Neuroendocrine Cancer UK

Incorporating The Ann Edgar Trust

NEUROENDOCRINE CANCER

TREATMENT: INTERVENTIONAL RADIOLOGY

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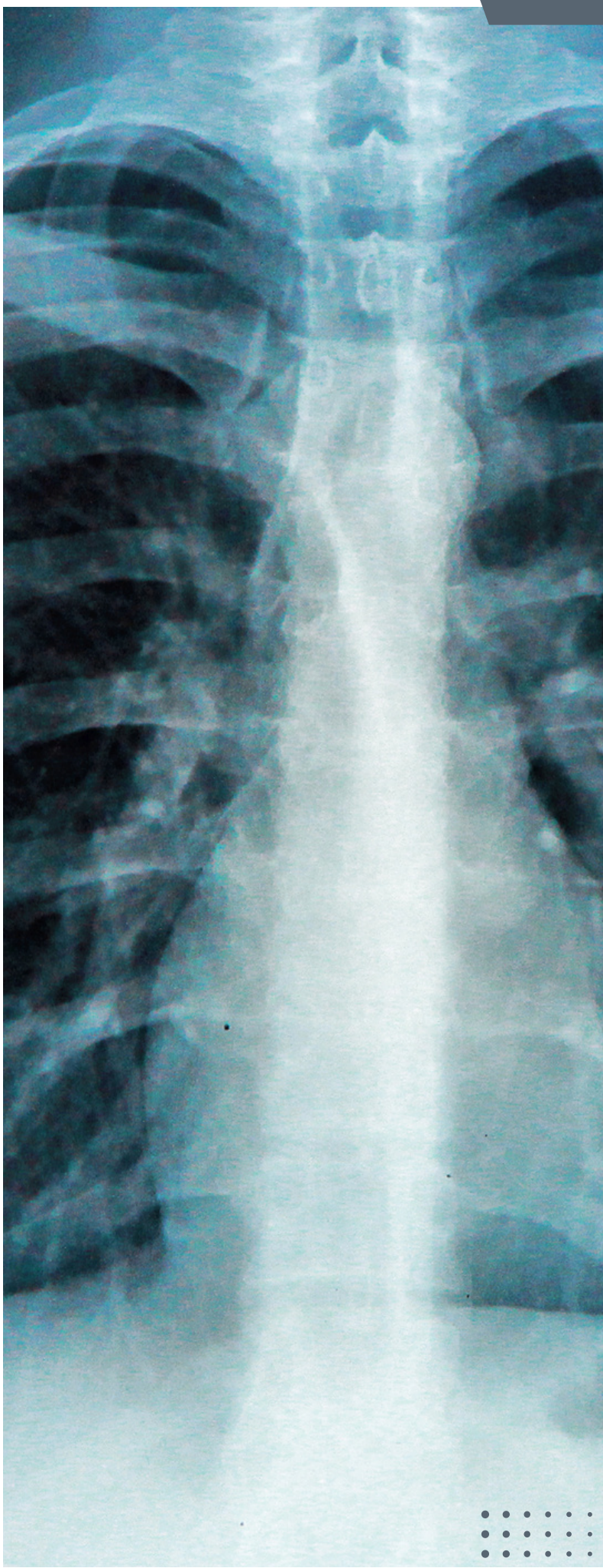
www.neuroendocrinecancer.org.uk



According to the British Society for Interventional Radiology:

"Interventional Radiology (IR) refers to a range of techniques which rely on the use radiological image guidance to precisely target therapy (X-ray fluoroscopy, ultrasound, computed tomography [CT] or magnetic resonance imaging [MRI]).

Most IR treatments are minimally invasive alternatives to open and laparoscopic (keyhole) surgery. As many IR procedures start with passing a needle through the skin to the target it is sometimes called pinhole surgery!"

What is Interventional Radiology?

