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INCIDENTAL ABDOMINAL LESIONS



Objective:

1. Become familiar with the most common routinely detected incident lesions on CT scans.
2. Recognize standard of care management algorithms for incidental lesions.

Introduction

High-quality cross-sectional imaging has revolutionized medical and surgical diagnosis and aided in patient management; however, it has also led to imaging overutilization as well as the discovery of a large number of incidental findings that may require further evaluation to determine whether they may be safely dismissed or if further clinical care is required.

This chapter discusses several of the most common incidental findings and offers evidence-based management recommendations based upon the *Journal of the American College of Radiology* article on this subject [1]. The guidelines listed below assume a relatively healthy population with reasonable life expectancy. In patients with multiple or severe comorbidities or with limited life expectancy, these guidelines may not be appropriate, and decisions should be tailored on an individual basis.

Incidental Cystic Renal Lesion

Renal cysts are some of the most commonly encountered incidental findings. The Bosniak criteria are a well-studied evidence-based approach to the management of renal cysts. The Bosniak criteria describe five (I, II, IIF, III, IV) categories of renal

cystic lesions based upon distinct imaging characteristics. The concept is that the more purely cystic a lesion is, the more likely it is benign. The more calcification, solid components, enhancement, or thickened walls a lesion has, the more likely it is to be malignant.

Categories I and II do not require follow-up and include simple cysts, cysts with fine calcifications and/or thin internal septa, and non-enhancing hyperdense cysts. Category IIF (F stands for “follow-up”) has indeterminate features and should be followed up at 6 and 12 months and then yearly for 5 years to assure stability. Categories III and IV should be referred for surgical consideration at the time of diagnosis (Fig. 33.1).

Size is not a determinant in renal cystic lesions. Interval growth or stability of a lesion may delineate benign from malignant renal cystic lesions.

Incidental Solid Renal Lesion

Renal lesions which are greater than water density may be solid, proteinaceous, or hemorrhagic. Lesions less than 1 cm are too small to definitively characterize with most imaging modalities. Also, it is important to thoroughly search for macroscopic fat within a solid renal lesion. If gross fat is identified in the lesion, then the lesion can almost always be diagnosed as an angiomyolipoma, a benign lesion composed of vascular, muscular, and fatty elements. Of course there are always exceptions,

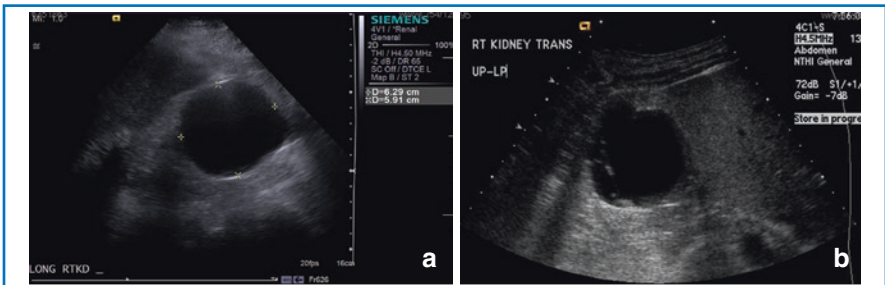


FIGURE 33.1 - (A) ULTRASOUND IMAGE OF A SIMPLE RENAL CYST

Features include well-circumscribed lesion, anechoic (black), thin imperceptible wall, and posterior acoustic enhancement (whiter area behind the cyst) consistent with a Bosniak I lesion. (b) Ultrasound image of a more complicated renal cyst. In comparison to image (a), this cyst has a thickened internal septation with nodularity along the wall posteriorly, rendering this a Bosniak III lesion at minimum



FIGURE 33.2 - LARGE SOLID RENAL LESION ARISING IN THE RIGHT KIDNEY
Given the intermediate density of the lesion, it is indeterminately characterized and warrants further imaging evaluation

and rarely renal cell carcinoma can incorporate fat within it by enveloping the adjacent perirenal or central sinus fat.

Solid renal lesions have the potential to be malignant and need to be evaluated with an enhanced dedicated imaging study such as renal protocol CT or MRI (Fig. 33.2). Lesions that demonstrate any area of significant post-contrast enhancement are worrisome and should be referred for surgical evaluation.

Historically, biopsy of a renal lesion prior to surgical resection has not been routinely performed; however, a recent paradigm shift in urology has now led to an increased number of renal mass biopsies for lesions measuring under 4 cm to avoid the unnecessary resection of small benign renal masses.

Incidental Hepatic Lesion

Incidental hepatic lesions are common. In fact, nearly half of patients without malignancy have benign hepatic lesions at autopsy. Any hepatic lesion in an oncology patient must be evaluated to exclude malignancy. The recommended approach for evaluating incidental hepatic lesions involves assessing lesion size and patient risk. Despite a complex algorithm based upon these factors and imaging characteristics, the crux of the approach is that any size of a lesion in a high-risk patient needs further evaluation with advanced imaging (CT or MRI) and potential biopsy. The majority of benign lesions are hepatic cysts or biliary hamartomas (which do not



FIGURE 33.3 - LARGE HYPODENSITY IN THE CENTER OF THE LIVER

In a patient with a known malignancy, this would be concerning for metastasis. However, without that history, it most likely represents a large hepatic cyst

enhance) and hemangiomas (which can have a characteristic enhancement pattern) (Fig. 33.3). High-risk patients are those with known malignancy or cirrhosis or patients with risk factors predisposing to the development of cirrhosis (hepatitis, sclerosing cholangitis, etc.). In all other patients, the decision to dismiss or follow up is based upon size and specific imaging characteristics.

