

Copeptin as a marker for severity and prognosis of aneurysmal subarachnoid hemorrhage

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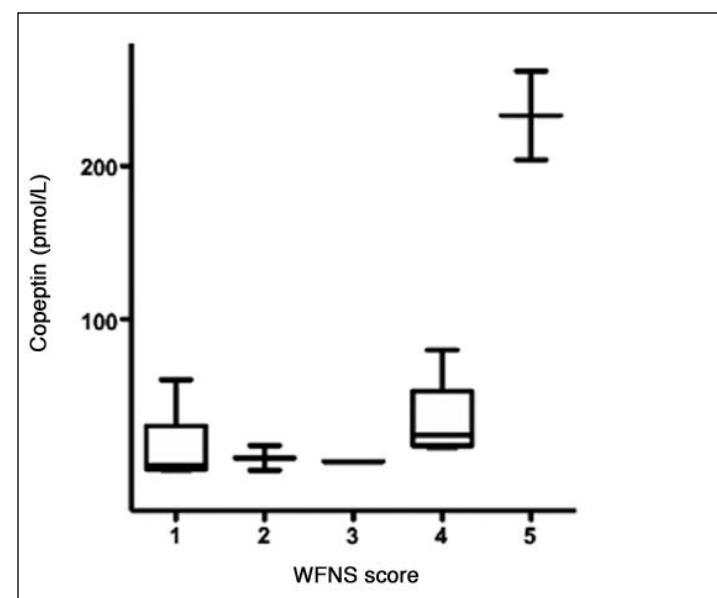


Introduction

Grading of patients with aneurysmal subarachnoid hemorrhage (aSAH) is often confounded by seizure, hydrocephalus or sedation and the prediction of prognosis remains difficult. Recently, copeptin has been identified as a serum marker for outcomes in acute ischemic stroke and intracerebral hemorrhage (ICH). We investigated whether copeptin might serve as a marker for severity and prognosis in aSAH.

Methods

Eighteen consecutive patients with SAH had plasma copeptin levels measured with a validated chemiluminescence sandwich immunoassay. The primary endpoint was the association of admission copeptin levels with the World Federation of Neurological Surgeons (WFNS) grade score after resuscitation. Levels of copeptin were compared across clinical and radiological scores as well as between patients with ICH, intraventricular hemorrhage, hydrocephalus, vasospasm and ischemia



Results

The study included 18 patients (12 women and 6 men), median age of 57 years (interquartile range (IQR) [48-67]). Overall median copeptin level at admission was 17.0 pmol/L (IQR 3.3-38.4). Copeptin levels had a significant association with the severity of SAH measured by WFNS grade (P=0.006), the amount of subarachnoid blood (P=0.03) and the occurrence of ICH (P=0.02). There was also a trend between copeptin levels and functional clinical outcome at 6-months (P=0.054). No other clinical outcomes showed any statistically significant association. Admission copeptin levels might not predict later cerebrovascular events, yet serial testing throughout might show an association.

	n	Median copeptin level (IQR) (pmol/L)	p-value
WFNS grade^a			
Good-grade	11	6.8 (6.6-17.4)	P=0.006
Poor-grade	7	26.3 (18.3-204)	
Fisher grade			
Diffuse blood (Fisher grade 2 and 4)	3	1.6 (1.5-3.3)	P=0.027
Thick clot (Fisher grade 3)	15	18.3 (6.8-60.4)	
ICH			
Yes	6	52.5 (17.4-204)	P=0.02
No	12	6.7 (2.2-22.3)	
IVH			
Yes	11	17.4 (6.6-38.4)	P=0.89
No	7	7.1 (1.6-79.9)	
Hydrocephalus			
Yes	12	17.9 (5-32.4)	P=0.682
No	6	6.7 (3.3-60.4)	
Vasospasm			
Yes	5	26.3 (24.5-60.4)	P=0.15
No	13	7.1 (2.8-18.3)	
Ischemia			
Yes	3	24.5 (1.3-60.4)	P=1.0
No	15	16.5 (3.3-38.4)	
Outcome^b			
Good	13	6.8 (2.8-24.5)	P=0.054
Poor	5	26.3 (17.4-204)	
Mortality			
Survivors	14	7.0 (2.8-38.4)	P=0.277
Deceased	4	21.9 (17-115.2)	

Conclusions

Copeptin may indicate clinical severity of the initial bleeding and may therefore help in guiding treatment decisions in the setting of aSAH. These initial results show that copeptin might also have prognostic value for clinical outcome in SAH.

Learning Objectives

By the end of this session the audience should know
1) about the possible usefulness of Copeptin as serum marker in SAH
2) that Copeptin is associated with the severity of SAH, the amount of subarachnoid blood and the occurrence of ICH

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