IR therapies can be used for the following:

- To treat cancer (tumour ablation, embolisation)
- To relieve the effects of the cancer on other systems e.g. blockage of the oesophagus, bowel, kidney (nephrostomy) or liver (biliary drainage)
- To drain collections of fluid or pus in the chest or abdomen
- To place feeding tubes (gastrostomy, jejunostomy)
- To treat collapsed spinal bones (vertebroplasty).

These treatments are performed and checked using imaging (ultrasound, computed tomography or magnetic resonance imaging).

Hepatic Artery Embolisation

Hepatic Artery Embolisation (HAE – also known as TAE – Transhepatic Arterial Embolisation). The liver's unique dual blood supply (approximately 2/3rd is via portal veins and 1/3rd via the hepatic artery) allows for embolisation (and / or the delivery of treatment and embolisation) via the hepatic artery without compromising blood supply to the unaffected liver. This is useful in Neuroendocrine Cancer that may occur within the liver – as it tends to latch onto / develop its own blood supply attached to branches of the Hepatic Artery. By blocking (embolising) these branches you can essentially starve the tumour of oxygen and nutrients, causing the cancer cells within it to shrink and / or die.

Occasionally this procedure may be used to also deliver certain chemotherapy drugs or irradiated beads directly to the tumour – before embolisation occurs – the drug or radiation is concentrated on the tumour and the embolisation keeps the drug or radiation in place, as well as cutting off further oxygen and nutrients to the tumour.

If chemotherapy is used the procedure is called TACE (Transarterial ChemoEmbolisation)
If irradiated beads are used the procedure is called SIRT (Selective Internal Radiation Therapy).

Portal Vein Embolisation

Portal Vein Embolisation (PVE) is a technique used, usually as part of preparation for liver surgery – to reduce the size of the liver to be removed and increase the size of the liver segments that will remain after surgery. It is normally reserved for use in cases where there may be concern about reduced or lost liver function if little liver is left behind. The liver can continue to provide normal function on about 40% of its normal size – and it can recover to near normal size, and full function, provided it has enough 'volume' to do so during and immediately after surgery.

PVE works by blocking blood flow to the part of the liver to be removed. This encourages blood flow to the part of the liver that will remain – and encourages growth. If growth is enough to maintain normal function, during and immediately after surgery, then the surgery can go ahead.

PTC & Stent Insertion

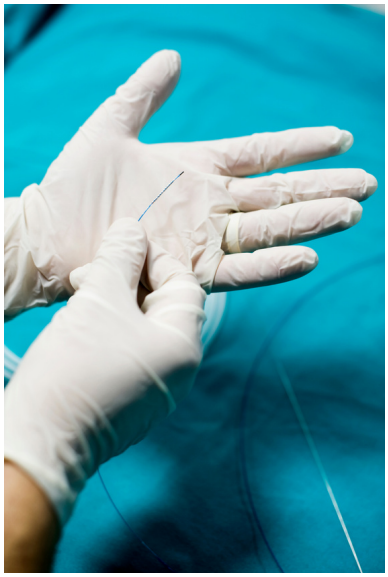
Occasionally a tumour in or near the pancreas and bile duct system may cause a blockage that means that bile cannot flow from the liver into the digestive system. Without being able to flow out of the liver, bile can build up within it and cause jaundice (where your skin and the whites of your eyes can turn yellow). Jaundice can make you feel very unwell – may cause infection or sepsis – as well as reduce your body's ability to absorb food properly. Insertion of a biliary stent can help to alleviate this blockage – and so alleviate jaundice.

A biliary stent is usually inserted via endoscopy in a procedure called an ERCP (Endoscopic Retrograde Cholangio-Pancreatography). If the stent cannot be inserted using an endoscope you may be asked to consider a PTC (Percutaneous Transhepatic Cholangiogram) – a procedure carried out by Interventional Radiology – that involves inserting a small, flexible, plastic tube through the skin into the liver in order to drain an obstructed bile duct system. You may be left with a temporary drain and bag, for bile to drain into until a stent can be successfully positioned. Occasionally a combination of both ERCP and PTC is required to achieve effective bile drainage and flow.

