

# Radionuclide examinations of the lymphatic system

**Radionuclide lymphography** is mainly used to monitor and treat malignant tumours and their metastases. This may be very useful in explaining the aetiology of limb swelling (ruptured or obliterated lymph vessel). We distinguish between **direct and indirect lymphoscintigraphy**.

## Radiopharmaceuticals

Various radionuclides, most commonly  $^{99m}\text{Tc}$ , dissolved in saline are used for **direct lymphoscintigraphy**.

**Indirect lymphoscintigraphy** uses human albumin colloidal aggregates or  $^{99m}\text{Tc}$ -labelled oil emulsions. As with liver tests, rhenium sulphides, again labelled  $^{99m}\text{Tc}$ , can be used to capture macrophages. The size of the particles ranges from 50 to 600  $\mu\text{m}$ .

## Direct lymphoscintigraphy

The method is difficult to execute. Therefore, it is no longer implemented today. It consisted of subcutaneous administration of methylene blue, which stained the lymph vessels. These were then removed under the magnifying glass and threaded with a thin needle. The radiopharmaceutical was thus injected directly into the blood vessel. Scintigraphy was then performed several hours later.

## Indirect lymphoscintigraphy

It is currently used much more frequently than the previous method. Radiopharmaceuticals should be administered subcutaneously. The marked colloids then gradually enter the lymph vessels from the interstitium and are picked up by macrophages in the nodes.

Similarly, the sentinel node is investigated when the radiopharmaceutical is administered s.c. or peritumorally.

## Evaluation of examination

In **normal lymphoscintigraphy**, the finding on both sides is the same: a thin strip of activity indicates a lymphatic vessel. Hot bearings, which are often arranged in a chain behind them, are nodules. The progression of lymph vessels and the number of nodules are very variable, therefore the results of the examination cannot be completely objectified.

If the node is affected by metastasis, inflammation or any other pathology that prevents the lymph from draining, no more nodes are displayed.

**Lymphedema** manifests as a diffuse distribution of activity in the affected tissue, the radiopharmaceutical oozes into the surrounding interstitium.

**Sentinel nodes** are the ones that appear first. Lymphoscintigraphy is unable to accurately express node involvement only if lymph flow is stopped completely. Therefore, her surgical withdrawal and histological examination are necessary. The radiopharmaceutical accumulated in the node can be used in surgery where the surgeon uses small hand-held scintillation probes to accurately locate the node.

## Links

### Related articles

- Swelling

### Bibliography

- KUPKA, Karel, Jozef KUBINYI a Martin ŠÁMAL, et al. *Nukleární medicína*. 1. vydání. vydavatel, 2007. 185 s. ISBN 978-80-903584-9-2.