

## The Impact of Aging on Intracranial and Cerebral Perfusion Pressures in Patients with Cerebrospinal Fluid Disorders

Enoch Kim <sup>1</sup>, Michael Meggyesy <sup>2</sup>, Dipankar Biswas <sup>2</sup>, Mark G. Luciano <sup>2</sup>

1. Department of Neurological Surgery, Nova Southeastern University Dr. Kiran C. Patel College of Allopathic Medicine, Davie, USA 2. Neurological Surgery, Johns Hopkins University School of Medicine, Baltimore, USA

**Corresponding author:** Mark G. Luciano, ek617@mynsu.nova.edu

**Categories:** Neurology, Neurosurgery

**Keywords:** aging, intracranial pressure, cerebrospinal fluid

### How to cite this poster

Kim E, Meggyesy M, Biswas D, et al. (2021) The Impact of Aging on Intracranial and Cerebral Perfusion Pressures in Patients with Cerebrospinal Fluid Disorders. *Cureus* 13(9): e.

## Abstract

**INTRODUCTION:** Intracranial pressure (ICP) monitoring is a routine but life-saving diagnostic test performed in patients with suspected intracranial pathologies. Sudden ICP elevations and corresponding cerebral perfusion pressure (CPP) reductions are often observed in these patients, causing cerebral ischemia, brain herniation, and even death. However, the influence of aging on ICP and CPP in patients with cerebrospinal fluid (CSF) disorders is poorly understood and may explain for the poorer treatment outcomes and higher mortality rates observed in older adults. The chief objective of this study was to determine if and how aging affects ICP and CPP in patients with pseudotumor cerebri, CSF leaks, and Chiari malformations.

**METHODS:** ICP monitoring data collected from patients evaluated and treated at The Johns Hopkins University Department of Neurosurgery between March 2017 and May 2021 were retrospectively reviewed. Both the young (18 – 35 y/o) and older adult (55 – 71 y/o) groups were composed of 18 individuals with the above-mentioned CSF disorders. Statistical analyses were performed using IBM SPSS.

**OUTCOMES:** During positional testing, older adults exhibited significantly greater CPPs than their younger counterparts. Mean ICP was also significantly lower in older adults at the 45° head-of-bed (HOB) angle, and greater ICP reductions were evident throughout positional testing, though not to a statistically significant extent.

**DISCUSSION:** Our findings suggest older adults with CSF disorders experience markedly higher ICPs and lower CPPs and may even exhibit greater ICP reductions when HOB angles are increased. Accounting for these aging-associated changes may help optimize care of older adults with CSF disorders.

### Open Access

Published 09/10/2021

### Copyright

© Copyright 2021

Kim et al. This is an open access poster distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Distributed under

Creative Commons CC-BY 4.0