

Prolactinoma

How does the normal pituitary gland work?

Your pituitary is an important gland because it controls several other hormone glands, including the thyroid, adrenals, and reproductive glands. It is normally about the size of a pea and is situated in a bony hollow beneath the base of your brain behind the bridge of your nose.

The pituitary gland produces a number of hormones, including prolactin, follicle stimulating hormone (FSH) and luteinising hormone (LH). Prolactin is sometimes known as the 'milk hormone' because it stimulates milk production after childbirth, but it is also produced in men, although in smaller amounts. FSH and LH control sex hormones and reproduction. In women they cause release of the sex hormone oestrogen, stimulate the ovaries to produce eggs and are essential for a normal menstrual cycle. In men they cause the release of testosterone and stimulate the production of sperm from the testicles.

What causes the prolactin level to be raised?

1. *Physiological causes:* Such as pregnancy, breastfeeding, nipple stimulation, and stress.
2. *Medication:* Some medication can cause elevated prolactin levels. Make sure you tell your doctor about all your current treatments.
3. *Hypothyroidism:* Underactive thyroid can cause elevated prolactin. This can be diagnosed by a simple blood test and which requires treatment with thyroid hormone tablets.
4. *Non-functioning pituitary tumours:* These benign (non-cancerous) tumours can cause a slight rise in the prolactin levels.
5. *Prolactinoma:* This is a prolactin-producing tumour of the pituitary gland. This is a benign tumour, and not a brain tumour or cancer. This tumour only grows very slowly and many do not seem to grow at all. We do not know exactly what causes a prolactinoma but it is the most common type of hormone producing pituitary tumour.

Prolactinomas can vary in size, but the vast majority are less than 10mm in diameter. These are called **micro**prolactinomas. The rarer larger tumours are called **macro**prolactinomas. They can occur in men and women. The symptoms produced by a prolactinoma depend on the sex of the patient and the size of the tumour.

Prolactinomas in women

The first symptoms may relate to loss of periods (amenorrhoea) as excessive prolactin interferes with the pituitary's productions of FSH and LH which control the menstrual cycle.

You may also develop excess breast milk production (galactorrhoea), which may leak spontaneously. This is due simply to the biological action of prolactin and is not a sign of breast cancer. Women with prolactinomas do not have any increased risk of breast cancer.

Prolactinomas in men

Men with prolactinomas usually have tumours larger than 10mm in diameter (macroprolactinomas). However, the larger size does not rule out an excellent response to tablet treatment. As in women, excessive prolactin reduces production of FSH and LH by the pituitary. This in turn lowers testosterone levels and may result in a reduced interest in sex and in impotence. You may also have infertility due to a low sperm count.

Large tumours

If you have a large tumour, you may have pressure symptoms such as headache or visual problems. This is because the nerves to your eyes pass over the top of the pituitary gland. In a minority of patients, an increase in pituitary size may cause pressure on these nerves and produce visual disturbance. Again, even these prolactinomas can usually be treated effectively with tablets, rather than surgery.

How is a prolactinoma diagnosed?

The tests to diagnose a prolactinoma are relatively straightforward. They consist of blood tests to check various hormone levels and a scan of the pituitary gland to show the size of the prolactinoma.

If the blood test shows you have a raised prolactin level, this will be repeated at least once to make sure it is a true result. As previously mentioned, a further blood sample will be taken to make sure your thyroid is functioning normally. The other hormones produced by the pituitary will also need to be checked.

An MRI scan (magnetic resonance imaging) is usually carried out to give detailed pictures of the pituitary gland. This involves you lying on a moveable table and passing into a cylindrical piece of equipment. You may find the examination a bit noisy or claustrophobic. During the scan, the radiologist may inject a special dye into your arm so that your prolactinoma can be seen more clearly. A small number of patients are allergic to this injection, so do tell the specialist if you have asthma or any allergies.

If you have any problems with your vision, you will probably be seen by an eye specialist who will check the strength of your eyesight and chart your fields of vision.

How is a prolactinoma treated?

Whatever the size of your prolactinoma, it is likely that your treatment will be with tablets. The two drugs we use are called bromocriptine (brand name Parlodel), and cabergoline (brand name Dostinex).

These drugs act by reducing prolactin secretion by the prolactinoma. Prolactin levels often fall to normal within a few weeks of starting the treatment. In women, once prolactin has fallen to normal, menstrual cycles usually resume and fertility is restored in most cases.

This may happen quite quickly, so if you do not wish to fall pregnant, you and your doctor will need to discuss the best method of contraception. In men, testosterone levels may rise, which brings an improvement in your sex life.

Nearly all prolactinomas shrink in size following treatment with the above tablets. If your prolactinoma is pressing on the nerves to the eyes, there is a good chance that your vision will improve as the tumour shrinks. If you have a larger prolactinoma, you may have several pituitary scans over the months and years so that shrinkage can be measured.

