Arq Neuropsiquiatr 2005;63(1):187-189

THESES

CONTRIBUTION TO THE STUDY OF THE SPINAL CORD CHANGES DURING EXPERIMENTAL MODEL OF THE ACUTE SPINAL CORD INJURY (ABSTRACT)*. **THESIS. CAMPINAS, 2004.**

*MANOEL BALDOINO LEAL FILHO***

This study reports an experience with 58 Wistar adult rats who sustained acute midthoracic spine cord injury due to Fogarty's balloon-compression technique. This experience was approved by the institutional animal care and use committee (CEEA-IB-Unicamp).

In the first step all the animals, sham and experimentals, were anesthetized with intraperitoneal pentobarbital 60 mg/Kg. The catheter was inserted into dorsal epidural space through a small hole made in the ligamentum flavum, advanced cranially to midthoracic spinal level, and inflated with 20 microlitres of saline only in the experimental group. The present study was performed to investigate the relationship between the spine cord injury and the time of compression (5, 15, 30 or 60 seconds). Quantitative neurological outcome was presented with 4, 24 and 48 hours from the compression to characterize the graduation of injury in different groups. The poor outcome occured with 60 seconds compression independentely of the time of neurological examination. Some animals died suddenly with pulmonary edema and a second step investigation was done to elucidate it. The aim of this second study was to show a model of neurogenic pulmonary edema due to thoracic spine injury using a Fogarty's balloon containing 20 microlitres of saline during 60 seconds of compression (n = 17). There were used two different group of anesthesics to compare the influence of the drugs on the pulmonary edema and three groups were constituted: sham (1), compression / pentobarbital, 60 mg/Kg (2) and compression / xylasin, 10 mg/Kg / ketamin, 75 mg/Kg (3).

The results indicated that there were differences between the groups. In rats with pentobarbital anesthesia systolic blood pressure doubled the baseline value during compression, whereas this effect was less pronounced in the xylasine/ketamine group. The pulmonary index (100 x wet lung weight / bodyweight) was 0.395± 0.018 in sham (1), rose to 0.499±0.060 in (3), and was maximum under group 2 (0.639±0.14; p=0.0018). Histologic examination of the spinal cord showed parenchymal ruptures and acute hemorrhage. Comparison of the pulmonary index with morphometric evaluation of edema fluid-filled alveoli by light microscopy in paraffin sections, showed that relevant intra-alveolar edema occured only for index values above 0.55. On electron microscopy, endothelial alterations, and signs of damage of the alveolar lining cells were found.

The present study showed that the anesthesic drug pentobarbital was very important for the formation of the lung edema. The present experience suggests that the pulmonary edema induced by spinal compression is of neurogenic nature, that the anesthesic drug used had an important participation in the genesis of edema and that it is a good method to produce neurogenic pulmonary edema.

KEY WORDS: spinal cord injury, trauma, neurogenic lung edema.

*Contribuição ao estudo das alterações da medula espinhal em modelo experimental de lesão traumática na fase aguda (Resumo). Tese de Doutorado. Universidade Estadual de Campinas, UNICAMP (Área de Ciências Médicas, Neurologia). Orientador: Antonio Guilherme Borges Neto.

***Address: Rua Thomaz Tajra 1222 / 300 - 64048-380 Teresina PI, Brasil. E-mail: manoelbaldoino@uol.com.br*

CORRELATION ANATOMICAL-BEHAVIOR-FARMACOLOGY OF THE PARAMETERS OF EXPERIMENTAL ANIMAL CHRONIC NEUROPATHIC PAIN (ABSTRACT)*. **THESIS. FORTALEZA, 2004**

*NILZA DUTRA ALVES***

Pain is a very common symptom in patients. It may involve somatic, visceral and neural structures. Neuropathic pain may be chronic with undefined mechanism and that is a challenge for therapy. With the aim of contributing to understand mechanisms and rational therapy for chronic neuropathic pain, we developed this study in order to do an anatomo-pharmacological-behavioral correlation (1) by quantifying spontaneous and induced behaviors, (2) administrating drugs with action on the GABA system, Ca++ and Na+ channels and (3) stimulating and inhibiting the periaqueductal region (PAG).

For this, 75 Wistar male and female rats, divided into 10 groups, were used. As model of neuropathic pain, the constriction of sciatic nerve was used. The rats were observed during 30 days and, at the 31st day, drugs were administered. For stimulation and inhibition of the PAG, a cannula was inserted in it (Groups VII, IX and X of rats). The spontaneous behaviors were observed in open field and thermal tests were carried out to induce pain behaviors. The pharmacological tests with gabapentin, vigabatrin, lamotrigin and morphine were carried out in Groups IV to VII. The stimulation with morphine and inhibition with morphine/naloxone and lidocain in the PAG were carried out in Groups VIII, IX and X of rats.