Hypopituitarism in Traumatic Brain Injury

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Traumatic brain injury (TBI) may cause hypopituitarism in a variable percentage of cases. The pituitary failure may be transient or persistent, isolated or multiple and occur at a variable time after TBI.

The primary aim of this study was to determine the incidence of isolated and multiple anterior pituitary hormone deficiency in patients with TBI enrolled at the AOU Ruggi d’Aragona. The secondary aim was to determine a correlation between pituitary deficiency and neuropsychological damage resulting from TBI.

Thirty-five patients, aged between 13 and 71 years, were evaluated from 3 months to 5 years after TBI. We performed neuro-psycho-motor tests and measured serum basal GH, IGF-1, LH, FSH, testosterone (in males), 17-β-estradiol (in women), PRL, fT4, TSH, ACTH, and cortisol. In patients with low IGF1, we assessed the GH/IGF-1 axis by GHRH + Arginine test.

A pituitary failure was found in 13 patients (37%). Low testosterone was found in 7 males, low FSH and/ or LH in 4, low IGF1 in 7 patients. Hypogonadotropic hypogonadism and GH insufficiency assessed by GHRH+Arginine test were found respectively in 3 and 2 patients. One patient had a concomitant corticotrophic axis deficit, GH insufficiency and low levels of TSH. There were no correlations between physical disability and hormonal deficiency; while cognitive or behavioral abnormalities were frequently associated with low IGF-1 and/or testosterone.

Isolated or multiple deficits resulting from TBI are frequent. Alterations in cognitive- behavioral rather than physical disabilities resulting from TBI are more frequently associated with pituitary failure.