

The blood-spinal cord barrier (BSCB), a physical [barrier](#) between the blood and [spinal cord parenchyma](#), prevents the [toxins](#), [blood cells](#), and [pathogens](#) from entering the [spinal cord](#) and maintains a tightly controlled chemical balance in the spinal environment, which is necessary for proper neural function.

Triggering of inflammatory responses and disruption of blood-spinal cord barrier (BSCB) integrity are considered pivotal events in the [traumatic spinal cord injury pathophysiology](#) (TSCI). Yet, these events are poorly understood and described in humans. This study aims to describe inflammatory responses and BSCB integrity in human TSCI.

**Methods:** Fifteen TSCI patients and fifteen non-TSCI patients were prospectively recruited from Aarhus University Hospital, Denmark. Peripheral blood (PB) and cerebrospinal fluid (CSF) were collected at median day 0 [IQR: 1], median day 9 [IQR: 2], and median day 148 [IQR: 49] after injury. PB and CSF were analyzed for immune cells by flow cytometry, cytokines by multiplex immunoassay, and BSCB integrity by IgG Index.

**Results:** Eleven TSCI patients completed follow-up. Results showed alterations in innate and adaptive immune cell counts over time. TSCI patients had significantly increased cytokine concentrations in CSF at the first and second follow-up, while only concentrations of interleukin (IL)-4, IL-8, and tumor necrosis factor- $\alpha$  remained significantly increased at the third follow-up. In PB, TSCI patients had significantly increased IL-6, IL-8, and IL-10 concentrations and significantly decreased interferon- $\gamma$  concentrations at the first follow-up. Results further showed increased IgG Index indicative of BSCB disruption in seven TSCI patients at the first follow-up, five TSCI patients at the second follow-up, and two patients at the third follow-up.

Results suggest that [traumatic spinal cord injury](#) mainly triggers innate [inflammatory responses](#) that resolves over time, although with some degree of non-resolving [inflammation](#), particularly in [CSF](#). Results cannot confirm [blood-spinal cord barrier disruption](#) in all [traumatic spinal cord injury](#) patients<sup>1)</sup>.

<sup>1)</sup>

Wichmann TO, Kasch H, Dyrskog S, Høy K, Møller BK, Krog J, Hviid CVB, Hoffmann HJ, Rasmussen MM. The inflammatory response and blood-spinal cord barrier integrity in [traumatic spinal cord injury](#): a prospective pilot study. Acta Neurochir (Wien). 2022 Oct 3. doi: 10.1007/s00701-022-05369-6. Epub ahead of print. PMID: 36190569.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=blood-spinal\\_cord\\_barrier](https://neurosurgerywiki.com/wiki/doku.php?id=blood-spinal_cord_barrier)

Last update: **2024/06/07 02:48**

