

Missed Nodule

Case

A 48-year-old man presented to the ED with a 2-day history of cough and congestion. He described the cough as gradual in onset and, though initially nonproductive, it was now productive of green sputum. He denied fevers or chills, chest pain, nausea, vomiting, or diarrhea, and complained of only mild shortness of breath. His medical history was significant for hypertension, which was well managed with daily lisinopril-hydrochlorothiazide. He admitted to smoking one pack of cigarettes per day for the past 25 years, but denied alcohol or illicit drug use.

On physical examination, the patient's vital signs were: blood pressure, 112/64 mm Hg; heart rate, 84 beats/min; respiratory rate, 20 breaths/min; and temperature, 98°F. Oxygen saturation was 97% on room air. The head, eyes, ears, nose, and throat examination was normal. Auscultation of the lungs revealed bilateral breath sounds with scattered, faint expiratory wheezing; the heart had a regular rate and rhythm, without murmurs, rubs, or gallops.

The emergency physician (EP) ordered posteroanterior and lateral chest X-rays (CXR), which he interpreted as normal. He also ordered an albuterol handheld nebulizer treatment for the patient. After the albuterol treatment, the patient felt he was breathing more easily. The frequency of his cough had also decreased following treatment and, on re-examination, he exhibited no wheezing and was given azithromycin 500 mg orally in the ED. The EP diagnosed the patient with acute bronchitis and discharged him home with an albuterol metered dose inhaler with a spacer, and a 4-day course of azithromycin. He also encouraged the patient to quit smoking.

The next day the radiologist's official reading of the patient's radiographs in-

cluded the finding of a very small pulmonary nodule, which was seen only on the lateral X-ray. The radiologist recommended a repeat CXR or a computed tomography (CT) scan of the chest in 6 months.

Unfortunately, the EP never saw this information, and the patient was not contacted regarding the abnormal radiology finding and the need for follow-up. Approximately 20 months later, the patient was diagnosed with lung cancer with metastasis to the thoracic spine and liver. Despite chemotherapy and radiation treatment, he died from the cancer.



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Author's Disclosure Statement: The author reports no actual or potential conflict of interest in relation to this article.

DOI: 10.12788/emed.2016.0069

The patient's family brought a malpractice suit against the EP, stating that the cancer could have been successfully treated prior to any metastasis if the patient had been informed of the abnormal radiology findings at his ED visit 20 months prior. The EP argued that he never saw the official radiology report, and therefore had no knowledge of the need for follow-up. At trial, a jury verdict was returned in favor of the defendant.

Discussion

Unfortunately, some version of this scenario occurs on a frequent basis. While imaging studies account for the majority of such cases, the same situation can occur with abnormal laboratory results, body-fluid cultures, or pathology reports in which an abnormality is identified (eg, positive blood culture, missed fracture) but, for a myriad of reasons, the critical information does not get related to the patient.

Because of the episodic nature of the practice of emergency medicine (EM), a process must be in place to ensure any "positive" test results or findings discovered after patient discharge are reviewed and compared to the ED diagnosis, and that any "misses" result in notifying the patient and/or his or her primary care physician and arranging follow-up. In cases such as the one presented here, a system issue existed—one that was not due to any fault or oversight of the EP. Ideally, EM leadership should work closely with leadership from radiology and laboratory services and hospital risk management to develop such a process—one that will be effective every day, including weekends and holidays.

Missed fractures on radiographs are a common cause of malpractice litigation against EPs. In one review by Kachalia et al¹ examining malpractice claims involving EPs, missed fractures on radiographs accounted for

19% (the most common) of the 79 missed diagnoses identified in their study. In a similar study by Karcz et al,² missed fractures ranked second in frequency and dollars lost in malpractice cases against EPs in Massachusetts.

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While missed lesions on CXR do not occur with the same frequency as missed fractures, the results are much more devastating when the lesion turns out to be malignant. Three common areas where such lesions are missed on CXR include: the apex of the lung, obscured by overlying clavicle and ribs; the retrocardiac region (as in the patient in this case); and the lung bases obscured by the diaphragm.

Emergency physicians are neither trained nor expected to identify every single abnormality—especially subtle radiographic abnormalities. This is why there are radiology overreads, and a system or process must be in place to ensure patients are informed of any positive findings and to arrange proper follow-up.

References

1. Kachalia A, Gandhi TK, Puopolo AL, et al. Missed and delayed diagnoses in the emergency department: a study of closed malpractice claims from 4 liability insurers. *Ann Emerg Med.* 2007;49(2):196-205.
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