

Radiotherapy for Brain Tumours

Introduction

Radiotherapy is an effective treatment for many brain tumours. It can stop a tumour growing and may cause it to shrink or in some cases disappear completely.

Why do you need radiotherapy?

Frequently brain tumours cannot be removed completely without interfering with normal brain structures and running the risk of causing permanent damage. Even if you have had surgery and the entire tumour seems to have been removed, small cells, too small to be seen by the surgeon may remain behind.

The cells of many malignant brain tumours are readily killed by radiotherapy and that is why this treatment is often recommended. It works by killing the cells directly or by interfering with their ability to grow. The tumour may shrink as tumour cells are destroyed. These cells are then disposed of by the body's natural process over a long time.

The operation and other medication such as steroid tablets and anticonvulsants (for seizures) may also have helped your symptoms and improved any disability. You may therefore be at a stage of recovery when the doctor suggests that you have radiotherapy.

Some tumours are very sensitive to radiotherapy and the hope is for a cure. Some tumours are less sensitive to it, in this case it may not be possible to effect a cure but radiotherapy will usually bring relief of symptoms and prolong life. Radiotherapy will also delay any tumour recurrence.

What is radiotherapy?

Radiotherapy is the use of high energy x-rays to destroy tumour cells whilst doing as little harm as possible to surrounding normal cells.

For various reasons the 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 (neurons) do not divide. This means that radiotherapy will be much more damaging to the tumour than the surrounding brain. Nevertheless a great deal of trouble is taken to minimise the amount of brain irradiated.

How is radiotherapy given?

Radiotherapy is given in a course of daily treatments called 'fractions'. It is given at different intervals; daily, twice daily or every few days. The number of fractions or daily treatments will depend on your tumour type and fitness.

Your doctor will plan the treatment individually for you taking all the factors into consideration.

Radiotherapy is painless, you will not feel anything during your treatment.

Planning radiotherapy

Before the radiotherapy can begin, the exact treatment plan, the radiotherapy dose, the number of fractions and the amount of brain that will be treated is decided by the radiotherapist. A radiotherapist is a doctor who specialises in the treatment of tumours using radiotherapy. The treatment plan varies depending on the type of tumour.

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

Your first appointment will be to the mould room.

To ensure that the radiotherapy is treating exactly the same area and that your position on the couch is the same each time, a Perspex mask is made. This is called a shell. It allows your head to be kept in the same position and helps to stop it moving during your treatment. In addition it has the advantage of allowing marks, for lining up the treatment machine, to be drawn on it instead of drawing on your skin. The mask is applied before each fraction of radiotherapy and removed immediately afterwards.

To make the shell an impression of your head and face is taken in the position that you will be in for your treatment. This could be lying on a couch on your back, on your side or even lying on your stomach. The impression is obtained using some strips of plaster or Paris bandage. Once the bandage starts to set it is removed and you can leave. The procedure takes about 20-30 minutes. Behind the scenes the mould room technician makes a plaster cast using this impression and a sheet of thin transparent Perspex is then moulded over this plaster cast. An alternative is to use a plastic sheet, which can be moulded when warm.

The shell needs to fit quite closely and it helps if you are relaxed during the taking of the impression. It does not hurt but most people say it becomes a little hot while the plaster bandage is setting.

The next step

Your next visit will be to the simulator machine. This is a special x-ray machine that can take films and reproduce the movements of the treatment machine and therefore 'simulate' the position of the x-ray beams that will be used for your treatment. You will need to lie in the treatment position wearing your newly made shell. The radiotherapist with the help of the radiographer plan the position of the radiotherapy beams using information from scans, operation and previous examinations. This session lasts about 30 minutes and is painless. It is often much longer than the treatment time on the machine.

At the end of this simulator session you will be given a date and time for starting treatment, this may be a few days later.

Whether you will be receiving radiotherapy as an outpatient or an inpatient will depend on how fit you are and your ability to travel. Your doctor will discuss this with you and any specific arrangements that need to be made.

You will be given a fixed appointment time for your treatment and every effort is made to keep closely to these times. However inevitably there may be some delays occasionally.

