



NEUROENDOCRINE CANCER GUIDE

RELATED COMPLICATIONS

2023



www.neuroendocrinecancer.org.uk



In medicine, a complication means an added problem that occurs as a disease develops. There are serious complications that may occur which will require urgent medical attention.

In this guide we look at the following Neuroendocrine Cancer-related complications:

- Mesenteric Fibrosis
- Carcinoid Heart Disease (CHD, Hedinger syndrome)
- Carcinoid Crisis
- Hypercalcaemia
- Cushings Syndrome
- Syndromes of inappropriate ADH Secretion
- Spinal cord compression
- Cauda Equina Syndrome
- Superior Vena Cava obstruction
- Lambert-Eaton Myasthenic Syndromes (LENS).



Mesenteric Fibrosis

Mesenteric Fibrosis – is where fibrotic strands form between tissues and organs of the small bowel and mesentery, like internal scar tissue, they connect tissues not normally connected – causing ‘gathering’ or kinking. This fibrotic process, thought to be related to excess serotonin production, can entrap loops of the small intestine and cause partial or complete intestinal obstruction and can lead to bowel ischaemia.

Symptoms can range from mild to severe:

- They may be acute (sudden and severe) – for example: signs of bowel obstruction – increasingly severe abdominal pain/cramping associated with vomiting.
- or chronic (occur over time and change in severity and frequency) – for example may be similar to symptoms of Irritable Bowel Disease – abdominal discomfort/cramping, diarrhoea, bloating, altered bowel habit, early satiety (feeling full, even after only a few mouthfuls) and / or nausea.

Intestinal (bowel) ischaemia is a serious condition that can cause pain and make it difficult for your intestines to work properly. In severe cases, loss of blood flow to the intestines can damage tissue and possibly lead to gangrene and/or sepsis (life-threatening infection).



Mesenteric Fibrosis

Although this process can develop over time (chronic), small kinks or inflammation/ cramping, can cause a sudden (acute) obstruction which needs urgent medical review – symptoms of acute obstruction and/or ischaemia include:

- Sudden abdominal (tummy) pain that may be moderate or severe
- Nausea and vomiting
- An urgent need to have a bowel movement
- Frequent, forceful bowel movements or no bowel movements at all
- Abdominal tenderness or distention.



Severe, acute symptoms require urgent medical review

Never ignore acute abdominal pain. Make sure you mention it to your care team – even if the symptoms ease off. If you have a small bowel Neuroendocrine Cancer and are experiencing pain with nausea and vomiting, it could be a sign that your bowel may be blocked. Bowel obstruction is a medical emergency and requires urgent medical attention.



Carcinoid Heart Disease (CHD, Hedinger syndrome)

Carcinoid Heart Disease (CHD, Hedinger syndrome) is a rare condition that affects about one in five (20%) patients who have a Neuroendocrine Cancer AND Carcinoid Syndrome (CS), particularly those whose primary is in the small bowel followed by lung, large bowel, pancreas or ovary.

The precise cause is unknown but is thought to be related to raised levels of peptides and hormones produced by Neuroendocrine Cancer cells – in particular serotonin.

In normal health, each time your heart beats, it first fills with blood and then pumps that blood out. The heart has valves that open and close with every heartbeat, helping the blood to flow smoothly and freely in one direction through the chambers of the heart and to the rest of your body. But if a valve doesn't open or close properly, problems can occur. The body may not get a sufficient supply of blood (stenosis), or, in some cases, blood can seep back into the heart (regurgitation).

In Carcinoid Syndrome raised serotonin levels may lead to the development of plaques on the surfaces of the valves of the heart. Valve leaflets become thickened, retracted and immobile, resulting in either stenosis (failure of valve to completely open) or, most often, in regurgitation (failure of valve to completely close) that causes right ventricular dilatation and ultimately, right heart failure.





Left-sided valve disease

is unusual (less than 5%) and may be limited to those with a Patent Foramen Ovale (PFO), those with lung secondaries (metastases), and those with high tumour burden who may secrete particularly high levels of serotonin.



