

1-2020

## Diagnostic Accuracy of Procalcitonin in Differentiating Sepsis from Noninfectious SIRS in Adult Patients with Subarachnoid Hemorrhage

Keshav Choudhuri

Thomas Jefferson University, keshav.choudhuri@jefferson.edu

Umer Mukhtar, MD

Thomas Jefferson University, umer.mukhtar@jefferson.edu

M. Kamran Athar, MD

Thomas Jefferson University, muhammad.athar@jefferson.edu

David Boorman, MS

Fred Rincon, MD

Follow this and additional works at: [https://jdc.jefferson.edu/si\\_ctr\\_2022\\_phase1](https://jdc.jefferson.edu/si_ctr_2022_phase1)  
Thomas Jefferson University, Fred.Rincon@jefferson.edu



Part of the [Neurology Commons](#), and the [Translational Medical Research Commons](#)

**Let us know how access to this document benefits you**

*See next page for additional authors*

### Recommended Citation

Choudhuri, Keshav; Mukhtar, MD, Umer; Athar, MD, M. Kamran; Boorman, MS, David; Rincon, MD, Fred; Vibbert, MD, Matthew; Shah, MD, Syed O.; Urtecho, MD, Jacqueline S.; and Jallo, MD, Jack, "Diagnostic Accuracy of Procalcitonin in Differentiating Sepsis from Noninfectious SIRS in Adult Patients with Subarachnoid Hemorrhage" (2020). *Phase 1*. Paper 86.

[https://jdc.jefferson.edu/si\\_ctr\\_2022\\_phase1/86](https://jdc.jefferson.edu/si_ctr_2022_phase1/86)

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's [Center for Teaching and Learning \(CTL\)](#). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Phase 1 by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: [JeffersonDigitalCommons@jefferson.edu](mailto:JeffersonDigitalCommons@jefferson.edu).

---

**Authors**

Keshav Choudhuri; Umer Mukhtar, MD; M. Kamran Athar, MD; David Boorman, MS; Fred Rincon, MD; Matthew Vibbert, MD; Syed O. Shah, MD; Jacqueline S. Urtecho, MD; and Jack Jallo, MD

## CTR Abstract

### Diagnostic Accuracy of Procalcitonin in Differentiating Sepsis from Noninfectious SIRS in Adult Patients with Subarachnoid Hemorrhage

Keshav Choudhuri, Umer Mukhtar, MD, M. Kamran Athar\*, MD, David Boorman, MS, Fred Rincon, MD, Matthew Vibbert, MD, Syed O. Shah, MD, Jacqueline S. Urtecho, MD, Jack Jallo, MD

**Background:** Subarachnoid hemorrhage (SAH) is a frequent diagnosis in the neuro-intensive care unit (NICU) that can result in the development of systemic inflammatory response syndrome (SIRS) and fever. The differentiation between central fever and infectious fever is paramount in order to prevent superfluous diagnostic testing and overuse of empiric antibiotics.

**Methods:** A prospective chart review study conducted in the NICU between December 2012 and September 2015. Patients with SAH, fever ( $\geq 101.0^{\circ}\text{F}$ ) and/or who were SIRS positive and had PCT levels measured were included. The primary outcome was clinical infection defined as any positive culture or infiltrate on chest X-ray within three days of onset of fever.

**Results:** Out of 129 patients, 54 were positive for any culture: 14 with PCT  $\leq 0.2$ , 12 with PCT  $>0.2$  and  $\leq 0.5$ , and 28 with PCT  $>0.5$ . Using multiple logistic regression, PCT between 0.2-0.5 had an odds ratio of 2.99 (95% CI 1.12-8.00) while PCT  $>0.5$  had an odds ratio of 29.11 (CI 8.49-99.83) and p-value of  $<0.001$ . All other predictors were not statistically significant. For procalcitonin  $>0.5$ , specificity is 94.7%, sensitivity 51.9%, positive predictive value 87.5%, and negative predictive value 73.2%. ROC Curve area: 79.3%.

**Conclusion:** PCT of 0.5 ng/mL or greater was useful for distinguishing infectious from central fever in SAH patients, with PCT values between 0.2-0.5 as somewhat predictive of infection. The test has high specificity and a reasonably high negative predictive value, so it can be a valuable tool to rule out infectious fever in patients with SAH.