While some people find the shell and treatment machines intimidating at first, you can not feel the radiotherapy and there is no discomfort during treatment.

You are not radioactive and there is no need to take any special precautions for the safety of others. You are not a hazard.

The side effects

The side effects depend on how much of your brain is being treated or if the spinal canal has to be treated as well. Most side effects are quiet 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 area irradiated. Hair starts to fall out between the second and third weeks of treatment and will usually have grown back to its maximum extent by 3-6 months. It sometimes will not re-grow completely or it re-grows a slightly different colour and is usually finer than it was before the radiotherapy or it can re-grow curly. The part of your head that is affected will depend on the actual radiotherapy field arrangement, but for most people it will be such that a wig or hat will be required. Wigs are supplied on the National Health Service, your doctor or nurse will make arrangements for a fitting. Ladies often wear turbans, scarves and hats. Wigs are available for men, however most prefer to wear a hat or cut their hair very short or even shave their head.

- **Skin changes:**

You may also notice some skin changes in the area being treated. After about 3 weeks it may become reddened, itchy and darkened, as sunburn might be. Do not try and treat this yourself. Check with your doctor, nurse or radiographer for advice on how to care for your skin. For example you will probably be advised to avoid the use of cosmetics and creams on the treatment area. It is also important that your head is protected in the sun with a hat. You should continue this practice for some years after the radiotherapy has finished. It is likely that the skin in the treatment area will be more sensitive to the sun.

- **Tiredness:**

Most people will feel tired and a little sleepy towards the end of their course of radiotherapy. A sleep in the afternoon and periods of rest can help you cope with the tiredness. This feeling of tiredness can last for a few weeks. Additionally some people experience a period of increased

tiredness around 6 - 10 weeks after radiotherapy has finished. If this happens to you it is advisable that you inform your doctor.

- **Nausea:**

Very rarely people feel sick. This usually lasts just a few hours after treatment. For example, if your treatment is at 9am, 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 and are effective.

- **Weight:**

You may find that your weight has increased, especially if you have been on steroid tablets. In this case it is probably best to eat sensibly. Either way your doctor, nurse or dietician can give you advice.

- **Blood count:**

The blood count is not usually a problem unless the spinal canal is being treated as well as the head.

Late side effects

There are some side effects that can develop many months or years after the radiotherapy. The degree and frequency will depend on the dose given, the amount of normal brain treated and sometimes the particular site of the brain that has been treated. If, for instance, the pituitary gland or the hypothalamus receives a high radiotherapy dose, regulation of some of the hormones can be upset. This may lead to a loss of periods or sexual function and sometimes an under active thyroid, but all of these can be treated by hormone replacements.

Most people are concerned about the effect of radiotherapy on their intelligence. Some damage to the normal brain will be inevitable. It must be remembered however that the tumour itself may cause damage and the best balance must be achieved between treatment effectiveness and side effects. All attempts are made to minimise radiotherapy injury to normal tissues and there are many people surviving well with normal life styles many years after treatment. If there is no tumour recurrence, many individuals can retain their ability to work and function within the lifestyle that they enjoyed before the illness began.

These notes are very general. If there are any 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 because the radiotherapy interferes with the tumour's ability to grow by damaging its reproductive cycle, cells die gradually over a period of time. Thus, it may be several months or even longer before the full effects of therapy are realised.

The results of scans taken during this time 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 this mass may cause symptoms similar to the tumour.

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. The changes expected may show up on a later scan.

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

After the treatment

Most people feel an unexpected sense of depression after the treatment is over, even though they have been looking forward to its completion.

While you are undergoing treatment, you have a specific goal in mind and specific activities that have to be performed. You feel that you are contributing to the effort of your treatment.

Once radiotherapy is over you are no longer taking an active role. It may be a few weeks before you have to see your doctor and there is nothing to be done until then. No wonder you feel depressed - everyone does.

Your task now is to stay as healthy and as active as possible. Aim to lead an active life. Exercise. Eat well. Keep appointments for tests and check ups. See your doctor or nurse if you have any questions or notice any changes you think are important and are of concern. Think about joining a self-help group. The worst may well be over.

For Information / Support / Counselling contact:

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