A previously healthy 42-year-old man had sudden-onset severe headache resolving within days. Two weeks later, he noted acute right-sided hemiparesis. Brain CT, MRI, and digital subtraction angiography showed acute left hemispheric ischemic stroke, bilateral middle cerebral artery vasospasms, and intracerebral aneurysms (figure 1A–E). The following day, CSF was obtained and appeared clear and without xanthochromia (figure 2A). CSF cytology proved past subarachnoid hemorrhage (SAH) by demonstrating macrophages with ingested erythrocytes, hemosiderin, and hematoidin crystals (figure 2B). CSF may be clear, but CSF cytology can prove SAH 2 weeks after aneurysm rupture leading to vasospasm and stroke.1,2
**Figure 2** CSF cytology proving subarachnoid hemorrhage (SAH)

(A) Clear CSF without xanthochromia. (B) Cytology of May-Grünwald-Giemsa stained CSF cytopsin showing macrophages with ingested erythrocytes (short arrow), hemosiderin (arrowheads), and hematoidin crystals (long arrow). Macrophages containing hemosiderin and hematoidin crystals appear 3 and 7 days, respectively, after SAH and can thereafter remain detectable for several months.

**Study funding**
No targeted funding reported.

**Disclosure**
No author reports any disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

**Appendix**

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leonie Müller-Jensen, MD</td>
<td>Department of Neurology, Charité Universitätsmedizin Berlin, Germany</td>
<td>Author</td>
</tr>
<tr>
<td>Elie Diamandis, MD</td>
<td>Department of Neuroradiology, Charité Universitätsmedizin Berlin, Germany</td>
<td>Coauthor</td>
</tr>
<tr>
<td>Anja Osterloh, MD</td>
<td>Department of Neuropathology, Charité Universitätsmedizin Berlin, Germany</td>
<td>Coauthor</td>
</tr>
<tr>
<td>Klemens Ruprecht, MD</td>
<td>Department of Neurology, Charité Universitätsmedizin Berlin, Germany</td>
<td>Coauthor</td>
</tr>
<tr>
<td>Christoph Leithner, MD</td>
<td>Department of Neurology, Charité Universitätsmedizin Berlin, Germany</td>
<td>Coauthor</td>
</tr>
</tbody>
</table>

**References**


**Visit the Neurology® Website at Neurology.org/N**

- More article-based content on home pages
- Streamlined menus and navigation
- Enhanced blog sections for specialty areas
- Same experience on desktop, tablet, and mobile devices
- Improved article reading experience; links more evident (pdf, analytics, social media)
- Neurology® Clinical Practice initiative “Practice Current” global surveys will be accessible across sites

- Find Neurology® on Facebook: http://tinyurl.com/neurologyfan
- Follow Neurology® on Twitter: https://twitter.com/GreenJournal
Cerebrospinal fluid cytology in subacute subarachnoid hemorrhage
Leonie Müller-Jensen, Elie Diamandis, Anja Osterloh, et al.
Neurology 2020;95;699-700 Published Online before print August 26, 2020
DOI 10.1212/WNL.0000000000010713

This information is current as of August 26, 2020

Updated Information & Services
including high resolution figures, can be found at:
http://n.neurology.org/content/95/15/699.full

References
This article cites 2 articles, 0 of which you can access for free at:
http://n.neurology.org/content/95/15/699.full#ref-list-1

Subspecialty Collections
This article, along with others on similar topics, appears in the following collection(s):
All Cerebrovascular disease/Stroke
http://n.neurology.org/cgi/collection/all_cerebrovascular_disease_stroke
Cerebrospinal Fluid
http://n.neurology.org/cgi/collection/cerebrospinal_fluid
Subarachnoid hemorrhage
http://n.neurology.org/cgi/collection/subarachnoid_hemorrhage

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
http://www.neurology.org/about/about_the_journal#permissions

Reprints
Information about ordering reprints can be found online:
http://n.neurology.org/subscribers/advertise

Neurology © is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2020 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.