

عنوان مقاله:

Effect of Bupivacaine and Combination with Dexmedetomidine and Dexamethasone on Mice Neural Apoptosis

محل انتشار:

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خلاصه مقاله:

Background: Numerous studies have shown the neurotoxicity of anesthetic substances in different age groups. This toxicity is often associated with damage or apoptosis of nerve cells that can lead to various diseases, including Alzheimer's, behavioral changes and transient and even persistent cognitive changes. In this study, it was attempted to evaluate the cytotoxic conditions following the use of three common anesthetic drugs (bupivacaine, dexmedetomidine and dexamethasone) by providing a suitable substrate. Methods and Materials: Mice (*Mus musculus*) with the same weight (۲۲ to ۳۰ gr) were used for assessment of neurotoxicity in Bupivacaine, Dexmedetomidine and Dexamethasone. Unilateral femoral nerve injections were done; animals were randomly divided into four groups: control, bupivacaine alone, "bupivacaine + dexmedetomidine" and "bupivacaine + dexamethasone". After ۲۴ hours, the mice were sacrificed and the femoral nerve removed. Hematoxylin-eosin tissue staining was used to evaluate changes in the effects of the drugs, and nerve samples were extracted to assess the expression of TLR۴ and caspase۳. Protein expression level was checked between different groups using Western blot technique. Results: The bupivacaine + dexamethasone group showed better outcomes in terms of cytotoxicity than bupivacaine + dexmedetomidine ($p=0.068$); also, bupivacaine + dexamethasone reduced neurotoxicity risk ($P=0.031$). Conclusion: Bupivacaine+dexamethasone leads to better outcomes in terms of neurotoxicity compared with bupivacaine+dexmedetomidine.

کلمات کلیدی:

Bupivacaine, Dexmedetomidine, Dexamethasone, Toll Like Receptor, Glyceraldehyde ۳-phosphate dehydrogenase,

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