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Radiotherapy for brain tumours

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Information Booklet

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BTA
BRAIN TUMOUR ACTION

RADIOTHERAPY FOR BRAIN TUMOURS

INTRODUCTION

Radiotherapy can be an effective treatment for many brain tumours; it can stop the tumour growing and may make it shrink.

WHY DO YOU NEED RADIOTHERAPY?

Most brain tumours cannot be removed completely by surgery without damaging normal brain structures and causing permanent problems such as difficulties with mobility or speech. Even if you have had an operation and the entire tumour seems to have been removed, small cells (too small to be seen by the surgeon) usually remain behind.

Radiotherapy works either by killing tumour cells directly or by interfering with their ability to divide, so stopping the tumour from growing. The tumour may shrink as tumour cells are destroyed. These cells are removed gradually by the body's healing processes.

Brain tumours vary in how sensitive they are to radiotherapy. With some it may be possible to cure the tumour. However for many this is not possible and in these cases radiotherapy is recommended to prolong survival and maintain quality of life.

WHAT IS RADIOTHERAPY?

Radiotherapy is the use of high energy x-rays to destroy tumour cells. Cells that grow and divide quickly are much more sensitive to radiation than non-dividing (resting) cells. In the brain most normal

cells, and certainly the important nerve cells, called neurons, rarely divide. This means that radiotherapy will be much more damaging to the tumour cells than the surrounding brain cells.

However, it is also important to protect normal brain cells from the radiotherapy as far as possible so the treatment is specially designed to keep this to a minimum.

HOW IS RADIOTHERAPY GIVEN?

Radiotherapy is given as a course of treatments called 'fractions'. The fractions are given at different intervals: daily, twice daily, or sometimes, every few days. The number of fractions of treatment given will depend on your tumour type and your fitness.

Your Oncologist will plan the treatment individually for you taking these factors into consideration.

Sometimes radiotherapy is combined with chemotherapy (concurrent chemo-radiation). Your Oncologist will explain if this is recommended for you.

THE RADIOTHERAPY TEAM

It takes a team of specialized staff to plan and deliver your treatment. The team includes:

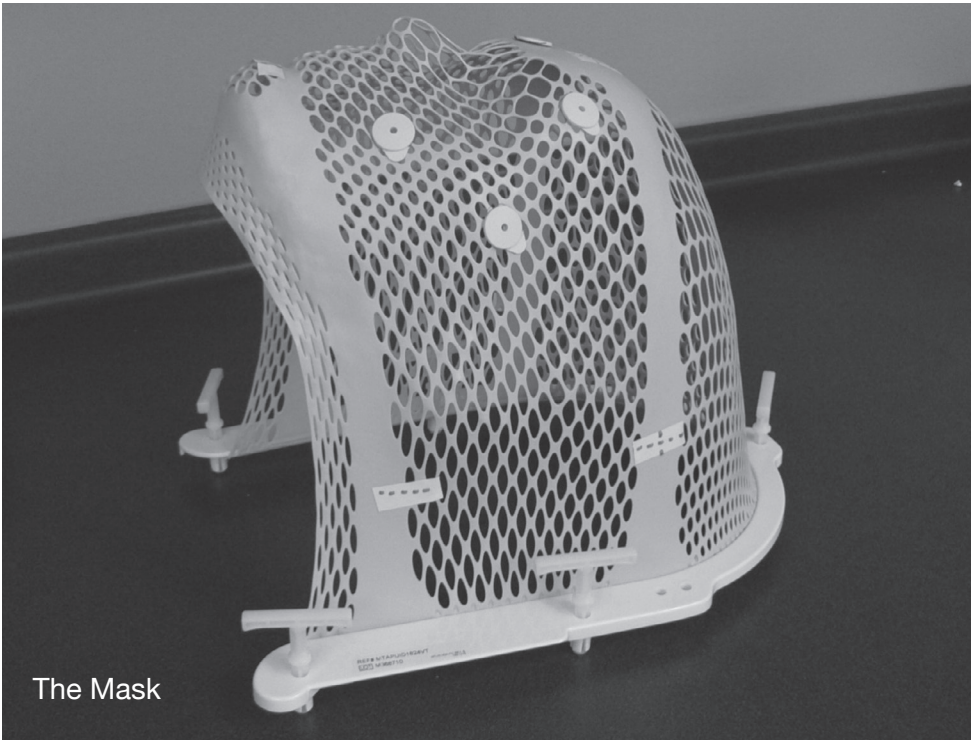
Clinical Oncologist: (also called Radiation Oncologist) is a doctor who has specialized in treating tumours with radiotherapy and chemotherapy.

