

# Pituitary tumours

## How prevalent are they?

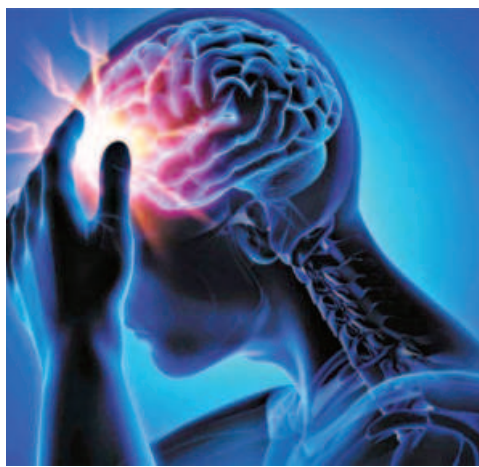
**The pituitary gland is referred to as the "master gland" because its hormones govern the balance of hormones produced by the majority of the other glands in the body. In this way, the pituitary gland regulates several activities, including growth, development, and reproduction. It also regulates the function of other organs, including the kidneys, breasts, and uterus.**

DR RAMISHA MALIHA

The pituitary gland is a key source of hormones in the human body and is one of the most important suppliers of hormones. The pituitary gland is a pea-sized gland connected to the base of the brain. The pituitary gland is referred to as the "master gland" because its hormones govern the balance of hormones produced by the majority of the other glands in the body. In this way, the pituitary gland regulates several activities, including growth, development, and reproduction. It also regulates the function of other organs, including the kidneys, breasts, and uterus.

Uncontrolled cell growth in the pituitary gland can sometimes result in tumours. A pituitary adenoma is a tumour or growth of the pituitary gland. The majority of pituitary adenomas are slow-growing and benign, meaning they are not cancer and do not spread to other regions of the body. However, when they expand in size, they can impose pressure on adjacent tissues, such as the nerves connecting the eyes to the brain, causing discomfort. This is referred to as the "mass effect." Besides mass effect, the patient may experience weight gain or loss, muscle ache, smell alteration, behavioural changes, fatigue, sexual dysfunction, and early menopause.

Tumours smaller than 1 cm are called microadenomas, and tumours larger than 1 cm are macroadenomas. Some adenomas generate hormones, while many do not. A larger adenoma can also compress normal pituitary cells and prevent them



from functioning normally, resulting in hypopituitarism. This disorder can result in low blood pressure, exhaustion, and changes in sexual drive and function. It might also make you feel less capable of dealing with stress.

Pituitary adenomas constitute around 10-15% of skull tumours. They occur in 77 out of 100,000 people, although 20% of people may have them at some point. However, many pituitary adenomas, especially microadenomas, cause no symptoms and are never identified. About twice as many people have macroadenomas. Pituitary adenomas can arise at any age but are most frequent in the 30s and 40s. Rare among those under 20. Adenomas are more common in women. Pituitary macroadenomas might be asymptomatic or cause symptoms owing

to hormone imbalance or mass effects. The latter can cause vision impairments, headaches, high intracranial pressure, and intracranial haemorrhage. Hormonally active tumours might present with symptoms due to target organ stimulation, such as hyperthyroidism, Cushing syndrome, or hyperprolactinemia.

Tumours in asymptomatic people may be identified when imaging the head for unrelated medical issues. The frequency of pituitary tumour diagnosis has increased with the extensive use of computed tomography (CT) and magnetic resonance imaging (MRI) scans.

The cause of pituitary macroadenomas is unknown. However, the most widely accepted explanation blames tumour initiation and development on the monoclonal neoplastic (a single abnormal cell reproduces itself into a cancerous mass) transformation of pituitary cells.

Macroadenoma therapy aims to cure. Medications, surgery, and radiation are used to reduce tumour bulk, restore hormone function, and restore normal vision.

Pituitary macroadenomas typically require surgery. Pituitary macroadenomas often require surgical extirpation for the cure.

Transsphenoidal surgery is used. Transcranial surgery is needed in 1% of cases. Compared to microadenomas, macroadenomas with extrasellar extension had 15-37% remission rates with surgery alone. Radiation and medicine often complement surgery.

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## A person's height impacts their risk of multiple diseases

Tall stature increases the risk of peripheral neuropathy and skin and bone infections. According to a new study performed at the Rocky Mountain Regional VA Medical Center in the U.S., a person's height raises their risk for a variety of diseases.

Height has been associated with multiple common conditions, ranging from heart disease to cancer. However, scientists have struggled to determine if being tall or short puts persons at risk or if factors like nutrition and socioeconomic status are to blame.



Researchers examined correlations between diseases and a person's actual height and genetically predicted height in the new study. The researchers used genetic and health data from over 200,000 white people and 50,000 black adults from the VA Million Veteran Programme.

The results confirmed previous findings that being tall is linked to a higher risk of atrial fibrillation and varicose

veins, and a lower risk of coronary heart disease, high blood pressure and high cholesterol.

The study also uncovered new associations between greater height and a higher risk of peripheral neuropathy, which is caused by damage to nerves on the extremities, as well as skin and bone infections, such as leg and foot ulcers.

