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Plasma ADAM-10 as a novel biomarker for traumatic brain injury and concussion

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Background: Cellular prion protein (PrPC) is a lipid raft protein locallizing within CNS tissue. It is reguated by a disiintegrin and metaloproteinase domain containing protein 10 (ADAM10), which induces ectodomain shedding. PrPC has been previousy implicated as a ptentia lbiomarker for TBI, but no prior studies have examined the potential of ADAM10 as a biomarker. **Methods:** Serum samples from patients admitted for TBI were collected and patient data was recorded. Control serum was acquired from a commercial tissue bank. Patient GCS was recorded during admission. Serum was used for ELISA to assess PrPC and ADAM10 expression. GraphPad was used to conduct ANOVA and regressional analysis. **Results:** 37 control and 20 TBI samples were collected. Of the TBI patiients, 8 were mild, 3 were moderate, and 9 were severe cilnical grade. Both PrPC and ADAM10 were elevated in TBI patients compared with control ($p<0.001$). ADAM10 exhibited a dose response, with greter expression in patients with higher clinical grade. There was no significant association of either PrPC or ADAM10 with time after injury. **Conclusions:** Our results indicate that PrPC and ADAM10 may be useful tools for screening of TBI. ADAM10 is associated closely with clinlcal grade, and may in the future represent a promising prognostic tool.

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Permanent isolated micrographia from traumatic basal ganglia injury

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Background: Micrographia is a rare neurological finding in isolation. Most cases of isolated micrographia have been found in association with focal ischemia of the left basal ganglia. **Methods:** We present a case of post-traumatic micrographia stemming from contusion to the left basal ganglia. We performed a detailed analysis of the patient's writing at three-year follow-up. **Results:** A halthy 15 year old male was admitted following a BM accident. CT showed contusion to the left basall ganglia/external capsule. MRI was negative for underlying lesion. He had a short stay in the ICU and then was discharged. Two years later, he expressed concern regarding difficulty with sma, cramped writing at school. Writing analysis revealed micrographia with spontaneous printing as well as printing to dictation, but not with copied English nor Japanese writing. **Conclusions:** Isolated micrographia is a rare neurological finding. We present the incidence of this symptom folllowing gliding contusion to the et basal ganglia and external capsule.

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Case series, systematic review and meta-analysis of basilar bifurcation aneurysms treated between 2001 – 2017

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Background: In aneurysms overall, a lower rate of recanalization in stent assisted coiling vs coiling alone has been observed without an increase in morbidity. This study aims to stratify and compare degree of occlusion outcome by treatment modalities. Secondarily, this study aims to stratify and compare postoperative adverse events. **Methods:** MEDLINE and EMBASE databases were searched. Study center were reviewed for inclusion. We performed meta-regressions, bias analysis and fail-safe N. We controlled for the quality of the studies. **Results:** 396 nonduplicated patients were separated into 4 groups: microsurgical, stent-assisted coiling, coiling, stent only. Stent-assisted coiling has lower rate of retreatment (17 vs 24%) and higher rehemorrhage (5% vs 3%) compared to coiling. Stent-assisted has higher rates of complete occlusion (55% vs 45%) and lower rate of residual aneurysm (15% vs 23%) compared to coiling. Comparative analyses were performed. Microsurgical remained the most morbid modality with the best rate of complete occlusion (93%) and lowest rehemorrhage (2%) and retreatment rate (5%). **Conclusions:** This is the first and largest meta-analysis focusing on patients treated for basilar apex aneurysm. To our knowledge, this is the first study to stratify and compare degree of occlusion per treatment modality. This study provides benchmark numbers to guide clinicians.

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Headache outcomes after treatment of unruptured intracranial aneurysms: systematic review and meta-analysis

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Background: Headaches are a major cause of disability and healthcare cost worldwide. When investigating headaches etiology, incidental unruptured intracranial aneurysms are often considered unrelated. We conducted a systematic review and meta-analysis to assess headaches outcomes (severity) after treatment of unruptured intracranial aneurysm. **Methods:** MEDLINE and EMBASE were systematically reviewed. **Results:** The data from eligible studies (n=7) was extracted and analyzed. 309 nonduplicated patients provided patient-level data for analysis. All studies used the 10-point numeric rating scale (NRS). 88% of patients were treated with endovascular technique. Overall, the observed effect estimate under a random effects model was found to be a standard mean difference in pre- and post-intervention headache severity of -0.448 (95% CI: -0.566 to -0.329). No significant heterogeneity was noted. No significant publication bias was demonstrated. **Conclusions:** This is the

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