Therapy Radiographers: these are staff trained in the delivery of radiotherapy. As well as delivering it they also prepare the treatment

and help look after you while it is taking place.

Radiotherapy Physicists: These are clinical scientists who plan the treatment and are involved in running the machines and performing quality assurance. You probably won't meet them but they are key members of staff behind the scenes. They also work with a team of engineers to look after the radiotherapy machines.

Radiotherapy Nurses: these are nurses who have taken a special interest in looking after patients receiving radiotherapy. They work with your Nurse Specialist and Oncologist to help you with any treatment side-effects.



The Mask

PLANNING RADIOTHERAPY

Before the radiotherapy can begin a treatment plan needs to be designed specifically for you.

Your doctor or nurse will fill in this section for your personal treatment plan.

Your radiotherapy will be given in:

• Number of fractions .....

• Frequency .....

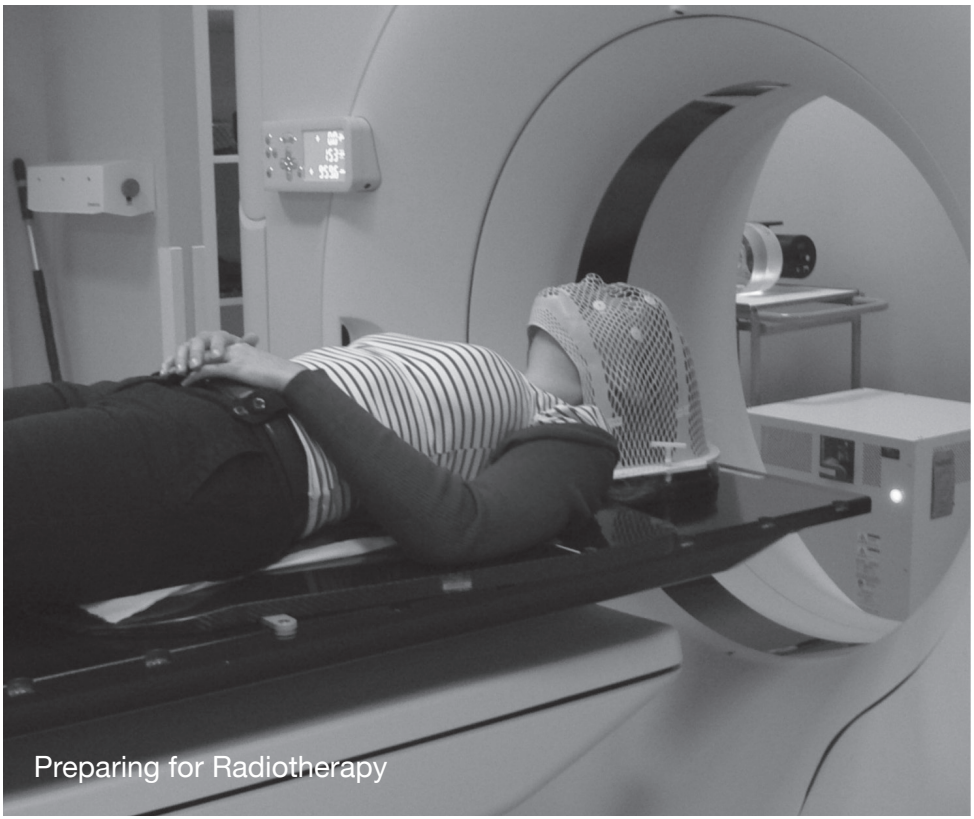
Your first visit for radiotherapy: designing the treatment

The first step is to make a mask which is used to hold your head still during treatment.

Most radiotherapy centres now use 'thermoplastic' masks. These are made from a flat plastic sheet which becomes flexible when it is warmed in water. The sheet is then placed over your face and left to cool for 20-30 minutes. The mask is either made in a special 'mould room' or on the CT scanner.

