عنوان مقاله:

Lung ventilation studies using 99mTc-DTPA radio-aerosol Produced by Jet nebulizer

محل انتشار:

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خلاصه مقاله:

Background: Pulmonary Emboli (PE) is a life threatening disease. Perfusion and Ventilation scintigraphy has been used in nuclear medicine for immediate diagnosis of PE. Due to low access to radioactive gases (133Xe, 81mKr), radio aerosols such as 99mTc-DTPA is an available agent for ventilation studies. Our main goal is to improve 99mTc-DTPA radio aerosol particle size for best ventilation scintigraphy.Methods: Jet nebulizer is a common technique in 99mTc-DTPA radio aerosol production. After 99mTc-DTPA preparation by adding 10-20 mCi, radiochemical purity was assessing for 1 h. Different concentration of ethanol (0-20%) was applied in 99mTc-DTPA solution to decrease radio aerosols particle size. Nebulizer was connected to cascade impactor through a ventilation tube which flows radio aerosols through different disks size.Results: 99mTc-DTPA was prepared with Radiochemical purity of > 98% which decreased to 90% after 1 h. Particle size assay of 99mTc-DTPA was performed using cascade impactor at different concentration of added Ethanol. Low Ethanol concentration of 10% had no impact on radio aerosols particle size. However, higher concentration of Ethanol of 20% in 99mTc-DTPA solution significantly decreased radio aerosols particle size in jet nebulizers.Conclusion: Ventilation scans were done on 20 patients, using a biocompatible surfactant such as Ethanol (20%) decreased particle size of 99mTc-DTPA aerosols and prevented radio aerosols accumulation in warm media of lungs. Therefore, fewer hot focal areas in the lung were observed.

کلمات کلیدی:

Pulmonary Emboli, Ventilation Scintigraphy, 99mTc-DTPA Radio Aerosol