Plurihormonal pituitary neuroendocrine tumor

Plurihormonal pituitary neuroendocrine tumors are tumours that show immunoreactivity for more than one hormone that cannot be explained by normal adenohypophysial cytodifferentiation.

Plurihormonal adenomas may be ultrastructurally monomorphous, bimorphous, or trimorphous; thus, one morphologic cell type may elaborate several hormones [1)].

Classification

see Giant plurihormonal pituitary neuroendocrine tumor.

Epidemiology

The most common combinations in these adenomas include growth hormone (GH), prolactin (PRL) and one or more glycoprotein hormone sub-units (β-TSH, β-FSH, β-LH and αSU).

They represent 10%-15% of all functioning pituitary neuroendocrine tumors.

Such tumors comprise in excess of 50% of adenomas in the setting of acromegaly and occur with somewhat greater frequency in childhood and adolescence than in adulthood. Eight percent are associated with multiple endocrine neoplasia, type I. The most common variant of plurihormonal adenoma produces growth hormone, prolactin, and one or more glycoprotein hormones, the most common being TSH.

Clinical features

Clinical effects most often reflect the presence of growth hormone, and to a lesser extent, prolactin cells; expression of glycoprotein hormone production is rare. The tumors are more often macroadenomas (80%) than microadenomas (20%) and demonstrate gross invasion in 50% of cases.

Case series

Ho et al. included 167 plurihormonal adenomas, which consisted of 31% of the surgically removed pituitary neuroendocrine tumors that they collected during a 12-year period. The mean age of patients with plurihormonal adenoma was 45.7 years (range 13-75 years). There were 86 men and 81 women. All tumours were fully classified by immunohistochemical staining for seven pituitary hormones or subunits. Thirty immunohistochemical subtypes of plurihormonal adenomas were recognized. Hormonal symptoms were present in 70% of patients, while serum hormonal levels were

increased in 89% of patients. Most patients had symptoms related to only one of the hormones and only 7% of patients had symptoms related to two hormones. The most common hormonal symptom was acromegaly (50%); symptoms related to hyperprolactinaemia ranked second (20%). Double immunostaining of all the possible combinations of the hormones was performed in 30 selected tumours, and they all showed mixtures of hormones in individual adenoma cells in any hormonal combinations studied. The latter finding supported the view that plurihormonal adenomas are monomorphous adenomas.

Plurihormonal adenomas are common pituitary neuroendocrine tumors. Immunohistochemical staining of all pituitary hormones is mandatory for correct classification [2].

Case reports

Plurihormonal pituitary neuroendocrine tumor case reports.

1)
Scheithauer BW, Horvath E, Kovacs K, Laws ER Jr, Randall RV, Ryan N. Plurihormonal pituitary neuroendocrine tumors. Semin Diagn Pathol. 1986 Feb;3(1):69-82. PubMed PMID: 3039632.
2)
Ho DM, Hsu CY, Ting LT, Chiang H. Plurihormonal pituitary neuroendocrine tumors: immunostaining of all pituitary hormones is mandatory for correct classification. Histopathology. 2001 Sep;39(3):310-9. PubMed PMID: 11532042.