



G28 Medico-Legal Importance of Posttraumatic Hypopituitarism

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The goal of this presentation is to inform the public of existence of hypopituitarism after traumatic brain injury and possible significance for both criminal and civil cases.

This presentation will impact the forensic community by demonstrating how some form of hypopituitarism occurs in 35% of patients with moderate to severe head injury.

Recent studies have demonstrated that different forms of hypopituitarism are common among survivors of traumatic brain injury (TBI) tested several months or years following trauma.

The results of endocrine evaluation in a group of 109 patients (68 male and 41 female, mean age 37.9±1.4 yrs.; body mass index (BMI) 24.8±0.5 kg/m²) who had suffered moderate to severe TBI (Glasgow Coma Scale ≤13), at least one year prior to the assessment (mean 3.4±0.5 yrs) are presented. After fasting overnight, at 08:00, serum samples were taken for T4, TSH, FSH, LH, testosterone (men), cortisol, and prolactin. GH/IGF-1 axis was evaluated by a provocative GHRH+GHRP-6 test and IGF-1 measurement, and results were compared with those from 85 healthy control subjects (59 male and 26 female, mean age 36.5±1.4 yrs, BMI 24.2±0.4 kg/m²).

Three groups of TBI patients were formed based on the established normal peak GH cut-off (>20 mg/L) and cut-off for severe GH deficiency (<10 mg/L). These groups are defined as *severe GH deficient* (GHD, n=16, mean GH peak: 5.6±0.7 vs. 46.1±1.9 mg/L in healthy subjects; p<0.01), *GH insufficient* or the so called "grey zone" group (GHI, n=17, mean GH peak: 15.9±0.7 vs. 46.1±1.9 mg/L; p<0.01), and those with *normal GH secretory capacity* (GHS, n=76, mean GH peak: 44.4±2.4 vs. 46.1±1.9 mg/L; p>0.05). Results show that lower GH responses during the provocative test were associated with older age (p<0.01), higher BMI (p<0.01), lower IGF-1 (p<0.01) and the time since trauma (p=0.024), but unrelated to GCS scores (p=0.095), sex (p=0.628) or presence of traumatic subarachnoid haemorrhage (p=0.615). These results also indicate that 6.4% of TBI patients had hypogonadism, 2.8% had hypothyreosis and 2.8% had hypocortisolemia; also 5.5% had hypoprolactinemia and 2.8% hyperprolactinemia.

A significant number of patients (33.9%) express some form of hypopituitarism after traumatic brain injury, which is not related to severity of injury. From medicolegal point these observations might be significant both for criminal and civil cases.

Posttraumatic, Hypopituitarism, Medico-Legal