Once the mask is made, you then need to have a CT scan performed whilst wearing the mask. Sometimes you will be given an injection of iodine 'dye' to help localize the tumour. Marks are then made on the mask as reference points for future positioning.

The CT scan takes 20-30 minutes and is often done on the same day as the mask is made.



Preparing for Radiotherapy

PLANNING THE TREATMENT

Once the scan has been performed you can go home and the radiotherapy team will start designing your treatment.

Firstly, the region that needs to be treated is defined by the Oncologist. To do this the information from all the scans you have had before and after your operation is considered. The main tumour is treated with a margin around it which includes the area where tumour cells might be present (up to 3cm depending on the tumour type).

Then the treatment plan is designed using a number of X-ray beams delivered from different angles to concentrate the high dose area to this region while keeping the dose to the normal brain as low as possible.

This planning process takes a week or so.

Radiotherapy

THE TREATMENT

Radiotherapy is painless; you will not feel anything during your treatment. Your mask will be fitted at the start of each session.

Some patients find this uncomfortable to begin with but usually this improves after a few treatment sessions.

Before you start treatment a check is made to ensure the correct positioning. This is either done a few days in advance or on the first day of treatment. Some radiotherapy centres do this on the radiotherapy machine whereas others use a separate machine (the CT scanner or a simulator).

Once everything is ready you will receive your first treatment, known as a 'fraction'. You will lie on the couch wearing your mask and you will not feel anything. Most machines 'buzz' when the beam is on.

The radiographers delivering the treatment have to leave the room but will watch you on a camera. They will take images to ensure that your position matches that in the plan. You may feel the couch move as they correct your position before turning the beam on. The treatment takes 10-20 minutes depending on how many beams are used.

After the treatment you are not radioactive and no special precautions need to be taken.

Women should avoid getting pregnant when having radiotherapy and if you suspect you might be pregnant let the radiotherapy team know before treatment begins.

Most patients are treated as outpatients and you will be given a list of appointment times. Though every effort is made to try to keep to these sometimes there are delays or dates have to be rescheduled, for example for machine maintenance. Most radiotherapy is given from Monday to Friday, five days a week. However some brain tumour patients are treated on alternate days (Monday, Wednesday and Friday).

During the course of treatment you will be seen, usually weekly, by a doctor, nurse or radiographer in the 'review clinic'. This is to check for side-effects and to answer any questions you may have. If you are also receiving chemotherapy it will usually be given to you at this clinic.

THE SIDE EFFECTS

The side effects depend on how much of your brain is being treated and if the spinal canal has to be treated as well.

Most side effects are relatively mild and all efforts are made to minimise them. However, some are inevitable.

EARLY SIDE EFFECTS

- **Hair loss:** You will lose your hair in the areas being treated. The hair starts to fall out at around three weeks after starting radiotherapy and takes around six months to re-grow. Often it does not re-grow completely or it re-grows with a slightly different colour and is usually finer or curlier than it was before the treatment.

  The part of your head that is affected will depend on the actual radiotherapy field arrangement but for many people it will be such that a wig or hat may be required. Wigs are supplied on the NHS and your doctor or nurse will make arrangements for a fitting. Some women choose to wear turbans, scarves or hats. Wigs are available for men, however many prefer to wear a hat, cut their hair very short or even shave their heads.

- **Skin changes:** You may also notice some skin changes in the area being treated. After about 3 weeks it may become red, itchy and darkened, like sunburn. You are advised not to treat this yourself.

Check with your doctor, nurse or radiographer on how to care for your skin. You should use a simple shampoo (e.g. baby shampoo) during your radiotherapy and avoid applying any creams or cosmetics to the treated area, other than those given to you by the hospital.

It is also important that your head is kept protected in the sun with a hat. It is likely that the skin in the treatment area will always be more sensitive to the sun so you should wear a hat or apply a high factor sunscreen (but do not use sunscreen during radiotherapy).

- **Tiredness:** Most people will feel tired towards the end of their course of radiotherapy. A sleep in the afternoon should help you cope with this tiredness which can last for a number of weeks after the radiotherapy is over. Sometimes people experience a period of marked tiredness around 6 to 10 weeks after radiotherapy has finished. If this happens you should let your medical team know as it may be a reaction to the treatment and responds to steroid tablets.

