Remifentanil protects human osteoblasts from oxidative injury

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Background

Bone injury has been occurred in various clinical situations such trauma and surgeries. During surgery, excessive reactive oxygen species (ROS) decreases the quality and quantity of osteoblasts and increases the apoptosis of osteoblasts and osteocytes. It has been reported that remifentanil decrease the production of ROS and inflammatory response. In this study, we investigated whether remifentanil has a protective effect against oxidative stress in osteoblasts or not.

Materials and Method

The groups were divided into the following groups; Control : cells were incubated at 37°C without remifentanil treatment, H₂O₂ : cells were exposed to 200 μM of H₂O₂ for 2 h. RPC+H₂O₂ : cells were pretreated with 2 ng/ml of remifentanil for 2 h before exposure of H₂O₂. 3-MA+RPC+H₂O₂ : cells were pretreated with 1 mM of 3-MA 1h and remifentanil before exposure of H₂O₂.

Results

Conclusions

This study demonstrated that remifentanil reduce oxidative damage in human osteoblasts. And we showed the possibility that autophagy is related with a protective effect of remifentanil in response to oxidative stress. For clinical correlation, further clinical based researches will be needed.