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The role of TNF-α-based models in prognostication of the outcomes after ICH: a pilot study

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Abstract

Introduction: Recently, we have developed TNF-α-based models for prognostication of the 3-month neurological outcome in patients after Intracerebral hemorrhage, ICH (Rendevski et al., 2018). In this pilot study, we aimed to test their utility in the clinical practice for the purposes of identification of the patients who will most likely end up with a poor outcome, as well as to test their utility for clinical decision making between conservative and surgical intervention.

Methods: 20 patients with ICH were included initially in this pilot longitudinal study. Their peripheral blood TNF-α levels were screened, and the risk for poor outcome was assessed by using our previously determined cutoff value of > 110.35 pg/mL. The neurological outcome was determined 3 months after the initial hemorrhagic cerebrovascular insult. Another series of 20 threatened patients with TNF-α levels higher than 200 pg/mL were tested for the possibility of lowering the risk of the poor outcome by implementing early craniotomy with hematoma evacuation.

Results: The value of > 110.35 pg/mL had fairly identified the patients who later fell into the group with poor outcome, 3 months after ICH (8 out of 9 identified patients with risk for poor outcome have resulted in a poor outcome). In the second series of 20 threatened patients with TNF-α levels higher than 200 pg/mL, early craniotomy and evacuation of the hematoma were shown beneficial; 7 out of 20 patients resulted in a good outcome.

Conclusions: TNF-α screening at admission was shown as a useful method for identifying the ICH patients with the highest risk for ending with poor neurological outcome; early craniotomy with hematoma evacuation in the threatened group of patients with the highest TNF-α levels has also shown benefit in lowering the risk for poor outcome and improving patient's neurological state 3 months after ICH.