

ABSTRACT

Background

Epidural fibrosis (EF) is defined as nonphysiological scar formation, usually at the site of neurosurgical access into the spinal canal, in intimate vicinity to and around the origin of the radicular sheath. From the very onset, EF behaves as a reparative inflammation causing, as a rule, symptoms of characteristic nature and clinical course (pain). Treatment of epidural fibrosis causing failed back surgery syndrome (FBSS) by neuromodulation technique is very expensive. Finding of suitable parameters for the indication of treatment is therefore very important.

Aims

The study is based on evidence of the importance of epidural fibrosis for the development of chronic pain. Research is also focused on the comparison of the range fibrosis and the effect of stimulation (spinal cord stimulation - SCS). The goal is to find a suitable selection factor for the indication of neuromodulation.

Methods

I. A double-blind prospective study was conducted to investigate a cohort of 200 patients requiring surgical treatment for intervertebral disc hernia (hernia disci intervertebralis). The patients were randomly and blindly divided into 2 groups, one on peroperatively applied local doses of a mixture containing corticosteroids, the other without such medication. All the requirements of a double-blind study, including statistical assessment of the results, were followed throughout the diagnostic and therapeutical processes. The results were processed relative to the: clinical findings, subjective intensity of symptoms

rated on a visual analog scale, radiographic findings (magnetic resonance imaging: plain and after contrast medium application).

II. We studied a cohort of the dorsal column stimulation to 50 patients with history of failed back surgery syndrome coupled with epidural fibrosis. Percutaneous implantation technique was used in 48 patients. Study group is composed by 20 women and 28 men aged 26-67 years (mean age 49). Two patients had no effect during the examination period. Prospective observational questionnaire based study was used. The results were processed relative to the clinical finding, subjective intensity of complaints rated on a visual-analogue scale (VAS) and graphic finding (degrees of epidural fibrosis – Ross classification).

Results

I. A 5% statistical significance was established in the correlation between the presence of EF and the patients' subjective rating of pain (difference between input and output VAS).

II. Assessment of the EF and Δ VAS correlation after neuromodulation: as cross-tabulation suggests, there was a statistically significant correlation between the degree of fibrosis and Δ VAS after implantation at the 5% level of significance. As for linear association, a significant correlation was found at the 5% level of significance.

Conclusion

The extent of epidural fibrosis is an important factor for FBSS. FBSS is the basis for the existence of neuropathic pain after lumbar spine surgery. There is clear evidence of a correlation between the MR degree of epidural scar formation and the effect of dorsal column stimulation. The stimulation in

patients without postoperative epidural fibrosis is less effective. This is important factor for the indication of patients for spinal cord stimulation. Previous spinal fixation is also the statistically significant factor for a bad result of the neuromodulation. Other factors such as instability, Modic changes or spinal stenosis are less statistically significant.