

Incidence of central diabetes insipidus in brain dead patients

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Antidiuretic hormone (ADH), also called arginine vasopressin, is a hypothalamus-produced hormone stored and secreted in the posterior pituitary gland. When concentration of extracellular fluid increases, fluid leaks from hypothalamic osmoreceptor cells, creating a signal for ADH secretion. ADH is responsible for water retention in the kidneys. In brain dead patients, lack of ADH production occurs. Plasma half-life of ADH is 15-18 minutes. Therefore, full depletion of ADH should be expected soon after brain death, causing central diabetes insipidus (CDI). The aim of the study was to show incidence of CDI in brain dead patients. Data of patients with verified brain death at Sestre milosrdnice University Hospital Center in Zagreb from 2015 to 2018 were analysed. Poliuria, low urine specific gravity, hypernatremia and response to desmopressin were criteria for CDI. In four year time period, 89 patients were verified as brain dead. Out of them, 71 (79.8%) developed CDI. CDI was expected in all patients with defined brain death. However, only 79.8% of them developed CDI. One possible explanation may be preserved function of hypothalamic osmoregulation system in some patients. Parts of hypophysis and hypothalamus may stay sufficiently perfused by arteria hypophysialis inferior, which branches off extradural segment of arteria carotis interna, and is therefore protected from increased intracranial pressure. Other, less likely possibilities are presence of extracranial tumor with ADH secretion or passive ADH leakage from non-viable hypothalamic cells.