Brain Tumors in Children - Radiotherapy

Before treatment

Planning

Your child's radiotherapy treatment is very carefully planned by a team of medical specialists to ensure that it reaches as many tumor cells as possible, whilst avoiding as much healthy tissue as possible.
First a 'radiotherapy planning scan' will be taken. This is usually a CT scan, but sometimes an MRI scan. The scan creates a 3D image of your child's tumor, showing its shape and location in the brain. This image and measurements from the scan allow more precise planning of where the radiotherapy needs to be targeted, the dose required and how often it needs to be given.
All efforts will be made to avoid areas of the brain where irradiation (giving radiotherapy) may lead to long-term problems.
These areas include the brain stem (responsible for functions such as breathing and heart rate); the optic nerve (which helps you see); the hormone producing area; and the cochlear in the ear (to reduce long term hearing loss).

Treatment mask

It is important that your child lies very still during treatment, so that the radiotherapy is directed to the correct part of the brain. To help your child stay still, a treatment mask is made specifically to fit your child's face and head. This mask fixes to the treatment couch to keep their head still and in the same place each time they have treatment.
There are different types of masks, made from different materials. They are made by smoothing the warmed material onto your child's face, so that the final mask is an exact replication of the size and shape of their head. Gaps are left for the eyes, nose and mouth, so your child is always able to breathe easily.
A play therapist may work with your child to make wearing the mask less daunting. They can also arrange for your child to look at a radiotherapy machine before their treatment so that they are mentally prepared when they begin treatment.

Thermoplastic radiotherapy mask being made (there are other types of masks).

Treatment

Your child's treatment is planned to suit their individual needs, so may be very different to the treatment of other children you may meet.
If your child is very young or extremely anxious and won't keep still, a short general anaesthetic may be given. Or a health play specialist may work with your child to keep them calm and still.

- Your child will lie on the radiotherapy bed with the radiotherapy machine above them
- Medical staff will place the mask over your child's head and attach it to the bed, taking some time to position them.
- Before the radiotherapy machine is switched on, the staff will leave the room, but remain nearby. They will be able to see, hear and speak to your child, should they need them.
- Your child won't be able to see or feel the radiotherapy beams nor feel any heat from it. They will be able to hear the machine.

- Once the treatment session, called a 'fraction' is finished, medical staff will go back into the room, remove the mask and help your child off the bed.
- The medical staff will keep your child's mask until the next treatment session.

How long will treatment take?

Treatment times will vary, depending on your child's individual treatment plan.
However, each treatment session (fraction) generally only lasts a few minutes. The treatment appointment will be considerably longer, due to the time taken to position your child in the correct place. If you child is having radiotherapy to their spine (known as craniospinal radiotherapy), this can also take longer.
A typical radiotherapy plan is once a day, Monday to Friday, with a break at the weekends.
It is common for your child to have radiotherapy for 4 to 6 weeks.
Your child's health team can tell you your child's exact treatment plan.

After treatment

If your child is having radiotherapy as an outpatient, they will be able to go home after each session. If they need to remain in hospital for another treatment, a nurse will take them back to their ward.
After the whole course of treatment, your child will have regular check-ups to monitor the effects of the radiotherapy on the tumor and any side-effects you child may get. It is likely they will experience some side-effects. Some of these will be temporary and gradually clear once the treatment has finished. Others may be long-term.

What are the side-effects of radiation?

These will partly depend on the area of the brain where the radiotherapy is directed, and what that area controls. Radiotherapy works best on rapidly dividing cells, such as tumor cells, but some normal cells in the treatment area also divide rapidly, so these areas tend to have the most common side-effects. These include hair and skin cells.

***For information, referral to specialists or support to children and families living with childhood cancer, please contact:**

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