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Recommendations for performing V/Q scans in the context of COVID-19

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Substituting ventilation scintigraphy by CT as part of stand-alone perfusion SPECT/CT is not recommended, as this reduces the specificity of the study. Both perfusion and ventilation studies should be performed to rule out pulmonary embolism. Read more!

V/Q scan and COVID-19

The bottom line

Substituting ventilation scintigraphy by CT as part of stand-alone perfusion SPECT/CT is not recommended, as this reduces the specificity of the study. Both perfusion and ventilation studies should be performed to rule out pulmonary embolism.

Based on recommendations by the [French Society of Nuclear Medicine \(SFMN\)](#) and the [German Nuclear Medicine Society \(DGN\)](#).

What are the potential risks of performing ventilation/perfusion scan in the context of COVID-19?

Patient-to-patient cross-contamination related to the use of the inhalation system. Technegas™ and Krypton 81m have been used worldwide for several decades. No events of viral cross-contamination or other illness associated with the inhalation system have been reported to date. The risk of cross-contamination of COVID-19 associated with the use of the inhalation system therefore appears to be extremely low.

Contamination of health care personnel and the environment

The inhalation procedure of the ventilation radiotracer involves close contact of the technologist with the patient, requires removal of the patient's mask, and may generate a cough. There is therefore an increased risk of transmission in connection with this inhalation phase of the radiotracer.

What measures should be applied to limit the risk of contamination when performing a lung scan in the context of a COVID-19 virus epidemic?

Substituting ventilation scintigraphy by low-dose CT scan alone?

Several studies have evaluated this procedure for the diagnosis of acute pulmonary embolism. Replacing ventilation with CT scan alone has little impact on the sensitivity of the examination, which relies on perfusion scintigraphy. In other words, this procedure is unlikely to "miss" a pulmonary embolism.

On the other hand, this work has consistently reported a decrease in specificity with a significant risk of false positives (15-20% of negative ventilation/perfusion CT scans being misclassified as positive by substituting ventilation with CT). Given the hemorrhagic risks associated with anticoagulation therapy, this risk of diagnostic error is not acceptable.

In principle, an attempt could be made to reduce the number of ventilation studies by performing perfusion scanning first, and doing the ventilation only if the perfusion is not sufficient for diagnosis: normal findings or classic embolism (but beware: without ventilation the specificity decreases).

Therefore, if a pulmonary CT scan is required for the diagnosis of pulmonary embolism, the use of a CT scan as an alternative to ventilation scans is not recommended. Both scans, ventilation and perfusion, should be performed.

What precautions should be taken for the staff?

If a ventilation/perfusion lung scan is required for the diagnosis of pulmonary embolism, the institution's current COVID-19 precautionary measures, adapted to the clinical setting (patient's COVID-19 status) and local organizational constraints, should be applied. We invite all departments to implement procedures for cleaning the examination rooms between each examination (of the type for Multi-Resistant Bacteria) and in accordance with local hospital recommendations. A dedicated circuit for the management of COVID-19+, or suspect COVID-19+ patients must be put in place if the configuration of the department allows it.

References

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office@belnuc.be

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