

AbstractID: 9118 Title: Lung scan doses for young and pregnant women with suspected pulmonary embolism

Purpose:

The two techniques employed for lung scans when pulmonary embolism is suspected are computed tomography and QV nuclear medicine scan. The techniques have greatly different dose distributions to the breast and to the fetus. A recent survey in the UK has shown that doctors lack knowledge of fetal dosimetry. The purpose of this presentation is to discuss this and other implications in the choice of a lung scan.

Methods and Materials:

A review of the literature was performed and estimates of fetal and breast dose from the CT and NM were found. Monte Carlo estimates of the CT dose using the program *CTdosimetry* version 0.99x were made. The nuclear medicine QV scan technique method uses 1.5 mCi Tc99m labeled MAA perfusion injection and the ventilation study, if needed, uses a nebulizer dose of 40.7 mCi Tc99m DTPA. The doses are compared to the NCRP report 54 on "Medical Radiation Exposure of Pregnant and Potentially Pregnant Women," 1977.

Results:

The dose from CT is 40-60 mGy to the Breast and 3-131 microGy to the fetus.

The dose from NM perfusion is 270 microGy Breast and 110 microGy to the fetus.

The dose from NM ventilation is 57 microGy Breast and 90 microGy to the fetus.

The total fetal dose for a QV is 200 microGy.

Conclusions:

The fetal doses from both procedures are less than the 5 rad level for negligible risk from the NCRP. The fetal dose from CT is somewhat less however the breast dose is higher.

The efficacy of the two procedures is not judged here. It is important to note that proper diagnosis of pulmonary embolism is essential. The radiation doses are far less important than having a full range of diagnostic information that is readily available at all times.