

# Novi prediktor smrtnog ishoda u bolesnika s akutnim srčanim zatajivanjem

## New predictor of mortality in patients with acute heart failure

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**Uvod:** Poznato je da bolesnici s hiponatrijemijom u zatajivanju srca (ZS) imaju povećanu smrtnost te učestalije i dugotrajnije hospitalizacije. Unatoč mnogim istraživanjima dosadašnji terapijski pristupi u bolesnika s razvijenom hiponatrijemijom kod ZS-a se nisu pokazali učinkoviti. U radovima vezanim uz hiponatrijemiju u bolesnika sa ZS-om se nije posvećivala posebna pozornost vrijednosti klorida u serumu, najviše zbog mišljenja da je klorid samo sekundarno važan elektrolit čije vrijednosti koncentracije u serumu su uvjetovane koncentracijom natrija i poremećajima acidobaznog statusa.<sup>1</sup>

**Pacijenti i metode:** Istraživanje je provedeno u obliku prospektivne opservacijske studije u koju je bilo uključeno 152 bolesnika hospitaliziranih u Kliničkom bolničkom centru Sestre milosrdnice zbog akutnog ZS-a. Bolesnici su bili podijeljeni u četiri skupine s obzirom na inicijalne vrijednosti koncentracije natrija i klorida (normonatrijemija, hiponatrijemija, hipokloremija, normokloremija) u krvi te su bili praćeni drugi, treći, sedmi dan hospitalizacije i tri mjeseca nakon hospitalizacije. Statistički se obrađivala vjerojatnost razvitka hiponatrijemije nakon tri mjeseca i smrtnog ishoda po navedenim skupinama.

**Rezultati:** U usporedbi s bolesnicima koji su imali inicijalnu normokloremiju i normonatrijemiju, bolesnici s inicijalnom hipokloremijom i normonatrijemijom imali su statistički značajnu incidenciju hiponatrijemije tri mjeseca nakon hospitalizacije. Binarna logistička regresija je otkrila statistički značajnu povišenu unutarbolničku smrtnost u bolesnika koji su inicijalno imali hipokloremiju i normonatrijemiju. Kao zanimljivost u istraživanju je zapažena najviša vrijednost ejekcijske frakcije prilikom hospitalizacije u bolesnika s hipokloremijom i normonatrijemijom tj. skupini bolesnika koja je imala statistički značajnu povišenu unutarbolničku smrtnost. Vrijednosti NT-proBNP prilikom prijema bile su najniže također u grupi bolesnika sa hipokloremijom i normonatrijemijom.

**Zaključak:** Istraživanje je pokazalo da je hipokloremija prognostički pokazatelj razvoja hiponatremije i da bolesnici s inicijalnom hipokloremijom imaju veću bolničku smrtnost. Detektiranjem hipokloremije mogu se otkriti visokorizični bolesnici s ciljem drukčijeg terapijskog pristupa te smanjenja smrtnosti.

**Introduction:** Numerous studies have shown that during heart failure (HF) exacerbation patients with hyponatraemia have higher mortality, longer hospital stay and higher incidence of rehospitalisation due to HF. To date there has not been effective therapy for hyponatraemia in AHF. Until now, research related to hyponatraemia in HF patients did not focus on serum chloride levels, mostly due to traditional view of chloride as a secondary electrolyte whose levels are dependent on sodium levels and acid-base balance. The present study investigated the relationship between serum chloride and follow-up sodium levels in acute heart failure (AHF) patients with normal initial sodium level.<sup>1</sup>

**Patients and Methods:** The present study was performed as a prospective, single-centre, observational research with a total of 152 hospitalized AHF patients in University Hospital Centre "Sestre milosrdnice". Patients have been divided in four groups depending on values of sodium and chloride. Patients were monitored on the second, third and seventh day of hospitalisation and follow up was done after three months. We statistically calculated the likelihood of these groups for developing hyponatraemia after three months and mortality.

**Results:** Compared to patients with initial normochloreaemia and normonatraemia, patients with initial hypochloreaemia and normonatraemia had a statistically significant higher incidence of hyponatraemia after a 3-months follow-up. Binary logistic regression revealed a significantly increased in-hospital mortality in the hypochloreaemic/normonatraemic group. Interestingly, ejection fraction at admission was the highest in hypochloreaemic/normonatraemic patients, although that group of patients had significantly increased in-hospital mortality. The lowest ejection fraction was in a group of patients with hypochloreaemic/hyponatraemic patients. The N-terminal precursor Brain Natriuretic Peptide (NT-proBNP) levels at admission were significantly lower in hypochloreaemic/normonatraemic compared to other groups.

**Conclusion:** Our study showed that initial low serum chloride concentration is predictive of developing hyponatraemia and associated with increased in-hospital mortality in HF patients. Chloride levels could be used to detect high-risk patients and start appropriate therapy early enough to prevent poor outcome of AHF patients.

### LITERATURE

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