Additional Information

You can at any time address the technologists conducting your test with any questions you may have, before, during or after the test.

No risk of cancer or any other disease has been demonstrated at such low radiation doses (< 100 mSv).

The low dose of radiopharmaceutical product will be mainly eliminated by the kidneys. It is therefore important to hydrate well during the following 24 hours, unless otherwise advised by your doctor.

Our nuclear medicine department uses hybrid devices with a scintillation camera (which captures emissions from the injected radiopharmaceutical product) coupled with a CT scanner. For the purposes of this test, you will also receive a low dose of X-rays.

For more information on radiation, please consult the booklet *Information on Ionizing Radiation*, available in waiting rooms of our imaging department.

IMPORTANT POINTS

In order to speed up our service during your appointment, we ask you to have an up-to-date list of your medications with you.

Before undergoing a nuclear medicine test, it is important to let us know if there is a possibility that you may be pregnant or if you are breastfeeding.

Following a nuclear medicine test, you can resume your normal activities.

If you are considering leaving the country soon, please inform the technologist in order to obtain the required document. The injected radiopharmaceutical product could be detected at customs.

If you are unable to attend your test, please notify us as soon as possible by calling 514-376-3330, ext. 3488.

May 25, 2022 Version Reviewed on September 24, 2025

Montreal Heart Institute
affiliated with the Université
of Montreal

INSTITUT DE CARDIOLOGIE DE MONTRÉAL

Nuclear Medicine Department

Information on cardiac amyloidosis

Cardiac amyloidosis

Definition

Amyloidosis (or amylose) is a disease where our own proteins are deposited in different organs of our body. Proteins are molecules found in all living organisms and are essential for life. They are used, among other things, for the formation of many human tissues; they also transmit signals and are necessary for the functioning of various organs such as the heart.

Sometimes, some of these proteins lose their ability to maintain their optimal shape. Effectively, in amyloidosis, one of the elements that maintained their shape disappears. At this point, these proteins fold back onto themselves, compact and assemble together to take the form of rigid rods called amyloid fibrils. These fibrils are able to accumulate in many organs of our body (heart, nerves, kidneys...) and can cause functional problems.

The risk of damage to each organ depends on the type of amyloidosis. In the case of the heart, fibril deposits cause a micro-calcification reaction in several portions of the organ, particularly the heart muscle.

Types of Amyloidosis

There are several types of amyloidosis depending on the underlying cause. Amyloidosis can result from an inherited genetic disease. It is linked to a genetic mutation in a protein called transthyretin. It is a genetic disease that usually appears between the ages of 50 and 60. It can also be caused by a bone marrow disease (*AL amyloidosis*). In this case, the white blood cells will begin to produce excessive antibodies that will agglomerate into a fibril and form deposits.

Finally, in the majority of cases, aging is the cause of amyloidosis. This type of amyloidosis is also related to transthyretin. However, in this case, aging is the cause creating the problem at protein level, leading to its folding into itself and the formation of fibrils.

Symptoms

Several types of symptoms may be experienced. These are mainly:

- Swollen legs
- A significant shortness of breath
- Significant fatigue

Other symptoms that may sometimes appear:

- Bruises around the eyes
- Macroglossia (or swollen tongue) related to deposits on the tongue, with alterations in taste
- Damage to the nails (nails that crack)
- Carpal tunnel damage
- Deafness
- Lumbar canal damage
- Tingling at the extremities
- Or even a motor deficit and difficulty walking

PYP Imaging

PYP (for pyrophosphate) is a molecule that has a high affinity for micro-calcifications. A radioactive substance called ^{99m}Tc is bound to PYP before being injected into your body through a vein in your arm. Images will be acquired after the tracer is injected. A delay between the injection of the tracer and the acquisition of images is necessary to obtain optimal image quality. The test can therefore last several hours.

This tracer will attach to your heart in the presence of amyloid fibril deposits. A myocardial perfusion scan at rest using rubidium may also be performed on the same day. Both tests are complementary and sometimes necessary for an accurate diagnosis.

Please note that this test can only detect cardiac amyloidosis related to the transthyretin protein. It does not detect cardiac amyloidosis related to a disease of your bone marrow (AL type). Further testing may be required to complete a global screening for amyloidosis, such as blood tests. These other tests will be prescribed by your doctor.