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Evaluation of the possible neurotoxic effect of the bone cement on the facial nerve

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Objective: The aim of that experimental study was to investigate the possible neurotoxic effects of the bone cement (BC) on the facial nerve with the electrophysiological and histological examinations.

Materials & Methods: Twenty male Wistar albino rats; divided into 4 groups were used in the study. Group A was determined as a control group and the group B as a sham. In group C; one drop BC was dropped on facial nerve trunk and washed with saline after waiting 5 seconds. In group D; one drop BC was dropped on facial nerve trunk and the wound was closed primarily after waiting 5 minutes to set BC. Electromyographic measurements (EMG) were performed preoperatively and postoperatively at the fourth week. Animals were euthanized after applying EMG at the fourth week, facial nerve tissue and environmental samples were taken for the histopathological examination.

Results: When the EMG wave parameters evaluated in four groups, there was a statistically significant decrease of the postoperative amplitude levels compared with preoperative amplitude levels in Group D ($p < 0.05$, $p = 0.014$). There was no significant difference between the groups in terms of inflammation in histopathological evaluation. Foreign body reaction or granulation tissue was not detected in none of the groups.

Conclusion: To the best of our knowledge, that is the first experimental study which investigates the possible neurotoxic effects of the BC on the facial nerve with the electrophysiological and histological examinations. Any facial nerve paralysis or nerve conduction block was not detected in animals by EMG. Opinion of the authors is to show special care to avoid the direct neural contact with BC in the middle ear surgery, if the contact occurs removal of BC would be beneficial by aspiration and washing with saline.

Biography

M Tayyar Kalcioğlu has graduated from Medical faculty of Hacettepe University and worked as an ENT Resident in Inonu University, Department of Otorhinolaryngology, Turkey. He became an Associate Professor and Professor in Inonu University and has been working in Istanbul Medeniyet University since 2012. He has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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