Bromocriptine is a safe drug and well-tolerated by most patients. It should be taken with meals to avoid the nausea that sometimes occurs if it is taken on an empty stomach. Your doctor will give you instructions on how to build up the dose slowly, again to minimise any side effects, particularly dizziness. Occasionally, bromocriptine may cause slight constipation but this can be cured by increasing the amount of fibre in your diet. The final bromocriptine dose for most patients is one tablet (2.5mg) twice or three times a day. Sometimes, the dose can be reduced later during long-term treatment.

Alternatively we may prescribe cabergoline as treatment for your prolactinoma. This drug is very similar to bromocriptine, but is much longer acting, so it only requires one or two doses **per week**. It is just as effective as bromocriptine and is better tolerated by most patients.

Very few patients with *micro*prolactinomas will require surgery and radiotherapy. For the minority of patients with *macro*prolactinomas which do not shrink following medical treatment (less than 10%), surgery may be required, particularly if your vision has not improved.

If you continue to have pituitary underactivity following treatment of your prolactinoma, then hormone supplements may be required. These may include steroid tablets for adrenal underactivity, thyroid hormone tablets for thyroid underactivity and possibly oestrogen for women or testosterone supplements for men.

Common questions

Q *Can I drink alcohol when taking bromocriptine or cabergoline?*

A Yes, in moderation.

Q *Can my tablets be stored at room temperature?*

A Yes, bromocriptine and cabergoline can be stored in your medicine cupboard. However, please note that the cabergoline bottle has a moisture-absorbing gel in its cap and this should not be removed.

Q *What happens if I miss a tablet or cannot remember whether I have taken one?*

A There should be no problem. If you are taking bromocriptine just start again with the next tablet. For cabergoline, a delay of one or two days will not make much difference because the drug is very long-acting. However, in general terms, regular tablet taking is important for the success of your treatment.

Q *Are bromocriptine and cabergoline safe?*

A Yes, they have been in clinical use for more 20 years and have an excellent safety record.

Q *Is bromocriptine safe if I fall pregnant?*

A Yes. We will usually recommend that you stop taking bromocriptine as soon as pregnancy is confirmed. Many thousands of healthy 'bromocriptine babies' have now been born. There has been no increased risk of malformation and the children have developed normally.

Q *I have heard that women with prolactinomas can sometimes develop complications during pregnancy - is that true?*

A The main worry used to be that the prolactinoma would enlarge during pregnancy. However, we now know that the risk is very small indeed for microprolactinomas. If there is evidence of tumour expansion during pregnancy (e.g. headaches or visual problems), then you will probably need to start taking bromocriptine again.

Q *Do all patients with prolactinomas need treatment?*

A Most do. If you have infertility problems, excessive milk production or a large tumour causing pressure symptoms, then there is a clear case for treatment. If not, then the need may not seem so clear. However, prolonged sex-hormone deficiency (particularly oestrogen in women) causes thinning of the bones, or osteoporosis. Therefore, most doctors believe that women without regular periods should receive treatment. The same applies to me with low testosterone levels.

Q *How long will I have to take bromocriptine or cabergoline?*

A You will probably need to take them for a relatively long time, with interruption during pregnancy as described earlier. If you have a microprolactinoma, We tend to withdraw treatment for a trial period of a few weeks every 2-3 years or so if you have a microprolactinoma as in some patients the problem seems to disappear. If you have a large tumour, your treatment courses may last several years and you will usually need treatment for life.

Q *What are my fertility prospects as a man with prolactinoma?*

A Bromocriptine/cabergoline treatment alone may improve your sperm count and lead to the return of normal fertility, although this could take several months. Additional treatment with hormone injections (FSH and LH) may also be necessary. In general terms, fertility treatment tends to be less successful for men with prolactinoma than for women, but a successful outcome is certainly not impossible!

Q *Is tablet treatment better than surgery for prolactinomas?*

A There are potential advantages and disadvantages with each form of treatment. The main problem with tablet treatment is that the medication has to be taken long-term; usually the prolactin level rises and symptoms return soon after stopping the tablets. On the other hand, surgery involves a general anaesthetic and there may be complications, such as interference with normal pituitary function. However, if the surgeon is able to remove the prolactinoma completely and leave the normal pituitary tissue behind, then some patients may be cured of their prolactinoma. The chances of this happening depend on the size of the prolactinoma; if it is very small or quite large, then the surgical results may not be so good and you may need bromocriptine anyway.

Q *Does prolactinoma run in families?*

A No, most cases are isolated. Vary rarely, more than one member of a family may have a prolactinoma, but this is sufficiently uncommon for you not to have to worry about it.

Q *Is it safe to take the oral contraceptive pill if I have a prolactinoma?*

A Yes.

Where can I learn more?

Contact the Pituitary Foundation at:

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Websites: www.pituitary.org.uk

More information is available on the Trust website www.royalberkshire.nhs.uk

This document can be made available in other languages and formats upon request.

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