Editorial
J Korean Neurosurg Soc 67 (2) : 135-136, 2024
https://doi.org/10.3340/jkns.2024.0046
pISSN 2005-3711 eISSN 1598-7876

Editors' Pick in March 2024

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Among the 13 papers published in the March issue of *Journal of Korean Neurosurgical Society* (*JKNS*) 2024, the following two papers, which deserve attention from readers, are selected by the editorial boards

Neovascularization in outer membrane of chronic subdural hematoma : a rationale for middle meningeal artery embolization[2)]

Chronic subdural hematomas (cSDHs) are generally known to be a result of traumatic tears in bridging veins. However, the causes of repeated spontaneous cSDHs are still unclear. While cSDHs often recur due to identifiable causes such as trauma, medications and clinical diseases, their spontaneous repetition is thought to be attributed to other factors. Recently, embolization of the middle meningeal arteries (MMAs) supplying the dura mater with glue or particles had been reported to exhibit a significantly lower recurrence rate and a higher cure rate compared to conventional management[1)]. These clinical findings present robust evidence of the direct association between MMAs and repeated spontaneous cSDHs. Nonetheless, translational investigations supporting this hypothesis are still lacking. The goal of this research is to clarify the pathophysiology of repeated spontaneous cSDHs by comparing the histopathology of the dura mater and membrane encapsulating cSDHs between a normal control participant and a patient with repeated spontaneous cSDHs.

The histological examination revealed that the dural border cell (DBC) layer, the innermost layer of the dura mater, of cSDH patient having looser connective tissue and numerous cavities compared to the normal control. There were significantly more vessels in the DBC layer from the patient with cSDH, about 3.8-fold increase. The percentage of vascular volume density was 5.9 times higher in the patient with cSDH than in the normal control. Compared to the capillary containing endothelial cells connected by tight junctions, fenestrated and sinusoidal capillaries were observed in the DBC layer in the patients with cSDHs. Penetrating arteries branching from MMA transversed the meningeal dural layer and ultimately connected to the capillaries distributed in the DBC layer. The arterial volume density in the DBC layer of the cSDHs was 5.4 times higher than that in the normal DBC layer.

Neovascularization in the outer membrane (OM), the newly formed membrane between the hematoma and arachnoid mater, of cSDHs is thought to be a consequence of the hematoma organization. As blood accumulates in the subdural space, inflammatory cells migrate and release cytokines and angiogenic factors around the hematoma and adjacent dural layer. The newly formed capillaries located in the DBC layer of

• Received : February 21, 2024 • Accepted : February 21, 2024
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the dura mater and OM of cSDHs were found to be connected to MMAs in the periosteal dural layer via penetrating arteries in this study. Based on these histological findings, it is proposed that MMA embolization can obstruct the blood supply to sinusoidal capillaries. This study is meaningful in that it elucidates the pathological changes of the dura in cSDHs and the mechanism of action of MMA embolization.

Importance of sacrotuberous ligament in transgluteal approach for sciatic nerve entrapment in the greater sciatic notch (piriformis syndrome)[3]

Piriformis syndrome is characterized by the entrapment of the sciatic nerve through or around the piriformis muscle, which is acknowledged as one of the sources of non-discogenic cause of sciatica. Surgical decompression of the sciatic nerve is recommended for patients with persistent or recurrent symptoms following conservative treatment, or for those who bear mass lesions that compress the sciatic nerve. The transgluteal approach, involving the resection of the piriformis muscle and its tendon, has been employed as a direct strategy to address sciatic nerve entrapment. One of the challenges associated with the surgical treatment of piriformis syndrome is recurrence. The author discovered that the sacrotuberous ligament (STL), located above the piriformis muscle in the subgluteal space, along with the stump of the resected piriformis muscle, formed a sort of compartment around the nerve during revision surgeries[4]. The author integrated a modified version of the surgical procedure, which involved resecting the piriformis muscle encircling the sciatic nerve by additional opening of the portion of the STL attached to the piriformis muscle. The findings suggest that the additional division of the STL during piriformis muscle resection significantly improves the surgical outcome.

Therefore, the importance of complete decompression of the sciatic nerve pathway in the compartment formed by the piriformis muscle, its tendon, and STL, has been underscored. This approach goes beyond the simple decompression of the sciatic nerve achieved through the resection of the piriformis muscle.

AUTHOR'S DECLARATION

Conflicts of interest

No other potential conflict of interest relevant to this article was reported.

Author contributions

Conceptualization : HJY; Data curation : HJY; Formal analysis : HJY; Methodology : HJY; Project administration : HJY; Visualization : HJY; Writing - original draft : HJY; Writing - review & editing : HJY

Data sharing

None

Preprint

None

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 https://doi.org/10.3340/jkns.2024.0046