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## OP-EXP.03-03

**Histopathological Analysis of Tamoxifen on Epidural Fibrosis**

Yasar Ozturk<sup>1</sup>, Ismail Bozkurt<sup>2</sup>, Mesut Emre Yaman<sup>3</sup>, Yahya Guvenc<sup>1</sup>, Tolga Tolunay<sup>4</sup>, Deniz Billur<sup>5</sup>, Fatma Kubra Erbay<sup>6</sup>, Salim Senturk<sup>7</sup>, Gokhan Bozkurt<sup>3</sup>

(1) Department of Neurosurgery, Yenimahalle Research and Training Hospital, Ankara, Turkey, (2) Department of Neurosurgery, Ataturk Research and Training Hospital, Ankara, Turkey, (3) Department of Neurosurgery, Memorial Ankara Hospital, Ankara, Turkey, (4) Department of Orthopedics, Yenimahalle Research and Training Hospital, Ankara, Turkey, (5) Department of Histology and Embryology, Ankara University School of Medicine, Ankara, Turkey, (6) Department of Mechanical Engineering and Biomechanics, TOBB University of Economics and Technology, Ankara, Turkey, (7) Department of Neurosurgery, Koç University School of Medicine, Istanbul, Turkey

**Background:** Epidural fibrosis is a challenging topic in spinal surgery. This phenomenon constitutes the main etiology behind “post-laminectomy syndrome” or “failed-back surgery”, which leads to persistent back and leg pain in association with compression and/or stretching the nerve root or the dura. The exact mechanism of action in epidural fibrosis is complex and remains uncertain. Excessive deposition of collagen, fibronectin, and dermatan sulfate known as “extracellular matrix”, and decrease of tissue cellularity results in epidural fibrosis are blamed. The most investigated and important actor in epidural fibrosis as well as in other forms of aberrant wound healing is assumed to be the transforming growth factor-1 $\beta$  (TGF-1 $\beta$ ) formation. Tamoxifen (Tam), a synthetic nonsteroidal antiestrogen used in breast cancer is also effective in inhibiting fibroblast proliferation via downregulation of TGF- $\beta$ .

**Method:** Thirty adult male rats were randomly divided into three groups. Laminectomy was performed in the control group. Spongostan was placed in the operation lodge after laminectomy in the second group. In the treatment group, TAM was administered orally after laminectomy. Fibroblast count, epidural fibrosis and arachnoidal involvement were evaluated and graded histopathologically.

**Results:** Results revealed fibroblast count, epidural fibrosis grade and arachnoidal involvement in the rats treated with TAM were significantly less than the control and spongostan group and the differences were statistically significant. Although, arachnoidal involvement was observed in a subject in tamoxifen group, the differences between all groups weren't statistically significant.

**Conclusion:** Tamoxifen reduced epidural fibrosis and arachnoidal involvement after laminectomy in rats.

**Keywords:** Epidural fibrosis, Laminectomy, Tamoxifen, Rats

## OP-EXP.03-04

**Preliminary Results of an in Vivo Intervertebral Disc Regeneration and Degeneration Study in a Rabbit Model**

İhsan Dogan<sup>1</sup>, Elif Arslan<sup>2</sup>, Mustafa Cemil Kılınç<sup>1</sup>, Ümit Eroğlu<sup>1</sup>, Onur Özgür<sup>1</sup>, Altan Demirel<sup>3</sup>, Hakan Özalp<sup>4</sup>, Mustafa Özgür Güler<sup>2</sup>, Ayşe Begüm Tekinay<sup>2</sup>, Yusuf Şükrü Çağlar<sup>1</sup>

(1) Department of Neurosurgery, Ankara University, Ankara, Turkey, (2) Institute of Materials Science and Nanotechnology, National Nanotechnology Research Center, Bilkent University, Ankara, Turkey, (3) Neurosurgery Clinic, Aksaray Government Hospital, Aksaray, Turkey, (4) Department of Neurosurgery, Mersin University, Mersin, Turkey

**Aim:** To examine the effect of bioactive peptide amphiphile nanofiber gels in a rabbit in vivo disc degeneration model.

**Method:** Fifty New Zealand rabbits were used in the in vivo animal model and its suitability for IVDD (intervertebral disc degeneration) and regeneration studies were investigated. In one group, immediately after degeneration and in the other group 2 weeks after degeneration peptide gels were injected. Degeneration were analyzed histopathologically and radiologically according to the intervertebral disc heights after 1 month.

**Results:** IVDD model was successfully developed. Level of degenerated discs and disc heights were confirmed by MR images. According to the preliminary results, in terms of radiological results, peptide gels were shown to be effective to decrease or preventing the disc degeneration.

**Conclusion:** Peptide gels can be used safely via injection without any adverse effect such as immunogenic reaction. Due to the preliminary results of our study, extracellular matrix mimetic peptide nanofiber gels can be used as a novel treatment method for the IVDD.

**Keywords:** Disc degeneration, Rabbit model, In vivo study, Peptide gel

## OP-EXP.03-05

**Inhibition of Phosphatase and Tensin Homolog Deleted on Chromosome 10 Decreases Rat Cortical Neuron Injury and Blood-Brain Barrier Permeability, and Improves Neurological Functional Recovery in Traumatic Brain Injury Model**

Jun Ding, Hengli Tian

Department of Neurosurgery, Shanghai Sixth People's Hospital, Shanghai Jiao Tong University, Shanghai, China

**Background:** Recent evidence has supported the neuroprotective effect of bpV (pic), an inhibitor of phosphatase and tensin homolog deleted on chromosome 10 (PTEN), in models of ischemic stroke. However, whether PTEN inhibitors improve long-term functional recovery after traumatic brain injury (TBI) and whether PTEN affects blood brain barrier (BBB) permeability need further elucidation. The present study was performed to address these issues.

**Method:** Adult Sprague-Dawley rats were subjected to fluid percussion injury (FPI) after treatment with a well-established PTEN inhibitor bpV (pic) or saline starting 24 h before FPI. Western blotting, real-time quantitative PCR, or immunostaining was used