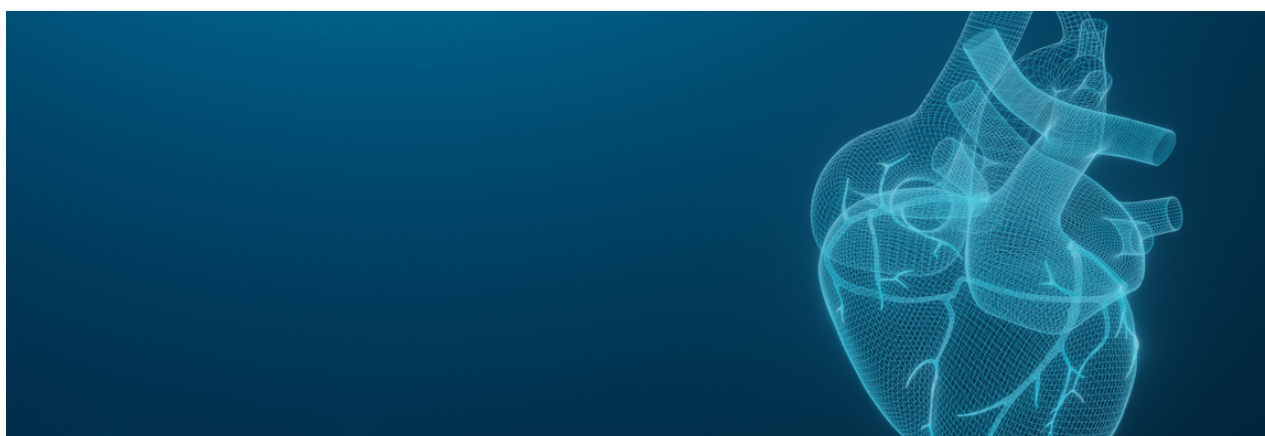
The right sided heart valves

Tricuspid and / or Aortic are the most likely to be affected, whilst left sided valves – Pulmonary and/or Mitral valves are less often involved.



A PFO

is a hole in the heart that didn't close the way it should after birth, allowing blood to avoid passage through the lungs, by leaking through from the right side of the heart to the left.



Many patients with Carcinoid Heart Disease may have no obviously notable heart-related symptoms, however, early signs may include:

- A gradual reduction in exercise capacity for example walking and / or exercise
- Dyspnoea (shortness of breath) – mainly on exertion
- Increasing fatigue.

Some of which may be thought to be due to other potential causes, such as the cancer itself, general health issues and / or increasing age.

In advanced Carcinoid Heart Disease however, symptoms may include worsening shortness of breath, peripheral oedema (for example swollen ankles), ascites (fluid collection of the abdomen), unintentional weight loss, reduced muscle mass and more obvious signs of right heart failure.

UKINETs have supplied Bitesize Guidance for Healthcare Professionals on CHD [here](#).



Carcinoid Crisis

Carcinoid Crisis is rare, but if it happens, those most at risk are people who already have Carcinoid Syndrome, however, it may also occur in patients without prior history of carcinoid syndrome. It can occur spontaneously (without obvious cause) but is most associated as being triggered by anaesthesia or tumour manipulation (biopsy, surgery or interventional radiology – e.g., embolisation or ablation treatments).

Therefore, careful assessment and precautionary measures including treatment with Octreotide through an infusion, are usually undertaken before surgery or intervention.

Symptoms are similar to Carcinoid Syndrome but are much more severe – include severe flushing – often accompanied by palpitations / fast, irregular heart rate, low blood pressure, confusion and breathing difficulty – and can be life-threatening.

Neuroendocrine Cancer UK supply wallet alert cards for those at risk of Bowel Obstruction and / or Carcinoid Crisis – they can be ordered free [here](#).

UKINETs have supplied Bitesize Guidance for Healthcare Professionals on the prevention and / or management of Carcinoid Crisis [here](#).



