24082 - ASSESSMENT OF SERUM PROLACTIN, SERUM LACTATE AND CONTINUOUS ELECTRO ENCEPHALOGRAM IN POST-TRAUMATIC HEAD INJURY PATIENTS IN INTENSIVE CARE UNIT.

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Introduction: Immediate sequence of seizures with development of post-traumatic status epilepticus complicates the management of patients with head injuries, causing hypoxia, hypertension and metabolic changes (1). This prospective randomized controlled study was conducted to evaluate the usefulness of a venous prolactin and lactate assay in the diagnosis of seizures in patients under anaesthesia using by a continuous Electro Encephalogram as a control (cEEG) in an Intensive Care Unit (ICU).

Methods: A series of 50 intubated polytraumatized patients were admitted to the ICU: 17 of those patients represented our study cohort composed of pure traumatic brain injury and were sedated with remifentanyl (0.35 µg/kg/min) and propofol (6 mg/kg/min). After family informed consent and ethical institutional agreement obtained, two subgroups (G1 and G2) were defined as: G1 (n=8) received prophylactic intravenous anti-epileptic therapy with valproate acid (0.1 mg/kg/h) and G2 (n=9) who did not. cEEG were performed daily in all patients and prolactin (P) and lactate (L) were measured twice daily using peripheral blood. For statistical analysis a Shapiro-Wilk test, Wilcoxon and a Student T-test were used.

Results: Both groups showed high level of L (38 ± 12 mg/dl) and P (32 ± 11 ng/ml) in blood samples ($p < 0.001$) at admission. cEEG was started immediately after ICU hospitalisation. In G1 six patients did not develop epileptic seizures according to cEEG, L and P values had each diminished on day 2 by 53%. At day one, two G1 patients increased their L serum levels, one to 3 times normal (36 mg/dl) and the other to 5 times normal (68 mg/dl) without any cEEG changes: in the first case this related to a deficit in thiamine and in the second to septic shock. In G2 four patients with normal cEEG also diminished their L and P levels on day 2 by 53 ± 3% ($p < 0.002$). Five patients developed epileptic seizures according to cEEG: three had a parallel diminution of their L serum levels by 50% but not however of their P levels which remained higher than normal (24 ± 4 ng/ml) ($p < 0.005$). Two patients had a significant raise in L levels ($p < 0.001$) but not in the P levels (20 ± 6 ng/ml) ($p = 0.2$) following multiple organ dysfunction.

Conclusion: In unconscious patients with a head injury, an increased prolactin level, even when determined up to 2 hours after venous blood withdrawal, could be a useful parameter for the diagnosis of epileptic seizure. Prolactin still significantly higher than baseline value when, accordingly to cEEG results, sub-clinical epileptic status occurred. Serum lactate doesn't appear to be very specific in the diagnosis of epilepsy but still correlates with a poor clinical outcome. It also is an indicator of thiamine deficiency during treatment with valproic acid.

References: 1 Zauner A et al, Brain oxygenation and energy metabolism: part I-biological function and pathophysiology. Neurosurgery 2002;51:289-301.