

The Influence of Pituitary Adenomas on Vision

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ABSTRACT

The functionality of the body largely depends on how various parts of the organs must communicate with each other to ensure that a constant internal environment is maintained. For this reason, everything begins in the brain. The gland responsible for most activities of the brain is known as the pituitary gland; the Pituitary Gland is a neuro-endocrine organ that regulates production and secretion of hormones. It acts as an intermediary between the brain and peripheral organs. One of the disorders that form on the pituitary gland is called the pituitary adenoma.

Keywords

Pituitary Gland, Pituitary Adenoma, Endoscopic, Transsphenoidal.

Pituitary adenomas are managed by a collective approach of 3 medical specialists; namely; Ophthalmologist, Endocrinologist and Neurologist. Pituitary adenomas affect the optic nerves, in this regard; an ophthalmologist is the first to diagnose pituitary adenoma. Since the endocrine system is critical to normal functioning of every aspect of the body, a thorough medical examination is thereby conducted by an endocrinologist to determine which hormones are affected by the tumour and how much secretion there is.

Pituitary adenomas are tumours of the pituitary gland. They are classified as benign tumours. The pituitary gland sits inferior to the hypothalamus. It is surrounded by the sphenoid bone in a basketlike structure called the sella tarcica and superiorly by the optic chiasm. The sella tarcica forces an expanding adenoma superiorly, which leads to the compression of the optic nerve, thereby affection one's vision. Pituitary adenomas are classified based on size. If the tumour is 10mm or larger, it is considered a macro adenoma; if it is less than 10mm, it is considered a micro adenoma. Recent studies reveal that macro adenomas are not common as opposed to micro adenomas [1].

The gold standard imaging method for pituitary disease is the Magnetic Resonance Imaging (MRI) scanning of the pituitary and parasellar region, involving fine cuts and saggital and coronal reconstruction [2].

When the tumour enlarges, it compresses the optic chiasm superiorly, primarily causing visual field deficits, in most cases causing bitemporal hemianopia [1].

Daniel, a 64-year-old man with no significant past medical history had noticed a rapid deterioration in his vision for about 5 months and he was experiencing frequent headaches What was thought to be a sight problem turned into a major neurological problem. It was discovered after thorough examination using an MRI scan that a tumour grew on the pituitary gland and put pressure on the optic nerve and optic chiasm. The optic nerve is the nerve cable that connects the eye to the brain. The optic chiasm is the point at which the two optic nerves cross. The tumour detected was a macro adenoma because it was more than 10mm in size. He described his vision as functionally blind because he was not able to see.

Pituitary Macro adenomas are treated by way of surgery, in this regard; an Ear-Nose-Throat (ENT) specialist is the medical specialist that performs the surgery with the neurologist respectively. The surgeon will gain access to the pituitary gland using the Transsphenoidal approach surgery or Endoscopic

Pituitary Surgery; it is called Transsphenoidal because the route the surgeons take uses the sphenoid sinus. The bone is located behind the nose. Endoscopic surgery implies that a tiny camera is used to enter the nostrils to remove the tumour. A Craniotomy is rarely used; where the skull is opened to reach the tumour [3].

Surgeons will use precise surgical instruments to enter the nasal cavity and create an opening in the sphenoid bone. Once the surgeon gains access to the sphenoid sinus, further openings will be made until a hole is created in the sella turcica- the bone that cradles and protects the pituitary gland. Once the tumour appears in the operative field, removal of the tumour can proceed therein. Surgeons use high magnification to help distinguish normal pituitary tissue from the tumour. After the tumour has been removed, the tumour cavity is cleaned and sealed off [3].

Daniel, mentioned earlier underwent Transsphenoidal or Endoscopic surgery to remove the tumour. In his case, the tumour was not completely removed. Tumours that grow sideways into the cavernous sinus, a collection of veins next to the sella, usually cannot be completely removed. This is because that area contains important nerves controlling muscles of the eyes and the carotid artery, which supplies the brain [4].

After Transsphenoidal surgery, radiation therapy can be used to halt further growth of the residual tumour. Daniel told the researcher that his surgery was successful and he began to notice an improved vision. He recovered fully and he was awaiting radiotherapy to halt the growth of the remaining parts of the residual tumour. Unfortunately, he contracted Covid-19 and passed away.

In the researcher's opinion, since diagnosis of pituitary macro adenomas is often delayed, it is fundamental to have regular medical checkups if headaches persist and vision begins to be affected.

References

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