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MORPHOLOGICAL FEATURES AND CLINICAL SIGNIFICANCE OF EPIDURAL MEMBRANE AND EPIRADICULAR SHEATH IN CERVICAL SPONDYLOTIC MYELOPATHY

Introduction/Aim

The morphology and clinical significance of epidural membrane (EM) and epiradicular sheath (RS) have been discussed in the whole spine; however, compared to the lumbar spine, less attention has been paid to them in the cervical spine. The purpose of this prospective study was to elucidate the morphological features and clinical significance of EM and RS in the degenerative cervical spine.

Materials and Methods

This study enrolled 151 patients with cervical spondylotic myelopathy (CSM) who underwent expansive open-door laminoplasty or laminectomy under microscopy with a more than 2-year follow-up period. The most damaged spinal segment (D-segment) was determined in each patient from the preoperative neurologic and image findings along with the remaining symptoms at follow-up. The morphological features of EM and RS were observed and recorded in each patient during surgery. For histology, specimens of EM and RS were obtained from 17 patients selected at random.

Results

The age at surgery averaged 63.2 years; there were 105 males and 46 females. With regard to D-segment, there were 21 cases at C3-4, 56 at C4-5, 67 at C5-6, and 7 at C6-7. EM and RS were adipo-fibro-vascular tissues with a variety of morphologies from delicate fibrous strands to a substantial membranous structure over the dural tube and that there was adhesion with both the ligamentum flavum and the dura in varying degrees. Some of them had notable structures: obstructing dural tube expansion (21 cases, 13.9%), compressing a nerve root or disturbing its mobility (4 cases, 2.6%), and the combined type (1 case, 0.7%). All of the notable structures were located at D-segment and/or its adjacent levels except 1 case. Interesting histological findings were observed as follows: harboring many small arteries, infiltration of many lymphocytes, calcified debris, metaplastic bone fragments, and pseudoangiomatous structures.

Conclusion

EM and RS can develop into clinically important structures with scarring, causing inadequate decompression and symptomatic epidural hematoma in CSM. A sound understanding of their morphological features is beneficial for performing successful decompression for CSM.