What does the pituitary gland do?

Written by: DR HELEN SPOUDEAS
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Edited by: JAY STANILAND

Do you know how many aspects of your life, particularly while growing, are linked to the pituitary gland? Dr Helen Spoudeas has spent many years helping children with problems of the pituitary gland. Learn from her about what this small but powerful part of the human body is, its purpose and what happens when it doesn't function correctly.

The pituitary gland

The pituitary itself is split into two halves—the anterior pituitary (the front part) and the posterior pituitary (the back part).

Endocrinology is the study of the body's hormones. Hormones can be likened to chemical letters that circulate around the body in the bloodstream and these letters come from a "post office" located deep in the middle of the brain. This "post office" is a tiny little gland called the **pituitary gland,** which in turn receives messages from the hypothalamus above it. Together, this cascade is called the **hypothalamic-pituitary axis (HPA)**.

The posterior pituitary gland

From the posterior of the gland, there are messages that control our **water balance** and our **thirst**. Controlling our thirst and the amount we drink is one example of the very vital functions it controls.

The anterior pituitary gland

The anterior pituitary sends messages that control **growth**. For example,

- It tells our body when to go into puberty.
- It controls our fertility.
- It sends important 'stress' messages to release cortisol, one of our fight or flight responses.
- It is also the 'body clock', controlling day/night rhythms, and accounts for our jet lag when travelling long distances and day and night are suddenly reversed.
- The pituitary also sends messages to the thyroid gland which is important for metabolism.

The pituitary gland is thus responsible for controlling vital functions that we take for granted. Together with the hypothalamus, it constitutes the most important endocrine organ; it is the endocrine master gland, controlling many target glands in the body in a very finely tuned feedback system.

Pituitary gland and growth

Delayed growth

In children, the most common cause of delayed growth and puberty is actually a **physiological (natural) delay in the pubertal hormone message** arising from the pituitary gland, affecting three per cent of normal children, and it's especially common in boys. We have to differentiate this from a true pituitary or gonadal deficiency of the pubertal hormones, and also from deficiency of pituitary growth hormone, which can sometimes occur because there's a developmental lesion or mass in the pituitary.

In my article, "Delayed puberty: late bloomer or medical condition?", I go into detail about the causes, diagnosis and treatment of delayed puberty.

Growth advance and early puberty

Growth advance and early puberty may occur because of disrupted hypothalamus or pituitary messaging. That again may be caused because there is either a pituitary abnormality or prior brain injury of some sort.

The other possibility is an adrenal gland disorder which results in the inappropriate production of male hormone messages as in congenital adrenal hyperplasia. This results in changes that mimic aspects of puberty but are not truly driven by the pituitary. We call it gonadotropin-independent precocious puberty.

Early puberty (also called precocious puberty) is really the most common cause of growth advance, along with obesity. My other article "Early puberty: what are the causes and how is it treated" provides you with fundamental knowledge of the condition. Both early puberty and obesity will accelerate growth and tend to early skeletal fusion.