A Nuclear Medical Manifestation of Munchausen's Syndrome

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A man with an enlarged and tender left calf, chest pain, itermittant hemoptysis, and shortness of breath was referred for a lung scan. Positioning for the ventilation part of the study revealed a high level of radioactivity in the lungs, kidneys, bladder, colon, and salivary glands. The patient denied previous hospital studies and suggested that he may have become contaminated while transporting radioactive materials as an independent truck driver. He was found to be a classic example of Munchausen's syndrome.

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CASE REPORT

A 30-yr-old white male presented to the emergency room complaining of swelling and pain in his left calf of four days' duration and a sudden episode of chest pain the day before, with intermittent hemoptysis and shortness of breath. He had been an army medical corpsman in Vietnam and was aware of the gravity of such symptoms. The admission physical examination revealed a somewhat enlarged left calf and a low-grade fever of 101° (rectal). The admitting physician found a palpable venous cord in the left leg and elicited a positive Homans' sign from the patient. The examination was otherwise unremarkable.

A tentative diagnosis of deep venous thrombosis (DVT) with possible pulmonary embolism ("PE") was made. A portable chest film was ordered but it showed "no evidence of any active cardiopulmonary disease." The patient was then sent to the nuclear medicine clinic for a ventilation/perfusion scan to rule out pulmonary emboli.

While the patient was being positioned preparatory to the ventilation scan, a high level of pre-existing radioactivity was detected, mainly in the lungs, but with lesser concentrations in the kidneys, bladder, and salivary glands (Fig. 1). The counting rate was maximal when the energy window was set to accept Tc-99m. When questioned about the origin of his internal radioactivity, the patient specifically denied any previous medical radionuclide administrations but offered the explanation that, in his occupation as a self-employed truck driver, he sometimes transported radioactive materials and might have become contaminated as a result. He had a vague recollection of noticing a "radioactive materials" sticker on part of a shipment he had delivered to Dallas, Texas, five days before.

The institutional radiation safety officer was called, and concurred with the suggestion that samples of blood and urine be collected for gamma spectroscopy to identify the radionuclide. Cognizant of the possibility of a grossly contaminated interstate shipment of radionuclides, the radiation safety officer notified the United States Nuclear Regulatory Commission of the incident. That agency, anxious to trace the shipment, sent a representative to the hospital to question the patient regarding the route followed.

Meanwhile, though doubtful of the patient's story of contamination, the nuclear medicine resident was persuaded, on medical grounds, to proceed with the ventillation/perfusion study. The studies were normal and were reported as "low probability of pulmonary embolism."

Despite the absence of positive findings on chest radiograph and $\dot{V}/\dot{Q}$ scan, the tentative diagnosis of DVT could not be definitely ruled out, nor could the possibility of future embolization with consequent PE be excluded. The patient was therefore transferred to an intensive care unit where he was given codeine (60 mg, p.o.) for relief of pain a prophylactic anticoagulant heparin, 1000 units/hr by i.v. drip), and was started on 31% oxygen at 6 l/min by mask. A repeat rectal temperature check showed a 98.6° reading. The reason for the earlier reading was not determined. No venous cord could be found by several other examiners. His medical course throughout the night was uneventful.

By the next morning, the so-called "contamination" had been definitely identified by gamma energy and half-life as Tc-99m. Back extrapolation of the residual activity to the time of the supposed accidental exposure yielded a preposterously high level of initial "contamination." Moreover, the likely sources of such high-level spills (e.g., fission products) are apt to be complex mixtures of radionuclides, many of them having longer half-lives and hence more persistence than 6-h Tc-99m. No other radionu-

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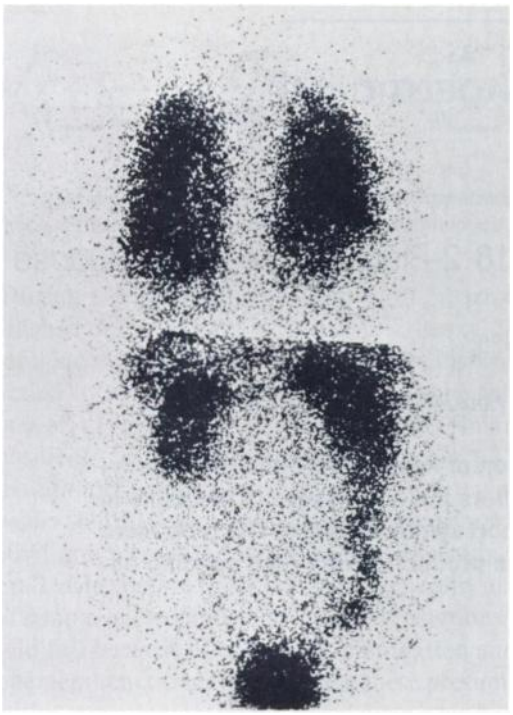

