Kallikrein

A subgroup of serine proteases, enzymes capable of cleaving peptide bonds in proteins. In humans, plasma kallikrein (KLKB1) has no known homolog, while tissue kallikrein-related peptidases (KLKs) encode a family of fifteen closely related serine proteases. These genes are localized to chromosome 19q13, forming the largest contiguous cluster of proteases within the human genome. Kallikreins are responsible for the coordination of various physiological functions including blood pressure, semen liquefaction and skin desquamation.

Tissue kallikrein (TK) plays an important role in the kallikrein-kinin system. Its protective role has been demonstrated in traumatic brain injury (TBI). We attempted to determine relationship between serum TK levels and trauma severity in addition to clinical outcome in TBI.

We recruited 112 patients with severe TBI (Glasgow coma scale score < 9) and 112 controls. We configured 2 multivariate models to assess the relationship between serum TK levels and 30-day death. Its prognostic predictive ability was analyzed under receiver operating characteristic curve.

TK levels were significantly lower in patients than in controls (median 0.148 mg/l, the upper - lower quartiles 0.121-0.185 vs. median 0.258 mg/l, the upper - lower quartiles 0.207-0.342, P < 0.001). TK levels were closely and positively correlated with Glasgow coma scale score (r = 0.550). TK levels <0.148 mg/l independently predicted 30-day mortality with odds ratio value of 4.752 (95% confidence interval (CI), 1.166-19.367) and 30-day overall survival with hazard ratio value of 3.698 (95% CI, 1.026-13.333). TK levels significantly discriminated 30-day mortality with area under curve of 0.822 (95% CI, 0.738-0.887).

Serum TK can represent a potential predictor of clinical outcome in TBI patients [1)].

The variant rs1722561 of Kallikreins might reduce the risk of sporadic IAs among individuals of Chinese Han ethnicity. This study confirms the association between Kallikreins and IAs [2)].

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Huang JJ, Qiu SZ, Zheng GR, Chen B, Shen J, Yin HM, Mao W. Determination of serum tissue kallikrein levels after traumatic brain injury. Clin Chim Acta. 2019 Sep 6. pii: S0009-8981(19)32033-9. doi: 10.1016/j.cca.2019.09.004. [Epub ahead of print] PubMed PMID: 31499021.
2)
Suo, Miaomiao, Yahui Lin, Hui Yu, Weihua Song, Kai Sun, Yan Song, Yinhui Zhang, et al. 2014. “Association of Kallikrein Gene Polymorphisms with Sporadic Intracranial Aneurysms in the Chinese Population: Laboratory Investigation.” Journal of Neurosurgery (January 3): 1–5. doi:10.3171/2013.11.JNS131036.