Neuroendocrine Cancer UK
(Formerly NET Patient Foundation)

MEDICAL ALERT

AT RISK of Bowel Obstruction

hello@nc-uk.org
www.neuroendocrinecancer.org.uk
Registered charity number 1092386
UKINETs clinical practice guidance www.ukinets.org

Neuroendocrine Cancer UK
(Formerly NET Patient Foundation)

AT RISK of Carcinoid Crisis

I have Neuroendocrine Cancer and am at risk of Carcinoid Crisis
UKINETs Expert Guidance on Carcinoid Crisis prophylaxis www.ukinets.org

hello@nc-uk.org
www.neuroendocrinecancer.org.uk
Registered charity number 1092386



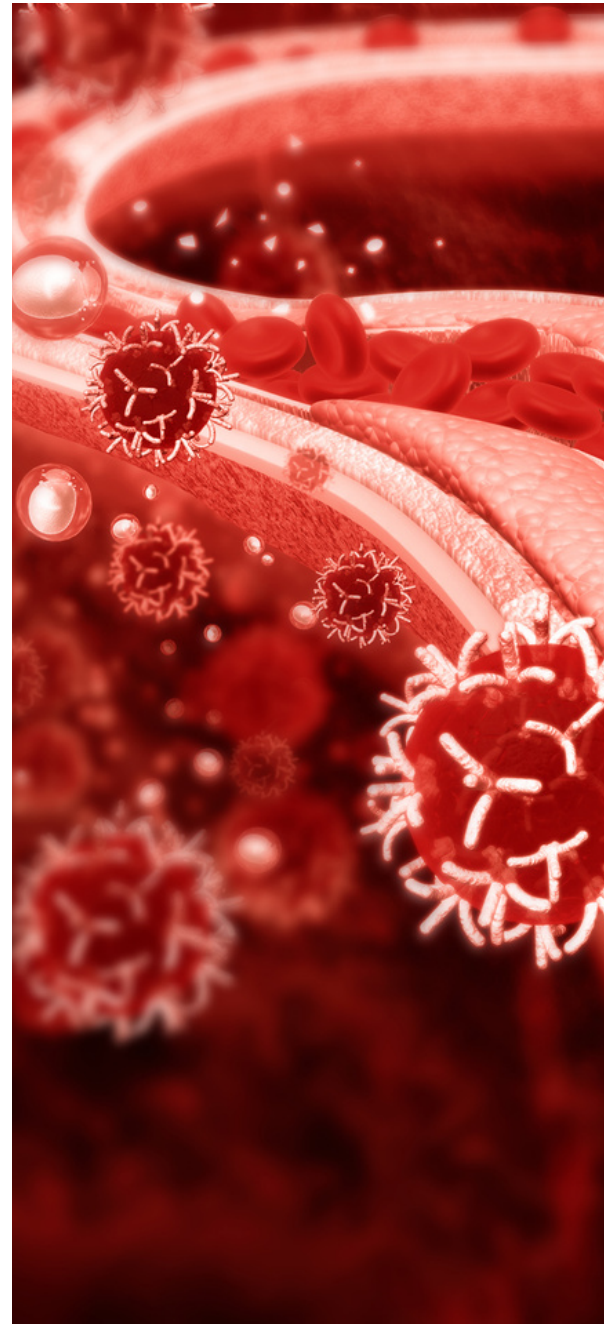
Other Cancer-Related Complications

Cancer complications and paraneoplastic syndromes (acute oncology) – are very rare and may occur in any form of cancer – and may require urgent medical review.

Most UK hospitals have an Acute Oncology Service (AOS) – further information about these can be found [here](#).

Paraneoplastic syndromes occur when a cancer causes unusual symptoms due to substances that circulate in the bloodstream. These substances may be hormones produced by the tumour or antibodies produced by the immune system. They can affect the function of various tissues and organs and cause symptoms at sites distant from the tumour. A rare group within these syndromes specifically target the body's nervous system (for example Lambert-Eaton myasthenic syndrome – LEMS).

About one in five people with cancer (of any form) may develop a paraneoplastic syndrome.



