

Reply to the letter to the editor “In response to: The effects of different environmental pH on healing of tympanic membrane: an experimental study” 10.1007/s00405-016-3931-7

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To the Editor:

We would like to thank for valuable comments on our article titled “The effects of different environmental pH on healing of tympanic membrane: an experimental study.” In general, wound healing consists of hemostasis, inflammation, proliferation (fibroblastic), remodeling, and contraction phases. Hemostasis and inflammation phases in healing of TM are similar to other body tissues; however, there are differences in proliferation and migration phases. In other tissues, granulation tissue provides a bed for re-epithelization, but squamous epithelium forms a bridge on the perforation in healing of TM perforation, and inner mucosal layer supports it. Then, fibrous layer is to be formed, but it is not formed in most of the cases. Thinning of TM takes place by remodeling of the fibrous layer [1–3]. Today this is the most widely accepted view in the repair of traumatic tympanic membrane perforation.

In this study, we investigated the effects of acidic and alkaline pH on healing in early phase of wound healing (inflammation and proliferation phases) in acute TM perforations of the rats. The perforation closure rate was quite high in the acidic environment on day 7. In our opinion, this may be explained as follows: an acidic pH may help wound healing by suppressing infection and reducing catabolic and proteolytic activities, and/or provides an

ongoing epithelization at the edges of the wound by inhibiting irregular fibroblast migration to the wound. Presence of inflammatory cells which are indicators of inflammatory phase, and observation of intense and irregular fibroblastic reaction in ears treated with the alkaline solution that had a bad healing on day 7 support our aforementioned opinion. In this study, it was observed that some inflammatory parameters, namely edema and neo-vascularization, were not affected by environmental pH. According to the data of this study, environmental pH affected fibroblastic reaction and inflammation phases, and an alkaline pH delayed wound healing while an acidic pH speeded up healing.

References

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