

# Case Report: Extra-Pulmonary Accumulation of Xenon-133 Gas

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*Ventilation scanning using xenon-133 gas is a common nuclear medicine procedure used to diagnose pulmonary problems. Findings of V/Q match or mismatch and trapping are well documented for various conditions. The following case is presented because of the very unusual appearance manifested during the wash-out phase.*

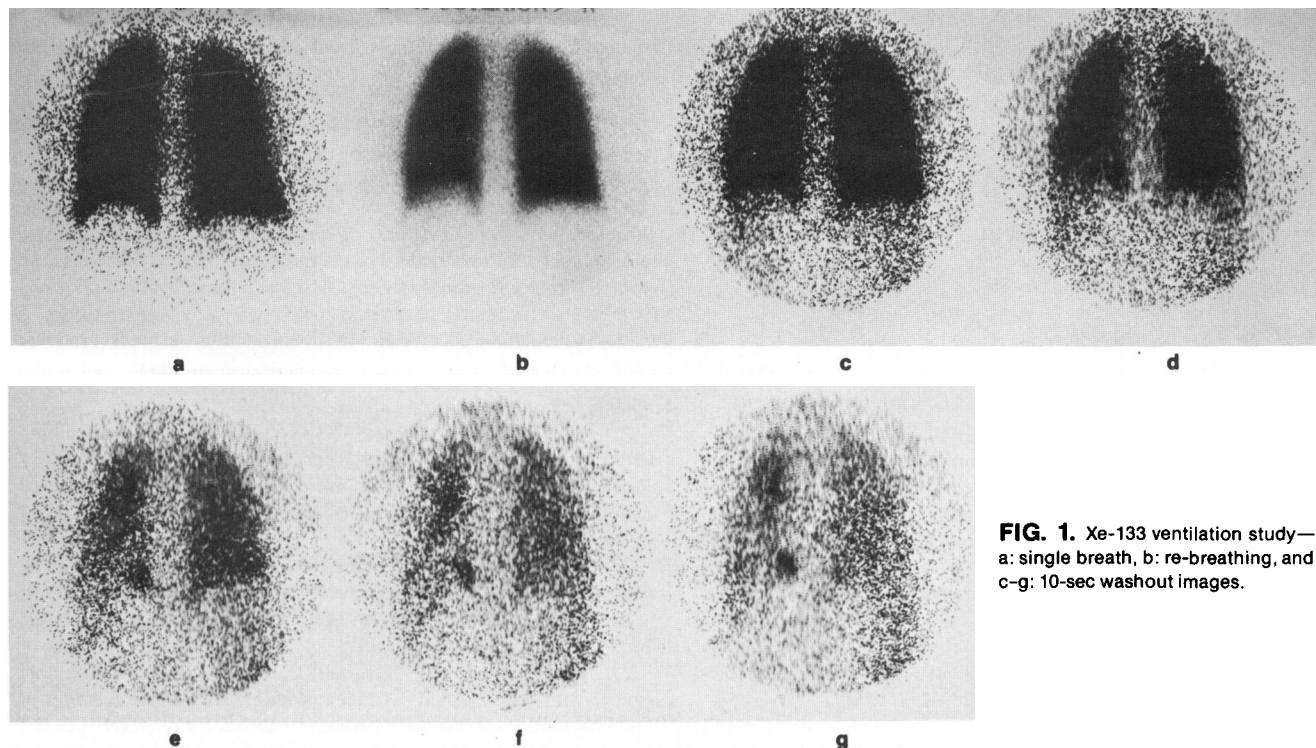
Recently, a 65-year-old woman was admitted to our ICU with congestive heart failure and chronic obstructive pulmonary disease with associated shortness of breath. Her SGOT, LDH, alkaline phosphatase, total bilirubin, glucose, BUN, and uric acid levels were all elevated. Chest x-ray was normal. The patient was referred to the nuclear medicine department for a ventilation and perfusion lung image. The examination was performed in the routine manner and completed without incident. The patient tolerated the examination very well and had no complaints or discomfort.

## Instrumentation

A Searle LFOV camera with a Micro Dot imaging system and parallel hole collimator was used. Camera settings were adjusted for Xe-133 according to the manufacturer's operating instructions. Xenon delivery was accomplished with an ADC xenon delivery system model 130-330 attached to a Radx xenon gas trap.

