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LETTER TO THE EDITOR

Is the current WHO classification of pituitary adenomas practical?☆

¿Es práctica la actual clasificación de la OMS para adenomas hipofisarios?

Dear Editor:

In 2004, the WHO classified pituitary neuroendocrine tumours into three categories, reflecting the potential for malignancy of pituitary adenomas (typical and atypical) and pituitary carcinoma.[1,2] The term ''atypical adenoma'' is defined as a tumour with a Ki-67 index above 3% and diffuse p53 immunoreactivity, predicting potential malignancy. Each hormone-producing adenoma was divided into an adenoma subtype based on its pathological immunoreactivity to the various anterior pituitary hormones.[3] In contrast, in the WHO's new 2017 classification, the ''atypical adenoma'' subtype was completely eliminated, primarily due to the lack of sufficient evidence to predict poor prognosis with pathological markers alone.[1] Prognostic prediction using just one cell proliferation index (Ki-67) is inadequate.[2,4] Mitotic count must be added to assess cell proliferation.

The second change included in the WHO's 2017 classification is the focus on classifying pituitary adenoma based on cell lineages, thus requiring routine immunohistochemistry (IHC) for transcription factors in order to classify adenomas. Immunohistochemical study is required of the transcription factors that regulate cell differentiation (PIT1, SF1 and TPIT[5–7]) and the hormonal activity of anterior pituitary cells (anterior pituitary GH, PRL, TSH-beta, ACTH, FSH-beta, LH-beta and alpha subunit).[4] The term ''hormone-producing'' has also been changed to the new ''-troph'' designation to highlight the role of transcription factors in cell differentiation and the regulation of each hormone.

These changes have implications for what were previously considered to be non-functioning adenomas. As a result of the introduction of IHC for transcription factors, null cell adenoma has recently been defined as an adenoma that does not present immunoreactivity for either anterior pituitary transcription factors or hormone production.[2] In the previous edition, this adenoma was defined as a hormone-negative adenoma, omitting the evaluation of transcription factors, and accounted for 10% of all pituitary adenomas.[2] With the introduction of this change, the new null cell adenomas account for just 1% of all pituitary adenomas.

Specific antibodies for TPIT are not yet on the market, and few analyses have used TPIT immunostaining to classify a large number of cases. Moreover, each centre has different established protocols for IHC. The method described in the new edition to classify pituitary neuroendocrine tumours depends largely on IHC, which is inconsistent from centre to centre; this affects its reproducibility and reliability. To tackle this issue, there appears to be a need to standardise techniques and assess their reliability based on IHC.[2]

Therefore, the new 2017 classification is practical and reasonable from a clinical and molecular pathology perspective, being based on IHC studies of transcription factors, which can be understood intuitively and are useful as a diagnostic technique. However, it is very challenging to carry out in practice in our setting due to how difficult it currently is to access all the immunohistochemical markers that would need to be included.

According to the changes in the new classification, more extensive IHC assessing several antigens will be necessary. There will therefore be a significant increase in these studies to compensate for the elimination of ultrastructural studies. In some countries, such requirements may be problematic from an economic perspective. Considering the scarcity of clinical data for many cases based on transcription factor expression, more research will be needed in this area[2] to consolidate this classification.

References

1. Osamura RY, Lopes MBS, Grossman A, Kontogeorgos GTJ, World Health Organization. Introduction. WHO Classification of Tumours of Endocrine Organs, 10, 4th ed; 2017.
2. Inoshita N, Nishioka H. The 2017 who classification of pituitary adenoma: overview and comments. Brain Tumor Pathol. 2018;35:51–6.
3. Nosé V. Pituitary adenomas: a practical guide for diagnosis. Endocr Pathol. 2010;21:48–68.

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4. Al-Shraim M, Asa SL. The 2004 World Health Organization classification of pituitary tumors: what is new? Acta Neuropathol. 2006;111:1–7.
5. Lopes MBS. The 2017 World Health Organization classification of tumors of the pituitary gland: a summary. Acta Neuropathol. 2017;134:521–35.
6. Mete O, Lopes MB. Overview of the 2017 WHO Classification of Pituitary Tumors. Endocr Pathol. 2017;28:228–43.
7. Laws ER, Penn DL, Repetti CS. Advances and controversies in the classification and grading of pituitary tumors. J Endocrinol Invest. 2019;42:129–35.

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