficiency, hepatomegaly, splenomegaly (some with diffuse hypoattenuation), retroperitoneal and mesenteric adenopathy [2, 3]. The very young, the elderly and immunosuppressed patients are at high risk of dissemination. Differential considerations for bilateral adrenal masses may include metastasis, lymphoma, hemorrhage, and other granulomatous infections like tuberculosis, cryptococcosis, and blastomycosis.

#### **REFERENCES:**

1. Kauffman CA. Histoplasmosis: a clinical and laboratory update. *Clin Microbiol Rev.* 2007 Jan;20(1):115-32. PMID: 17223625 [PubMed]
2. Radin DR. Disseminated histoplasmosis: abdominal CT findings in 16 patients. *AJR Am J Roentgenol.* 1991 Nov;157(5):955-8. PMID: 1927816 [PubMed]
3. Wilson DA, Muchmore HG, Tisdal RG, Fahmy A, Pitha JV. Histoplasmosis of the adrenal glands studied by CT. *Radiology.* 1984 Mar;150(3):779-83. PMID: 6695079 [PubMed]