

Paradoxical depression

A study identified postoperative delayed paradoxical **depression** following surgical repair of **unruptured intracranial aneurysms** in around 10% of patients, which may be comparable to mild **posttraumatic stress disorder** and resulted in a reduced rate of patients fully returning to their **activities of daily living**¹⁾.

There are previous reports hinting towards atrophy of parts of the **limbic system**, namely the **hippocampus** in patients after surgical aneurysm repair^{2) 3) 4) 5)}.

Taking into account that recent developments in neuroimaging have made it possible to reliably study the hippocampus and its subfields *in vivo*^{6) 7)}.

In a explorative study, Hedderich et al., found that history of microsurgical **clipping** (MC) was significantly associated with lower volumes in distinct hippocampal subfields, which may be a consequence of a more extensive treatment. This could indicate specific atrophy of cornu ammonis area 2/3 after MC and should motivate hippocampal subfield assessment in larger cohorts⁸⁾.

1)

Garzon-Muvdi T, Yang W, Luksik AS, Ruiz-Valls A, Tamargo RJ, Caplan J, Tamargo RJ. Postoperative Delayed Paradoxical Depression After Uncomplicated Unruptured Intracranial Aneurysm Surgery. World Neurosurg. 2017 Mar;99:63-69. doi: 10.1016/j.wneu.2016.11.101. Epub 2016 Nov 29. PubMed PMID: 27913259.

2)

Wostrack M, Friedrich B, Hammer K et al (2014) Hippocampal damage and affective disorders after treatment of cerebral aneurysms. J Neurol 261:2128-2135.

3)

Inoue T, Ohwaki K, Tamura A, Tsutsumi K, Saito I, Saito N (2014) Subtle structural change demonstrated on T2-weighted images after clipping of unruptured intracranial aneurysm: negative effects on cognitive performance. J Neurosurg 120:1-8.

4)

Bendel P, Koivisto T, Hänninen T et al (2006) Subarachnoid hemorrhage is followed by temporomesial volume loss: MRI volumetric study. Neurology 67:575-582.

5)

Bendel P, Koivisto T, Niskanen E et al (2009) Brain atrophy and neuropsychological outcome after treatment of ruptured anterior cerebral artery aneurysms: a voxel-based morphometric study. Neuroradiology 51:711-722.

6)

Iglesias JE, Augustinack JC, Nguyen K et al (2015) A computational atlas of the hippocampal formation using ex vivo, ultra-high resolution MRI: application to adaptive segmentation of in vivo MRI. Neuroimage 115:117-137.

7)

Fischl B, Salat DH, Busa E et al (2002) Whole brain segmentation: automated labeling of neuroanatomical structures in the human brain. Neuron 33:341-355.

8)

Hedderich DM, Reess TJ, Thaler M, Berndt MT, Moench S, Lehm M, Andrisan T, Maegerlein C, Meyer B, Ryang YM, Zimmer C, Wostrack M, Friedrich B. Hippocampus subfield volumetry after microsurgical or endovascular treatment of intracranial aneurysms-an explorative study. Eur Radiol Exp. 2019 Mar 21;3(1):13. doi: 10.1186/s41747-019-0092-7. PubMed PMID: 30900111; PubMed Central PMCID: PMC6428873.

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