Stent Insertion

Sometimes where a tumour cannot be removed, IR may be used to insert a stent to help alleviate the blockage it may cause.

For example; a colonic stent (a hollow cylindrical tube, usually made of metal or an alloy) can be used to relieve complete or partial large bowel blockage. The stent is compressed tightly onto a small delivery wire which allows the stent to be positioned across the tight narrowing which has caused the blockage. Once opened, it relieves the obstruction by keeping the colon open. It can take up to 24 hours for the stent to fully open.



The British Society for Interventional Radiology has a page dedicated to patient information about a number of procedures they may perform – however, not all are listed – and not all listed may be suitable or available for use in Neuroendocrine Cancer. You can find out more here.

Effects of Treatment

Neuroendocrine Cancer Treatments work in a variety of ways – and whilst we wish it wasn't the case, side-effects can occur – not will occur – but can occur.

Many of these, if they happen, can be mild and manageable – others may cause an alteration or adjustment in treatment, such as reduced dose or interval – occasionally a treatment may have to stop – either temporarily (a 'treatment break') or permanently, because the side-effect is more severe. You may also be given treatments in a different order to what was first planned or how you may see them given in others – remember – your treatment plan will be personalised to you. But it is only possible to deal with changes and side-effects, if you are able to talk them through with your specialist nurse or team.

If you notice a change, or don't feel well, during or after a treatment – it may be tempting to ignore it or not mention it or wait a few weeks to see if things improve. You may be worried that if you do highlight any changes, your treatment may be stopped. However, the sooner your team knows what is happening, the sooner they can help you to deal with any changes – which will not always mean stopping treatment.

Changes or new symptoms may not always be caused by your treatment – Neuroendocrine Cancer itself can cause alterations in health – and other unrelated health issues can also occur. So, it can be helpful to know what to expect from treatment, what to look out for – and, importantly, when and who to contact if changes occur.

Complications and Side effects

Depending on the type of procedure – complications of IR include:

Effects of Sedation: This is usually safe, but it can sometimes cause temporary side effects, including:

Feeling or being sick

Breathing difficulties

A bruise or burning sensation where the injection was given

Low blood pressure (hypotension)

Procedure related:

Infection – You may be given antibiotics before and after the procedure to help reduce the risk of infection.

Damage to the blood vessel being used to deliver treatment or healthy area surrounding the area being treated. This is rarely severe enough to require further medical or surgical intervention.

Bleeding / bruising – depending on the area being treated and what treatment is delivered – slight bleeding or bruising, at any incision or needle site, may be experienced.

Reactive response – the body may see the procedure as an injury. The natural response to injury is inflammation – caused by a rush of protective and repair factors to the site of harm.

For example, if you have undergone ablative treatment to a tumour in the liver – you may experience an inflammatory response in both the tumour and the liver. The tumour doesn't want to be killed, but as its cells are attacked, it may release certain substances that cause inflammation (swelling) and may also cause a temporary 'flu-like' response (fever, shivering). This reaction may cause surrounding healthy liver cells to respond in a similar fashion. This is temporary – usually occurring within 24 hours of treatment and can be alleviated by simple paracetamol.

Rarely, a more severe reaction may be experienced as tumour cells are damaged and die – this sudden destruction can cause the release of certain chemicals into the bloodstream, that the kidneys cannot get rid of as fast as they'd like – this is called Tumour Lysis Syndrome. Typically, onset is within 1-5 days of the procedure or chemotherapy and severity can range from a few abnormal blood results to the other extreme, which may include renal failure and cardiac disturbances (heart problems).

If IR involves the use of chemotherapy and / or radiation particles – these substances may also carry the risk of side effects.

Further information about chemotherapy effects and radiation-related effects, can be found here.

You will be given self-care advice (for before and after treatment): this will include how to best prepare for the procedure and what to expect afterwards – including when to seek medical help.

For example; If you notice any signs of infection, bleeding, shortness of breath or unrelieved, increasing, persistent pain. See a GP or visit your nearest A&E immediately.