Introduction:
AQP4 is a water channel protein contributing to astrocyte and immune cells migration, blood-brain barrier maintenance and cell survival [1-2]. AQP4 genetic variants represent biomarkers associating with outcome after traumatic brain injury and intracerebral hemorrhage [3-4]. Linking AQP4 genetic polymorphism to the course of sepsis has not been studied.

Methods:
Study cohort included 124 ICU patients diagnosed according to SEPSIS-3 consensus. AQP4 rs11661256 polymorphism was studied by analyzing PCR products in a 2% agarose gel using an AQP4 specific polynucleotide tetraprimer set. Data were analyzed by log rank test (MedCalc 18.11.3), and odds ratios/hazard ratios were computed. Statistical significance was determined by Fisher test (FT) or Mann-Whitney test.

Results:
23 of 124 sepsis patients had the minor mutation A for SNP rs11661256 located within the regulatory 3’ region of the AQP4 gene. Septic shock occurred more frequently in homozygotic carriers of AQP4 C allele vs. patients with AA or CA genotype: OR=3.75 (95%CI: 1.47-9.56), P=0.006 (FT). Lethality in septic shock patients, n=85, significantly increased compared to sepsis patients with no shock, n=39 (82% vs. 20%, P=0.001, FT). Maximum SOFA values were significantly lower in patients with minor allele A compared to CC carriers of (9.6 vs. 12.0, respectively, P=0.008). In post-surgery group of patients, carriers of AC or AA genotypes had significantly increased survival compared to patients with CC genotypes: Chi-square=5.804; HR=0.455 (95%CI: 0.24 -0.863) for lethality; P=0.016.

Conclusion:
Association of minor allele A of AQP4 SNP rs11661256 with survival in sepsis patients seems secondary to linking the SNP to decreased development of multiorgan failure and septic shock that contribute to mortality.

References:
Genotypes AA and AC SNP rs11661256 AQP4 associate with increased survival in sepsis