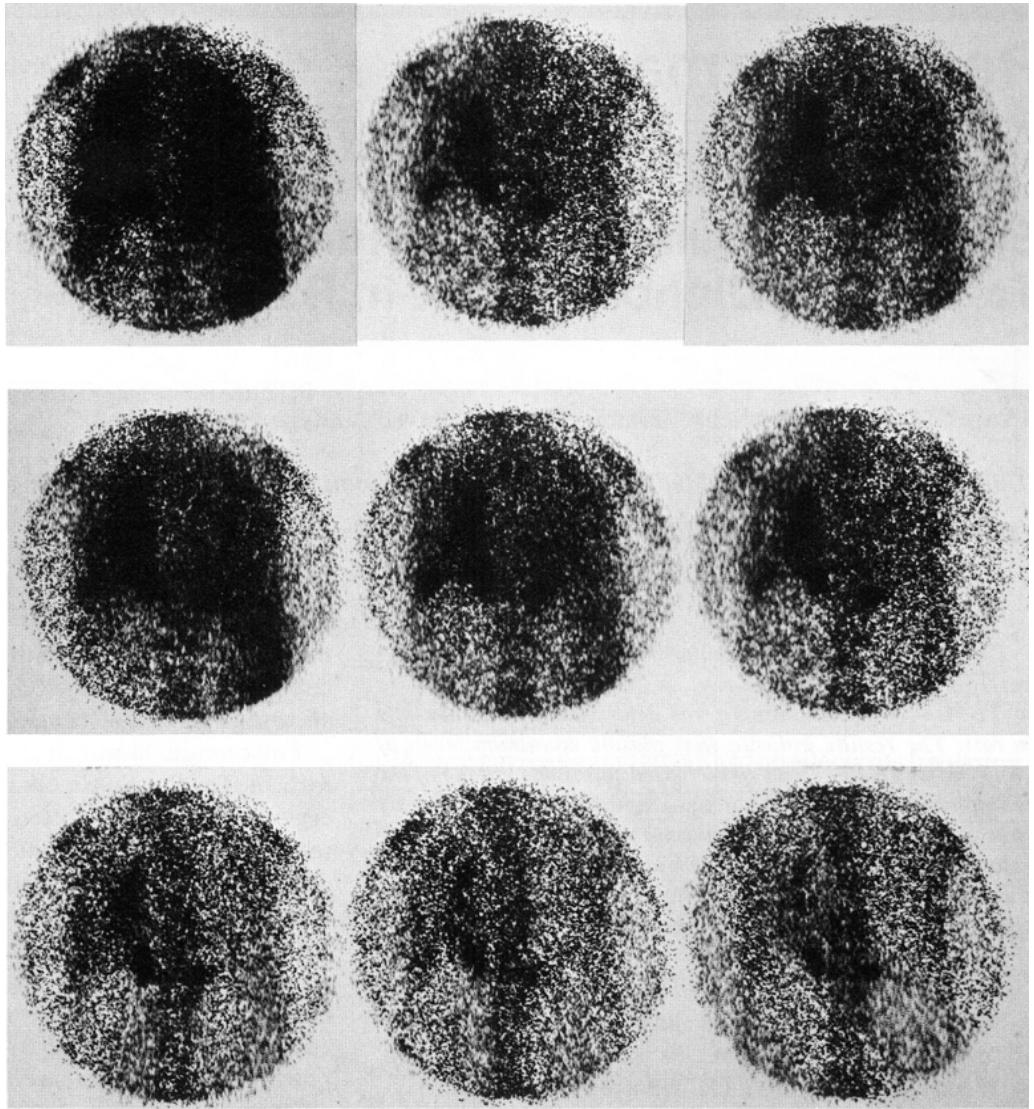
## Materials and Methods

With the patient supine, posterior images of the lung fields were acquired in the following manner: a single breath holding image of 50 K counts was obtained after the inspiration of 10.0-mCi xenon-133 gas (Fig. 1a). Following this, a re-breathing image of 500 K counts was obtained (Fig. 1b). Wash-out was in two phases. Phase one was five 10-sec images (Fig. 1c-g) followed by nine 60-sec images (Fig. 1h-p). Then a six-view perfusion lung scan was performed after the intravenous administration of 4.0-mCi Tc-99m MAA.



**FIG. 1.** Xe-133 ventilation study— a: single breath, b: re-breathing, and c-g: 10-sec washout images.

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**FIG. 2.** Xe-133 ventilation study (continued)—60-sec washout images.

## Results

The perfusion lung scan was normal with no areas of increased or decreased activity; and no activity was seen in the thyroid or abdomen. In reviewing the study, evidence of localized gas trapping during the wash-out phase owing to chronic obstructive pulmonary disease is seen. Secondary findings show increased uptake in the midline, both above and below the diaphragm corresponding to axial skeletal uptake. Skeletal uptake is probably present during the first phase of the wash-out portion, but is not evident owing to the short frame time (Fig. 1c-g). Delayed xenon images could not be taken because of the sub-

sequent perfusion images with Tc-99m MAA. Discussion with the patient and review of the chart eliminated the possibility of cross contamination from a previous nuclear medicine procedure. Review of the literature and discussions with experts in the fields of nuclear and pulmonary medicine revealed no disease, condition, or abnormality that would explain our findings.

## Acknowledgment

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