Microwave ablation for lung cancer

Information for the public
Published: 1 November 2013
nice.org.uk

What has NICE said?

There is some evidence that this procedure works but not much good evidence that it helps patients live longer or improves their quality of life. There are risks including pneumothorax, which can be serious in people whose lungs are already not working well.

It should only be used if extra care is taken to explain the risks to patients and extra steps are put in place to record and review what happens to patients who have this procedure.

More research on microwave ablation for lung cancer is needed.

What does this mean for me?

Your health professional should fully explain what is involved in having this procedure and discuss the possible benefits and risks with you. In particular, they should explain the uncertainty about the evidence on how likely it is to improve your symptoms and possible side effects, including pneumothorax. You should also be told how to find more information about the procedure. You should only be asked if you want to agree to this procedure after having this discussion.

Your health professional may ask you if details of your procedure can be collected.

Your healthcare team

A healthcare team including, ideally, a thoracic (chest) surgeon, an oncologist (cancer specialist) and a radiologist (a specialist who uses imaging such as X-rays or ultrasound scanning to investigate,
diagnose and treat disease) should decide which patients should be offered this procedure. It should also only be done by radiologists who regularly do image-guided interventional procedures.

The condition

There are 2 main types of primary lung cancer (primary means it starts in the lung). Small-cell lung cancer is fast growing and can spread quickly. Non-small-cell lung cancer usually grows and spreads slowly. Cancer often also spreads to the lung from other parts of the body – this is called metastasis to the lung (or secondary cancer).

Treatments include surgery to cut away the cancerous parts of the lung, chemotherapy, radiotherapy, and other procedures that use, for example, heat or cold to destroy the tumour.

NHS Choices may be a good place to find out more.

NICE has looked at using microwave ablation as another treatment option. Click on to the next page to find out more.

The procedure

The aim of microwave ablation is to destroy the cancer cells using heat, and to do as little damage as possible to nearby normal tissue. It could potentially be better than similar procedures at destroying bigger tumours.

The patient is given either a sedative and a local anaesthetic, or a general anaesthetic. The procedure is usually done through a small hole in the skin (percutaneously). A special needle called a probe is inserted into each tumour, using imaging to guide it, and microwave energy is passed through the probe to heat and destroy the cancer cells. This can be repeated if there is more than 1 tumour, or for large tumours.

Benefits and risks

When NICE looked at the evidence, it decided that although there is some evidence that the procedure destroyed tumours, there was not much good evidence that it helps patients live longer or improves their quality of life. The 10 studies that NICE looked at involved a total of 339 patients.

Generally, they showed that:
• Around three quarters of 48 patients with non-small-cell lung cancer in 1 study were still alive after a year, and about a third after 3 years. About half of 21 patients with cancer that had spread to their lungs were still alive after a year and only a sixth after 3 years.

• In a different study, although the procedure appeared to successfully destroy the tumours, they grew back in around a quarter of patients.

• Tumours grew back after around 6 months.

• Some patients had microwave ablation again on secondary tumours that had grown back. This worked in about half of the tumours, with no sign of them coming back within 9 months.

The studies showed that the risks of microwave ablation included:

• pneumothorax – up to third of patients needed a tube inserted into their chest to remove air from the chest cavity

• blood in the chest cavity (haemothorax)

• a fistula (an open channel between the lung and the surface of the skin), which healed after 2 months.

One patient developed an abscess in the space left after the tumour was destroyed. The patient started coughing up blood, and died 8 months after the procedure.

NICE was also told about some other possible risks: the tumour spreading because of the procedure, bleeding in the lungs, damage to other parts of the lung and chest burns.

If you want to know more about the studies see the guidance. Ask your health professional to explain anything you don't understand.

Questions to ask your health professional

• What does the procedure involve?

• What are the benefits I might get?

• How good are my chances of getting those benefits? Could having the procedure make me feel worse?

• Are there alternative procedures?
What are the risks of the procedure?
Are the risks minor or serious? How likely are they to happen?
What care will I need after the procedure?
What happens if something goes wrong?
What may happen if I don't have the procedure?

Medical terms explained

Ablation
Removing or destroying diseased tissue, for instance a tumour

Abscess
A collection of pus caused by an infection

Chemotherapy
Cancer treatment using drugs

Interventional procedure
An interventional procedure is a procedure used for diagnosis or treatment that involves

- making a cut or a hole to gain access to the inside of a patient's body – for example, when carrying out an operation or inserting a tube into a blood vessel, or

- gaining access to a body cavity (such as the digestive system, lungs, womb or bladder) without cutting into the body – for example, examining or carrying out treatment on the inside of the stomach using an instrument inserted via the mouth, or

- using electromagnetic radiation (which includes X-rays, lasers, gamma-rays and ultraviolet light) – for example, using a laser to treat eye problems.

Pneumothorax
Air in the chest cavity, which makes the lung collapse
Radiotherapy

Cancer treatment using X-rays or other types of radiation

About this information

NICE interventional procedures guidance advises the NHS on the safety of a procedure and how well it works. This information applies to people who use the NHS in England, Wales, Scotland and Northern Ireland.

ISBN: 978-1-4731-0359-7

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