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Incidental Findings on CT and MRI: Managing the Balance Between Detection and Overdiagnosis

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Abstract

The widespread use of computed tomography (CT) and magnetic resonance imaging (MRI) has substantially increased the detection of incidental findings. These findings, identified outside the primary clinical indication for an examination, may occasionally reveal important disease but are more commonly benign or clinically insignificant. Their management creates a difficult balance between detecting potentially serious pathology and avoiding unnecessary investigations, patient anxiety, healthcare expenditure, and iatrogenic harm. Contemporary radiology increasingly emphasizes risk-based assessment and standardized management recommendations rather than automatic follow-up of every abnormality. This review discusses the clinical significance of incidental findings, the problem of overdiagnosis, the role of structured recommendations, and strategies for improving patient-centered management.

Keywords: Incidental findings; Computed tomography; Magnetic resonance imaging; Overdiagnosis; Radiology; Patient management

Introduction

Incidental findings are now a routine component of CT and MRI interpretation. Improvements in spatial resolution, multiplanar imaging, and the increasing use of cross-sectional imaging allow radiologists to visualize structures beyond the region responsible for the patient's symptoms. While some unexpected findings can lead to early diagnosis of clinically important disease, many represent normal variants, benign lesions, or abnormalities that may never become symptomatic. The central challenge is therefore not simply detecting an abnormality but determining whether that abnormality requires action [1].

Clinical Importance of Incidental Findings

Incidental findings encompass a broad range of abnormalities involving the liver, kidneys, adrenal glands, pancreas, lungs, thyroid, ovaries, vascular structures, brain, and musculoskeletal system. Their significance varies according to patient age, clinical history, imaging appearance, lesion size, and associated features. The detection of an incidental lesion can occasionally provide substantial clinical benefit. An unsuspected aneurysm, malignant-appearing mass, or other clinically relevant abnormality may permit earlier intervention. However, the majority of incidental findings are benign or have uncertain clinical importance. A 2026 RadioGraphics review emphasized that incidental findings may generate unnecessary follow-up imaging and procedures, producing financial, psychological, and iatrogenic burdens [2].

The Problem of Overdiagnosis

The availability of increasingly sensitive imaging creates a paradox: better detection does not always translate into

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better outcomes. Very small lesions that would otherwise remain undetected may trigger repeated imaging, invasive procedures, specialist referrals, and prolonged surveillance.

Overdiagnosis is particularly concerning when an abnormality has a very low probability of progression or clinical consequence. Patients may experience anxiety simply from being informed that an abnormality exists, even when the radiologist considers it probably benign. Additional examinations can also expose patients to radiation in CT-based follow-up and contribute to healthcare costs. Consequently, the appropriate response to an incidental finding should depend on its estimated clinical risk rather than its mere presence [3].

Standardization and Risk-Based Management

Structured guidelines can help radiologists distinguish findings that require immediate evaluation from those that can safely be ignored or monitored. The American College of Radiology Incidental Findings Committee has developed recommendations for several organ systems and specific abnormalities. For example, recent recommendations for incidentally detected pineal cysts on CT and MRI provide management pathways based on imaging characteristics and clinical context. Similarly, Bone-RADS provides four management categories for solitary bone lesions detected incidentally on CT and MRI, ranging from no further action to additional imaging, follow-up, biopsy, or oncologic referral. Such systems reduce unnecessary variation between radiologists and provide clearer recommendations for referring clinicians [4].

Improving Radiology Reporting

Radiologists have an important role in preventing unnecessary diagnostic cascades. Reports should clearly distinguish clinically important findings from benign incidental abnormalities. When follow-up is appropriate, the recommended modality and timeframe should be stated clearly rather than using vague expressions such as “clinical correlation recommended.” Patient-specific factors should also influence recommendations. Age, symptoms, previous imaging, cancer history, comorbidities, and life expectancy may substantially alter the significance of an incidental lesion [5].

Conclusion

Incidental findings are an unavoidable consequence of modern CT and MRI. Their detection can occasionally identify important disease, but indiscriminate investigation may produce overdiagnosis, anxiety, unnecessary procedures, and avoidable healthcare costs. The goal of contemporary radiology should therefore be selective detection followed by proportionate management. Standardized guidelines, structured reporting, comparison with prior imaging, and individualized risk assessment can help ensure that clinically meaningful abnormalities are addressed while low-risk findings do not initiate unnecessary diagnostic cascades.

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