SO YOU HAVE A PITUITARY TUMOR?!

Pituitary tumors are quite common. Studies on autopsies suggest that about 20% of people have a pituitary tumor that would probably not have been discovered during their lifetime. MRI studies suggest that a pituitary tumor occur between 5% and 10% of people. When a pituitary tumor is found on MRI when the test is ordered for another indication, it is called an "incidentaloma" and has been thought to be a clinically insignificant lesion. However, Dr. Friedman published a paper in *Clinical Endocrinology* that found that although these tumors are benign, they may affect the secretion of other pituitary hormones. This is most likely due to the tumors affecting the blood flow to the normal pituitary cells. There is a defined order of pituitary hormone secretion that is effected with damage to the pituitary:
1-growth hormone
2-thyroid hormone
3-sex hormones (estrogen and testosterone)
4-only rarely is ACTH/cortisol.
The order of decrease in hormone secretion is similar in most patients with pituitary tumors, in that growth hormone deficiency is the most common and ACTH/cortisol is the least common.

While many endocrinologists would do tests looking for pituitary hormone deficiencies only if the patient had a known pituitary macroadenoma (tumor greater than 1 cm) or prior surgery or radiation of the pituitary, Dr. Friedman believes that hypopituitarism and pituitary dysfunction are underdiagnosed and need to be looked for. Therefore, if patients have signs and symptoms of hypopituitarism including growth hormone deficiency that include fatigue, poor sleep, muscle pain, joint pain, weight gain, depression, and sluggishness, Dr. Friedman would order pituitary hormone testing. If they then come back suggestive of hypopituitarism, which would include a low IGF-1 (a hormone called insulin-like growth factor which is a marker of growth hormone), or a low testosterone in both males and females, or what is called central hypothyroidism where you have a low free T4 and a low TSH, these would all be indications of pituitary dysfunction. At that stage, Dr. Friedman would order a pituitary MRI to look for conditions that would lead to hypopituitarism including pituitary microadenomas, small pituitaries (partial or total empty sella) or evidence of Sheehan's syndrome (a post-delivery mini-stroke to the pituitary). If the pituitary MRI shows a pituitary tumor, it is consistent with the pituitary tumor causing the low pituitary hormones such as low growth hormone, thyroid hormone and testosterone, and estrogen.

If a pituitary tumor is found, Dr. Friedman would order more extensive testing on the pituitary including most likely a growth hormone stimulation test; he often does a glucagon stimulation test to look for growth hormone deficiency. Once the complete pituitary profile is obtained, Dr. Friedman will replace the hormones that are found to be deficient. These often improve the quality of life of the patient.

Patients frequently ask what else to do when a pituitary tumor is found. The main concern is that the tumor is large and could be causing problems because of its size; however this is rare. Most of these incidentally found pituitary tumors are small, often less than 5 mm. In general, only a tumor greater than 1 cm (10 mm) is of concern that it would be affecting the surrounding tissues of the pituitary, such as the optic nerve. However, some of this depends on exactly where the pituitary tumor is, so it could be a smaller tumor that has a slight chance of compressing the optic

nerve. The next concern is to see if the pituitary tumor is growing. Most likely, these tumors are very slow growing and the patient could have had them for several years. However, Dr. Friedman will often order a follow-up MRI in a year to see if it is growing and after that, every 5 years. If the tumor is growing, that may be an indication for surgery. Another indication for surgery is if the tumor is making a hormone such as ACTH leading to Cushing's disease or growth hormone leading to acromegaly. Dr. Friedman will work up the patient with a pituitary tumor for Cushing disease and would also get an IGF-1 to look for growth hormone excess. Dr. Friedman will also measure prolactin, as the tumors can often make prolactin, for which they would be treated with a medicine called cabergoline.

The question does arise about taking out the tumor if it is leading to hormone deficiencies. Dr. Friedman thinks that the pituitary tumor, by affecting the blood supply in the pituitary, can lead to hormone deficiencies as discussed above. However, taking out the tumor does not necessarily restore these deficiencies. This is because the surgery often affects the blood flow to these other parts of the pituitary even more so than the actual tumor and therefore, surgery is usually not indicated to just replace hormone deficiencies. This is an area that has not been well studied, and Dr. Friedman, in the future, may do a prospective study examining whether removing these tumors does indeed restore pituitary function. However, at this stage, removing the tumor is not recommended. There are a few patients who have a very aggressive-looking pituitary tumor that is throughout the pituitary and is giving extensive hypopituitarism. In the past, Dr. Friedman has recommended a few of these patients to go for surgery with some improvement in their pituitary function. However, for the majority of patients, surgery is not indicated.

To summarize, pituitary tumors are common. They can cause pituitary dysfunction, possibly by affecting the blood flow to the normal pituitary. Most of the time they do not need to be removed, and they are almost never malignant. This information should give you a good guide as to what to do if you are found to have a pituitary tumor.