Hypothalamic obesity

Hypothalamic obesity (HyOb) is a complex neuroendocrine disorder caused by damage to the hypothalamus, which results in disruption of energy regulation. The key hypothalamic areas of energy regulation are the ARC (arcuate nucleus), the VMH (ventromedial hypothalamus), the PVN (paraventricular nucleus) and the LHA (lateral hypothalamic área). These pathways can be disrupted mechanically by hypothalamic tumors, neurosurgery, inflammatory disorders, radiotherapy and trauma or functionally as such seen in genetic diseases. Rapid weight gain and severe obesity are the most striking features of HyOb and are caused by hyperphagia, reduced basal metabolic rate (BMR) and decreased physical activity. HyOb is usually unresponsive to diet and exercise. Although GLP-1 and its anologs seem to be a new agent, there is still no curative treatment. Thus, prevention is of prime importance and the clinicians should be alert and vigilant in patients at risk for the development of HyOb [1].

Obesity is a well-recognized complication of tumors localized in the hypothalamic-pituitary region. In childhood, craniopharyngioma is the most common neoplasm of the hypothalamic-pituitary area, accounting for approximately 80% of tumors in this location and represents 5-15% of intracranial tumors.

612 consecutive PCs were prospectively enrolled from 6 hospitals. Data from 404 participants were analyzed. Participants from 3 of the 6 hospitals (n=290) were used to develop a risk score. External validation of the developed risk score was conducted using the participants from the other 3 hospitals (n=114). Sequential logistic regression was used to develop and validate the risk score. The c statistic and a calibration plot were used to assess the discrimination and calibration of the proposed risk score.

The overall frequency of severe obesity was 16.1% (65/404). The risk score employed a scale of 0 to 16 and demonstrated good discriminative power, with an optimism-corrected c statistic of 0.820. Similar results were obtained from external validation, with a c statistic of 0.821. The risk score showed good calibration, with no apparent over- or under-prediction observed in the calibration plots.

This novel risk score is a simple tool that can help clinicians assess the risk of severe obesity in PCs, thereby helping to plan and initiate the most appropriate disease management for these patients in time [2].

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Haliloglu B, Bereket A. Hypothalamic obesity in children: pathophysiology to clinical management. J Pediatr Endocrinol Metab. 2015 Mar 14. pii: /j/jpem.ahead-of-print/jpem-2014-0512/jpem-2014-0512.xml. doi: 10.1515/jpem-2014-0512. [Epub ahead of print] PubMed PMID: 25781673.
2)
Li D, Pan J, Peng J, Zhang S, Huang G, Zhang X, Bao Y, Qi S. Risk score for the prediction of severe obesity in pediatric craniopharyngiomas: Relative to tumor origin. Pediatr Res. 2017 Nov 22. doi: 10.1038/pr.2017.289. [Epub ahead of print] PubMed PMID: 29166381.