FIG. 1. Composite of posterior chest and abdomen gamma images of patient upon arrival in nuclear medicine clinic and before administration of any radioactive preparation. Lungs, kidneys, bladder, and descending colon are depicted.

clide were detected in the samples obtained from the patient. In the most unlikely event that an isotopically pure aerosol or dust of that radionuclide had been released and accidently inhaled, it could not have become so uniformly distributed in the lungs as was noted in this patient, and in any case would long since have been cleared from the chest by bronchial mucocilliary transport. The most plausible way that such a concentration of that particular emitter could have become uniformly distributed in the lungs would have been by an i.v. injection of a lung-specific, Tc-99m-labeled radiopharmaceutical that had been administered one, or at the most two, days before admission.

Confronted with these facts, the patient became defensive and agitated but steadfastly refused to admit to any previous nuclear medical diagnostic procedures. In the certainty that he was lying, the nuclear medical diagnosis became "Munchausen's syndrome," an opinion not then universally shared by the referring physicians (*1*).

There did remain, of course, the possibility that, though falsely denying, for whatever reason, a previous $\dot{V}/\dot{Q}$ study, the patient might nevertheless be suffering from a genuine DVT with the consequent medical risks. Accordingly, a left leg venogram was attempted but abandoned after several unsuccessful efforts at cannulation. A venous Doppler study with impedance plethysmography showed "no evidence of DVT." On the third day, the patient left the hospital against medical advice. The diagnosis was recorded as "fictitious disease."

DISCUSSION

A healthy person who would fraudulently gain admission to a hospital must learn to exhibit symptoms of a serious disease (e.g., pulmonary embolism) that might plausibly be of sudden onset, thereby laying to rest any suspicions arising from the lack of a previous medical history of prodromal symptoms. The symptoms should be readily feigned (e.g., pleuritic pain) and irrefutable by present history, examination, and/or laboratory test (*2,3*). The simulated disease should be one for which the appropriate diagnostic procedures (e.g., $\dot{V}/\dot{Q}$ scans) are comfortable to bear and not absolutely reliable at ruling out the suggested illness. On all these counts, the deception practiced in the case at hand was nearly perfect.

Retrospective inquiry accomplished in the face of very reluctant cooperation from the involved medical staffs, revealed that this particular patient, using various aliases but the same, well-rehearsed ploy, had succeeded in getting himself admitted to no less than four area hospitals within the month, receiving a $\dot{V}/\dot{Q}$ scan at each institution. At a fifth local hospital, the one visited immediately before his arrival here, he presented himself twice on two successive days, receiving a $\dot{V}/\dot{Q}$ scan each time. At that hospital, however, the $\dot{V}/\dot{Q}$ scan is part of the admission workup, so that on both days he was denied admission since the scans were normal. It is also the practice there to perform the perfusion study first, followed if necessary by a ventilation study using Kr-81m. The subject was therefore injected with the Tc-99m-labeled MAA before being placed in front of the scintillation camera, which explains why the pre-existing Tc-99m-activity from the first day was not noticed on the second.

Late on the afternoon of the following day the patient presented himself at the emergency room of this hospital with the results previously described. The fact that Munchausen's syndrome was suspected almost from the outset arises from the following circumstances. First, less than 36 hr had elapsed since his last scan, so that the remaining Tc-99m-activity was considerable. Second, our use of Xe-133 requires that the ventilation study be done first, so that the residual activity could not go unnoticed, even at an inappropriate window setting. Nevertheless, the subject's display of symptoms was convincing to the attending ER physician and his typically ingenious story of possible contamination was just plausible enough so that the nuclear medicine resident, despite suspicions, did not refuse to perform the study. The patient, therefore, achieved his goal of hospital admission. He even succeeded, for a time, in creating a certain amount of ill will among the ER staff, who felt that their benevolent efforts were being thwarted, initially by a hypersuspicious resident and, soon thereafter, by the chief of nuclear medicine, who was thoroughly convinced of the fraud at first hearing.

It is to be expected that the house staff on referring services, generally unfamiliar with the constraints imposed by the half-life and organ specificity of diagnostic radiopharmaceuticals, might fail to recognize the scientific implausibily of a tale of alleged contamination such as was presented by this patient. It may also be expected that the generally benign nature of nuclear medical diagnostic tests would predispose a clever subject seeking hospital admission to learn to present with feigned symptoms mimicking a serious disease for which such procedures would be indicated. For these reasons, practitioners of nuclear medicine should be particularly wary of Munchausen's syndrome.

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