Other complications may include:

- **Hypercalcaemia**
 - Raised calcium levels – affects up to one third of cancer patients at some point in their disease course. There are two main causes of hypercalcaemia. The first is associated with the presence of bone metastasis and how these can affect calcium levels.
 - The second most common cause, also known as Humoral Hypercalcaemia of Malignancy (HHM), is related to the abnormal secretion of parathyroid-related hormone.
 - Both causes can be confirmed by measuring calcium levels in the blood.
 - Symptoms include nausea and vomiting, anorexia, thirst and polydipsia, polyuria, lethargy, bone pain, abdominal pain, constipation, confusion and weakness.
- **Cushings Syndrome**
 - Raised cortisol levels – occurs when a hormone called ACTH is over-produced (hyper-secreted) by abnormal neuroendocrine cells. This causes the adrenal glands to make too much cortisol (a steroid hormone) and other hormones, causing symptoms of muscle weakness, weight loss, hypertension (high blood pressure), excessive hair growth, and osteoporosis, hypokalaemia (low potassium levels) and hyperglycaemia (raised blood sugars).
- **Syndrome of Inappropriate ADH Secretion (SIADH)**
 - Occurs due to the excessive production of antidiuretic hormone (ADH), which causes an increase in hypervolemia leading to hyponatremia where plasma sodium levels are lowered, and total body fluid is increased. Approximately 10% of patients who have Small Cell Lung Cancer exhibit SIADH with symptoms including confusion, seizure, reduced consciousness and coma.



Other complications may include:

- **Spinal Cord Compression**

- The spinal cord is the bundle of nerves that carries messages back and forth from your brain to your muscles and other soft tissues. It is protected by a stack of backbones called vertebrae. The nerves of your spinal cord run through the openings between the vertebrae and out to your muscles. The most common causes of spinal cord compression are the gradual wear and tear on the bones of the spine: osteoarthritis. However spinal cord compression can develop more quickly, even very suddenly – due to trauma or the development of cancer in the spinal cord or the vertebrae. Symptoms can range from mild to severe: They may be acute (sudden and severe) – and require urgent medical review. For example:
 - Severe or increasing numbness between the legs, inner thighs, and back of the legs
 - Severe pain and weakness that spreads into one or both legs, making it hard to walk or get out of a chair
 - Loss of bowel or bladder control
 - or chronic (occur over time and change in severity and frequency) – for example:
 - Pain and stiffness in the neck, back, or lower back
 - Burning / sharp pain that spreads to the arms, buttocks, or down into the legs (sciatica)
 - Numbness, cramping, or weakness in the arms, hands, or legs
 - Loss of sensation in the feet
 - Trouble with hand or leg coordination
 - “Foot drop,” weakness in a foot that causes a limp
 - Loss of sexual ability – such as erection problems or loss of sensation
 - “Saddle anaesthesia” – imagine sitting on a saddle – saddle anaesthesia is the loss or reduced feeling/sensation in the parts of the body that touch the saddle i.e., the bits you sit on!

- **Cauda Equina Syndrome**

- Is a rare but serious condition that describes extreme pressure and swelling of the nerves at the end of the spinal cord. These nerves control bowel and bladder functions as well as movement and sensation in the legs and feet. It can develop quickly with sudden severe symptoms, but may also develop slowly, with early symptoms that often mimic other conditions. The most common cause is a herniated (slipped) disc which puts pressure on these nerves. Other causes include trauma, infection, osteoporosis and cancer. Symptoms may be similar to those of spinal cord compression.



Other complications may include:

- **Superior Vena Cava Obstruction**

- The superior vena cava (SVC) is a big vein in the middle of the chest, that carries blood from the upper body to the heart. SVCO occurs when either a cancer or lymph node mass grows too near the SVC, pressing against it or growing round it, causing a blockage or disruption of blood flow within it.

- **Lambert-Eaton Myasthenic Syndrome (LEMS)**

- Is a very rare condition that may occur as a paraneoplastic disorder in association with cancer (CA-LEMS), notably small cell carcinoma of the lung. It affects the signals sent from the nerves to the muscles, which means that the muscles are unable to tighten (contract) properly, resulting in muscle weakness and a range of other symptoms.