Incidental Adrenal Lesion

It is estimated that 3–7% of the population has an incidental adrenal lesion. Studies indicate that the overwhelming majority are benign nonfunctioning adenomas. Therefore, it is important to definitively characterize these lesions on imaging.

The assessment of incidental adrenal lesions is primarily based upon imaging features. If an incidental adrenal lesion has Hounsfield units (HU) of less than 10 on a non-contrast CT exam, it can be definitively diagnosed as a benign adrenal adenoma (Fig. 33.4). For lesions 1–4 cm in size that are greater than 10 HU, it is recommended that the patient be rescanned using a specific CT adrenal protocol. This protocol scans the patient at different time points after intravenous contrast administration to calculate a value termed “adrenal washout.” The concept is that a benign adrenal adenoma will enhance and then quickly wash out the contrast, whereas an adrenal metastasis (and presumably adrenal carcinoma) will enhance and retain the

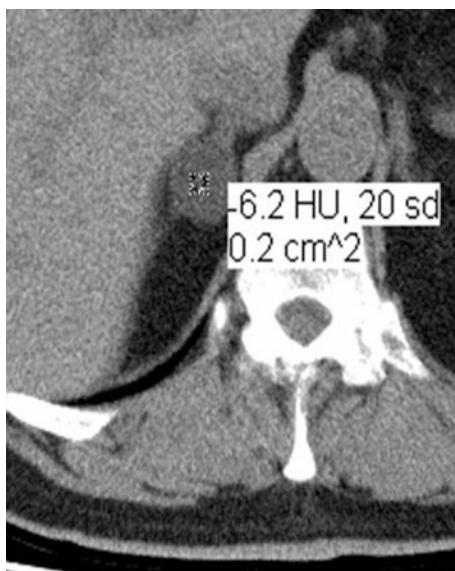


FIGURE 33.4 - NOTE THE ROUND LESION ARISING FROM THE RIGHT ADRENAL GLAND

The Hounsfield units measured -6.2 which is diagnostic of a benign lipid-rich adrenal adenoma

contrast (showing delayed washout). Biopsy should be recommended for a lesion with delayed washout. Lesion size and patient history of malignancy are also important factors. Lesions larger than 4 cm are likely malignant and are referred for possible surgical excision. Certain tumors such as functioning adrenal cortical tumors and pheochromocytomas are almost always associated with clinical symptoms and elevated biochemical markers in the patient's blood or urine.

Incidental Pancreatic Lesion

Incidental pancreatic cysts in patients without clinical or laboratory findings of pancreatic disease are relatively common findings. The most common cystic lesion found in the pancreas is a pseudocyst, which is a low-density collection typically developing as a consequence of pancreatitis 4–6 weeks after onset. Cystic pancreatic neoplasms are generally benign or low-grade malignancies. There are three main categories of cystic pancreatic neoplasms: mucinous neoplasm, serous neoplasm, and intraductal papillary mucinous neoplasm (IPMN) (Fig. 33.5). Serous tumors are benign but can enlarge. Mucinous tumors and IPMNs have a malignant potential.



FIGURE 33.5 - AXIAL CT IMAGE AT THE LEVEL OF THE PANCREAS SHOWING A MULTICYSTIC LESION OF THE PANCREATIC HEAD

Table 33.1 Pancreatic cystic lesion follow-up

Lesion type	Follow-up
Cystic lesions, 2 cm or less	F/U MRI or CT at 1 year
Cystic lesions, 2–3 cm	MRI with MRCP
Serous lesions	Follow q 2 years
Lesion without classic radiology findings	Follow q 6 months for at least 2 years
IPMN	Follow q 6 months for at least 2 years

Size is the predominant variable used in the evaluation of incidental pancreatic lesions. In the absence of a recent pancreatitis, pancreatic cystic lesions less than 2 cm should be followed up with CT or MRI in 1 year. If the lesion is unchanged in size and appearance, no further follow-up is needed. If the lesion grows or changes on follow-up or if the initial lesion is 2–3 cm in size, MRI with MRCP (MR cholangiopancreatography) is generally recommended. If a serous lesion is diagnosed, then it should be followed up every 2 years. If an IPMN is diagnosed, follow-up is recommended every 6 months for at least 2 years. If the lesion does not have classic radiology characteristics, then annual follow-up is recommended. If the initial lesion is greater than 3 cm and serous neoplasm cannot be definitively diagnosed, then cyst aspiration using endoscopic ultrasound guidance should be attempted. See Table 33.1.

S: Contrast-enhanced CT can be safely performed when patient GFR is >45 mL/min. In the setting of moderately impaired renal function (GFR between 30 and 45 mL/min), a lower dose of IV contrast can be safely given along with IV hydration before and after the exam for most patients. Severe renal impairment with GFR <30 mL/min is often a contraindication for CT and MRI contrast.

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- A:** Patients with mild IV contrast reactions can be pretreated according to various regimens, usually using a combination of steroids and Benadryl and then safely undergoing a contrast-enhanced examination.
 - F:** Specialized imaging protocols are tailored for dedicated evaluation of specific pathology within organs including MRCP, adrenal protocol CT, renal protocol MRI, and various liver protocols for CT and MRI. It is important to specify the clinical question to be addressed in order to acquire the study appropriately.
 - E:** Positive finding of an unexpected malignancy warrants a verbal communication to the ordering healthcare provider to expedite further clinical management. Frequently, the radiologist can help advise the clinician on the next appropriate imaging study.

Reference

1. Berland L, Silverman S, Gore R, et al. Managing incidental findings on abdominal CT: white paper of the ACR Incidental Findings Committee. *J Am Coll Radiol.* 2010;7(10):754–73.