

Insular cortex and epilepsy paradigm. Literature review

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Abstract

Background: The insula, first described in 1786 by Felix Vicq d'Azyr, later renamed Reil's island in 1809, was described by Clark as the fifth brain lobe in 1896. Initially considered an isolated lobe, belonging to the autonomic nervous system, it later proved to have broad anatomical and functional connections with brain structures. The relevant terms' combination [insula OR insular cortex] AND epilepsy was searched on PubMed database. The following filters were applied: publication date – 21 years, species – humans, age of subjects – 19+, language – English. Out of 170 identified results only Reviews (17), Retrospective studies (6), Case Reports (5) and Books (1) were analyzed (total – 27 papers). The insular cortex is a true anatomical hub for integration, with high connectivity to an extensive network of brain regions, and has a variety of functions. Insula has three main propagation pathways in the epileptogenic network, respectively, insular epilepsy can “imitate” other types of seizures: frontal hypermotor, temporal focal motor with oroalimentary automatisms or parietal focal somatosensory seizures. Insular seizures have a polymorphic semiology: from major symptoms, with insulo-opercular semiology-somatosensory manifestations, and pseudo-frontal semiology with hypermotor seizures, up to minor symptoms.

Conclusions: Although insula has a variety of functions and it is a part of epileptogenic networks, it remains an enigma to many clinicians to this day, and seizures with insular onset can mimic other types of epileptic seizures. Currently there is a need to improve the recognition and understanding of the semiology of insular seizures.

Key words: insula, insular epilepsy, insular seizures.

Arteriovenous malformations embolization in the modern era: case series report

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Abstract

Background: Cerebral arteriovenous malformations are complex high-flow lesions that can result in devastating neurological injury when they hemorrhage. Embolization for cerebral arteriovenous malformations has evolved in the last decade with evolution in both equipment and material. Endovascular interventions within arteriovenous malformations may include curative exclusion of arteriovenous malformations from circulation, embolization adjuvant to resection or radiation therapy, targeted closure of a previously identified bleeding site as well as palliative embolization. Fortunately, care by a multidisciplinary team experienced in the comprehensive management of arteriovenous malformations can offer excellent results in most cases.

Material and methods: We report the technical and management outcomes of our first cases of cerebral arteriovenous malformations treated with embolization. The clinical, angiographic, treatment, and outcome variables of consecutive cerebral arteriovenous malformation cases, treated with curative embolization between September 2019 and April 2021 in our center were retrospectively analyzed.

Results: In 12 patients, 12 arteriovenous malformations were identified. Fourteen embolization sessions were done. No cases of early hemorrhage after embolization occurred. All the patients were discharged at grade below 2 mRS. Angiographic cure was achieved in 2 patients (17%). The average size reduction was 80 %.

Conclusions: Embolization is a critical component of the multimodality treatment of cerebral arteriovenous malformations. It is clear that many arteriovenous malformations cannot be safely cured without the judicious use of this modality. In addition, embolization could serve as a curative option for arteriovenous malformations treatment with accepted morbidity and mortality.

Key words: arteriovenous malformation, embolization, endovascular.