
Patient Information Leaflet: Carcinoid Heart Disease

This leaflet has been compiled by the ENETS CHD task force. Dated: September 2023.

What is carcinoid heart disease (CHD)?

Carcinoid syndrome (CS) is the most frequent hormonal complication of neuroendocrine tumours (NETs). It is defined by chronic diarrhoea and/or flushing in the presence of high levels of serotonin metabolite 5-hydroxyindolacetic acid (5-HIAA). Carcinoid syndrome usually occurs with NETs found in the intestine but can also occur in other types of NETs (lung, pancreatic, ovarian, or unknown origin NETS).

Serotonin, together with other bioactive substances, can affect the right side of the heart inducing changes known as carcinoid heart disease, which are present in approximately 20%–30% of patients with carcinoid syndrome. When CHD is present timely treatment and follow-up is required.

CHD is characterised by a fibrotic process involving heart valves. It is important to understand that CHD does NOT represent metastasis of the NET to the heart. Fibrous plaques develop on the heart valves causing them to become thickened which leads to narrowing and/or leaking of the valves. Typically, the right sided heart valves (tricuspid and pulmonary) are affected. In about one third of cases the left sided valves (mitral and aortic) can be affected. The severity of these valve problems varies from a mild leak/narrowing, to a severe leak/narrowing which can cause right heart failure.

How is it diagnosed?

If there is a suspicion of carcinoid heart disease due to symptoms or where patients are at risk of developing carcinoid heart disease due to increased levels of 5-HIAA, an ultrasound scan of the heart will be performed to see if the heart valves show any evidence of carcinoid heart disease. A blood test (NT-proBNP) may also be used when available to help identify if there is a problem with the heart valves. If no carcinoid heart disease is detected, your physician will determine the need for and frequency of future heart scans depending on your individual risk of developing carcinoid heart disease.

What symptoms should I look out for?

In patients with mild valve leaks/narrowing due to carcinoid heart disease, patients will have no symptoms.

Even patients with moderate to severe valve leaks/narrowing might not have any symptoms and thus do not know they have carcinoid heart disease. When present, typical symptoms are fatigue and tiredness. In advanced stages, shortness of breath and swelling of the abdomen and legs can occur.

Patients with Carcinoid Heart Disease

Why have I been affected?

It is likely your heart valves have been exposed to high levels of serotonin in the blood stream produced by the neuroendocrine tumour. However, there are other factors involved since not every affected patient with high serotonin levels will develop carcinoid heart disease.

How will I be followed up?

Follow-up is tailored to the individual patient and will consist of ultrasound of the heart (preferably in specialised centers), clinical evaluation by the treating NET physician and blood and urine tests performed at regular intervals.

How is it treated?

Treatment is focussed on two key principles.

(1) Optimisation of NET therapy to reduce levels of serotonin in the blood stream.

There is a range of different treatments available to treat your NET including somatostatin analogues, peptide receptor therapy, biological therapies or treatment targeting the disease in the liver. These are designed to reduce symptoms of carcinoid syndrome i.e., flushing, diarrhoea and also to reduce the levels of circulating serotonin. Moreover, treatment with telotristat (Xermelo®), a drug specifically decreasing serotonin levels, should be considered (if available in your country). Reduction of the level of circulating bioactive compounds could potentially reduce the rate of progression of CHD.

(2) Management of heart valve disease

Patients with mild or moderate valve leaks/narrowing just require follow-up with echocardiography in regular intervals.

In patients with moderate to severely leaky or narrow heart valves, if the patient has symptoms including abdominal and leg swelling, medical treatments including diuretics ("water tablets"), as well as specific diet restrictions (restricting the use of salt in your diet) can be prescribed to reduce these symptoms.

In some patients with severely leaky or narrowed heart valves who are symptomatic (shortness of breath or leg swelling) and whose NET has been well controlled, heart valve surgery/procedure may be considered in highly experienced centers to replace the damaged heart valves. The purpose of heart valve surgery is to improve symptoms and it may improve survival. You should always consult with your NET specialist regarding if, where, and when to perform the heart surgery/procedure.

As this is major heart surgery, careful and detailed evaluation of the risks and benefits of surgery should be made. Only a proportion of patients will undergo heart valve surgery, as for some patients, medical therapy may be a better option.

Where can I get more information?

Further information can be found in different patient support group websites listed below.

- INCA (International neuroendocrine cancer alliance):
<https://incalliance.org/ask-the-net-expert-in-may-carcinoid-heart-disease-in-net/>
- Mayo Clinic:
<https://www.mayoclinic.org/diseases-conditions/carcinoid-syndrome/symptoms-causes/syc-20370666#:~:text=Carcinoid%20syndrome%20causes%20problems%20with,eventually%20lead%20to%20heart%20failure>
- Neuroendocrine Cancer UK
<https://www.neuroendocrinecancer.org.uk/carcinoid-heart-disease-1/>
- Hadassah Medical Center, Jerusalem:
https://www.hadassah.org.il/en/files/PDF_Files/Carcinoid%20syndrome%20and%20its%20complications.pdf

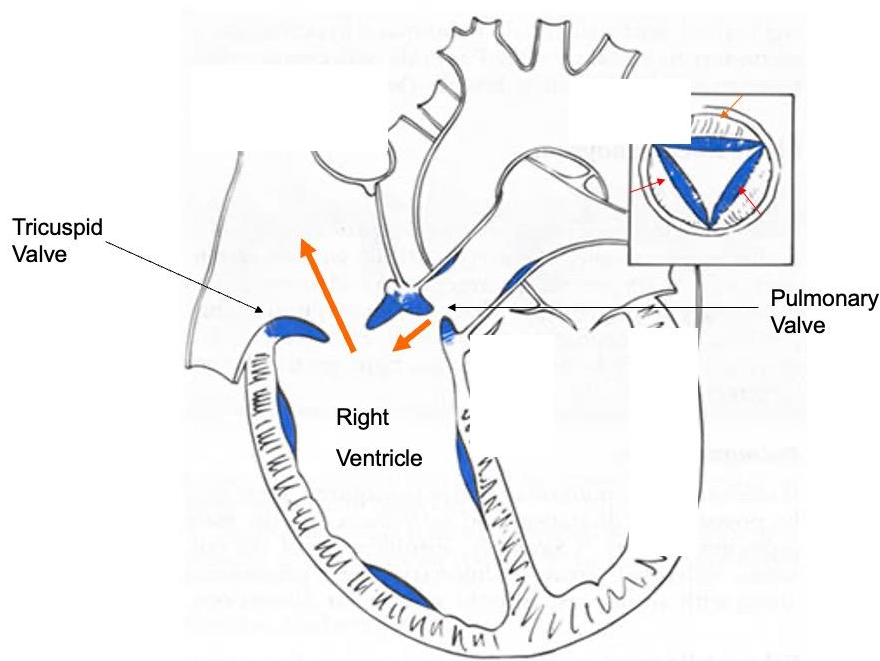


Figure. Carcinoid Heart Disease.

Carcinoid plaques in blue.

Tricuspid valve with thickened leaflets. Red arrow depicts blood leaking through the valve.

Pulmonary valve with thickened leaflets. Red arrow depicts blood leaking through the valve.