Cathepsin K

cathepsin K, which works extracellularly after secretion by osteoclasts in bone resorption.

n. A total of 42 patients with symptomatic CSDH who underwent burr-hole drainage were enrolled. Intraoperatively, hematoma fluid and peripheral venous blood (PVCSDH) were simultaneously collected. As controls, peripheral venous blood (PVControl) and intracranial cerebrospinal fluid (CSF) were collected from other subjects during other surgeries. CatK, lipocalin-type prostaglandin D synthase (PGDS), and cystatin C (CysC) present in these specimens were measured using enzyme-linked immunosorbent assay. Data obtained were statistically analyzed after age correction. In 15 patients, gas analysis was performed for CSDH and PVCSDH. Furthermore, immunohistochemical examination for the outer membrane was performed for four patients. CatK, PGDS, and CysC levels were markedly elevated in the CSF and CSDH. CatK levels in PVCSDH were significantly higher than in PVControl ($P<0.0001$). In contrast, CysC levels in PVCSDH were significantly lower than in PVControl ($P=0.004$). The gas analysis revealed that the internal environment of CSDH is characterized by marked hypoxia, hypoglycemia, and lactic acidosis. Furthermore, the outer membrane consistently showed a diffuse staining for CatK. Based on these, CatK was thought to play a role in the development of CSDH, with the levels in peripheral venous blood elevated in patients with CSDH [1].

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Tsutsumi S, Ogino I, Miyajima M, Nonaka S, Ito M, Yasumoto Y, Arai H. Role of cathepsin K in the development of chronic subdural hematoma. J Clin Neurosci. 2017 Nov;45:343-347. doi: 10.1016/j.jocn.2017.08.021. Epub 2017 Sep 6. PubMed PMID: 28887075.