- **Nausea:** Occasionally people feel sick or report a metallic taste when having radiotherapy. This usually lasts just a few hours after treatment. For example, if your radiotherapy is at 10am you may feel queasy and not have much appetite for lunch but by dinner time you are hungry again and ready to eat. Alternatively, it may be helpful to eat small, but frequent meals throughout the day. Avoid fatty foods and keep your diet bland if you are feeling sick. If it is troublesome and persistent please tell your doctor as anti-sickness tablets can be prescribed.

If you are also receiving chemotherapy you will be given anti-sickness tablets; take these as directed by your medical team.

- **Worsening of symptoms:** Radiotherapy sometimes causes

swelling of the brain which can result in headaches (usually on wakening) or a recurrence of the symptoms that you had before your operation. This is treated with steroids and settles a few weeks after the treatment has finished.

- **Blood count:** The blood count is not usually a problem unless you are receiving chemotherapy or having your spinal canal treated. In these cases you will have a weekly blood test.

- **Weight:** Some patients put on weight, not because of the radiotherapy but because of steroid tablets you may need to take to control your symptoms. To avoid weight gain try and eat healthily, avoiding high calorie, high sugar foods. It is best to avoid sweet foods as sometimes steroids can cause diabetes.

LATE SIDE EFFECTS

There are some possible side effects that can develop many months or years after the radiotherapy. These depend on the part of the brain that has been treated, the amount of normal brain treated and the radiotherapy dose given.

Most people are concerned about the effect of radiotherapy on their intelligence and memory. Some effects on the normal brain function are inevitable but it should be remembered that the tumour itself may cause damage and a balance must be achieved between treatment to control the tumour and side effects. All attempts are made to keep the risk as small as possible and there are people surviving well with normal life styles after treatment.

Other potential late effects:

a) **Hormones:** if the pituitary gland (hormone control centre behind the bridge of your nose) receives a high dose of radiotherapy its

control of some of your hormones can be upset. This may lead to an under-active thyroid, loss of periods or sexual function, or cortisol deficiency. However, all of these can be treated with hormone replacement therapy so longer term survivors after radiotherapy are often assessed by an endocrinologist (a doctor specializing in hormones).

b) **Eyes:** sometimes, depending on the position of the tumour and in order to ensure it is effectively treated, the eye or eye nerves have to receive some radiotherapy. This can lead to a cataract or blurred vision.

c) **Ears:** sometimes after treatment patients feel deaf in one or both ears. This is often due to dry skin in the ear canal and should be treated with almond oil ear drops. In other patients the inner ear is affected causing a condition like 'glue ear' which causes deafness; unfortunately there is no specific treatment for this though it usually wears off in time.

These notes are very general. If you have questions about any aspects of your treatment, you should not hesitate to ask your doctor, nurse or radiographer.

When will I begin to notice results from the radiotherapy?

The brain is not efficient at clearing away dead tumour cells; also, as the radiotherapy interferes with the tumour cells' ability to divide, they die gradually over a period of time. Thus, it may be several months or even longer before the full effects of therapy are achieved.

The results of scans taken during the first few months after radiotherapy are often confusing. This is because of swelling caused by the treatment. Dead cells often appear as a mass larger than the original tumour and may even cause symptoms similar to it.

Don't be disappointed if the first scans do not show shrinkage of the tumour. The combined effects of your surgery and radiotherapy may mean that the positive results that you hope for will not be obvious for a while.

What is much more important is how you feel and whether there is improvement in your function and capabilities.

AFTER THE TREATMENT

Some people feel an unexpected sense of depression after the treatment is over, even though they have been looking forward to its completion. During treatment you have appointments to attend and lots of distractions. After treatment you can feel very tired and have more time to think about what you have been through. If you are feeling low, speak to your GP or nurse specialist who can give you advice.

Things that have been shown to help after radiotherapy include light exercise, for example gentle walking, and eating healthily. This will also help you keep off weight and strengthen your legs if you are taking steroids.

Of course, if you have any questions or notice any changes which are worrying you then don't hesitate to contact your GP or someone else on your medical team.

You might also consider joining a support group or contacting one of the brain tumour charities for advice.

For further information and links to other charities please contact: **Brain Tumour Action,** 25, Ann Street, Edinburgh EH4 1PL. **Telephone helpline:** 0131 466 3116. **Website:** www.braintumouraction.org.uk