## Successful Deep Brain Stimulation surgeries performed in Bangladesh

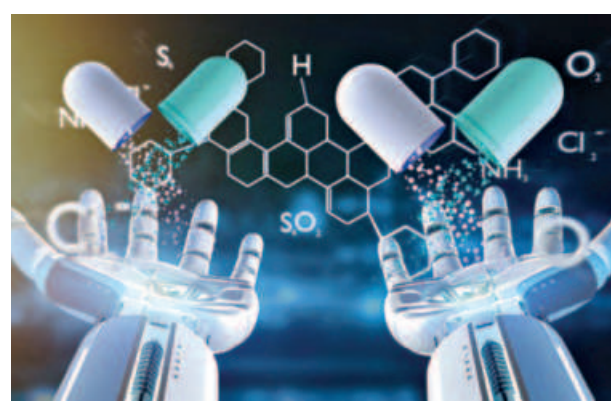
Two patients with advanced Parkinson's disease (disease affecting the central nervous system that causes tremors, slow movements, stiffness, and walking problems) and one with generalised Dystonia (muscles contract involuntarily, causing repetitive movements) underwent successful Deep Brain Stimulation (DBS) surgeries in Dhaka, Bangladesh - says a press release.

Dr Jalal Uddin Mohammad Rumi, Assistant Professor of Neurosurgery, National Institute of Neurosciences (NINS), and Dr Anirban Deep Banerjee, Associate Director, Neurosurgery, Medanta Institute of Neurosciences, Gurugram, Delhi-NCR, India, were the two lead doctors performing the surgeries, and a group of Neurologists supported them from the National Institute of Neurosciences & Hospital (NINS).

DBS is a proven and well-established treatment to treat movement disorder conditions like Parkinson's, Dystonia, and essential tremors. The procedure involves the implantation of electrodes in specific areas of the brain, which send electrical impulses or stimulations to treat advanced movement disorder conditions. However, this treatment is only for patients who cannot control their symptoms with medication.

Dr Imran Sarker, Assistant Professor, Neurology, NINS, a specialist of Parkinson's & Movement Disorder and a member of the team said, "These DBS surgeries in the public sector is a promising milestone for Bangladeshi patients seeking this kind of treatment for which people used go abroad earlier. We hope it will go a long way."

More than 10 million people worldwide live with Parkinson's disease. It is also understood that Parkinson's disease increases with age, but an estimated four per cent of people with Parkinson's are diagnosed before age 50. Also, men are 1.5 times more likely to have Parkinson's disease than women.



## Artificial intelligence and improved drugs: Another big step forward

STAR HEALTH DESK

Designing drugs that target proteins requires knowing the three-dimensional (3D) shape of the target protein and creating a drug whose shape binds to that target protein. As of June 2021, research had only determined the shape of one-third of human proteins. Then, in July 2021, two groups used artificial intelligence (AI) to predict the shape of nearly every human protein from nucleic acid sequences.

The same AI software that predicted the shape of proteins in the 2021 experiments has now been used to design small strings of 50 to 65 amino acids ("mini-antibodies") with 3D shapes that were predicted to bind to 13 important human target proteins: growth factors that are important in stimulating the growth of cancers and components of several infectious agents, including influenza and SARS-CoV-2. The mini-antibodies were shown to bind to their targets and to work as expected—for example, a mini-antibody designed to bind to the SARS-CoV-2 spike protein protected mice from infection.

These AI-designed mini-antibodies constitute a novel new class of drugs that are simple and inexpensive to produce, in contrast to monoclonal antibodies.

## Over 50? These problems can sneak up on you

STAR HEALTH DESK

Ageing is a natural phenomenon. We develop many health issues as we age. Here are some growing up issues to watch for:

**Outsmart your age:** Nine out of ten older adults have a chronic disease, and eight out of ten have more than one. So, chances are you'll have one soon. But you can live healthier.

**High blood pressure:** Your blood vessels become less flexible as you age, putting pressure on your circulatory system. Two out of three adults over 60 have high blood pressure.

**Diabetes:** Diabetes is one of the most common diseases nowadays. With age, your disease risk rises. Diabetes can cause heart disease, kidney disease, blindness, etc.

**Heart disease:** Plaque build-up in arteries causes heart disease. It begins in childhood and gets worse over time.

**Obesity:** Obesity weighs a lot more than is healthy for your height — it is not a few extra pounds. At least 20 chronic diseases, including heart disease, stroke, diabetes, cancer, high blood pressure, and arthritis, are linked to it.

**Osteoarthritis:** Age-related wear and tear were once thought to cause this joint disease. But genetics and lifestyle may play a role.

**Osteoporosis:** Osteoporosis weakens bones, causing fractures. A healthy diet rich in calcium and vitamin D and regular weight-bearing exercises like dancing, jogging, or climbing stairs can help.



**Chronic obstructive pulmonary disease (COPD):** It causes inflammation and blocks lung airflow. It is a slow-moving disease that you may have for years before symptoms appear in your 40s or 50s. It can cause breathing issues.

**Hearing loss:** Loud noises, disease, and your genes all play a part. Some medications can cause hearing problems, too.

**Visual problems:** Aging does not just cause blurry labels and menus. Cataracts and glaucoma can damage your eyesight.

**Bladder problems:** Bladder control issues tend to arise as we age. Nerve problems, muscle weakness, thickening tissue, or an enlarged prostate cause them.

**Cancer:** Cancer risk increases with age. Young people get the disease, but the risk doubles between 45 and 54.

**Depression:** Depression is common among adults 18 and older. Some people get depressed as they age, when health problems, lost loved ones, and other life changes occur.

**Backpain:** It is more common with age. Being overweight, smoking, not exercising enough, or having arthritis or cancer can increase your risk.

**Dementia:** Alzheimer's, a form of dementia, usually appears at 65. You cannot control some risk factors, like age and heredity. But a heart-healthy diet and watching blood pressure and sugar may help.

Beware of any discomfort you experience as you age and seek early intervention to avoid future complications.



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