Trigemino-cardiac Reflex in Open Reduction for TMJ Dislocation

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Background

Trigemino-cardiac reflex (TCR) has been defined as a decrease in heart rate (HR) and mean arterial blood pressure (MABP) of at least 20% upon the surgical manipulation at or around the vicinity of any branch of the trigeminal nerve. Oculocardiac reflex has frequently been reported. However, there have been only rare reports of such cases attributed to stimulation of division III. We report a case of trigemino-cardiac reflex in open reduction for TMJ dislocation.

Case report

A 74-year-old female presented for TMJ dislocation. Manual reduction was failed because of severe lateral pterigoid muscle contracture. Open reduction under general anesthesia was decided. There were no notable findings in the patient's medical history, except alzheimer's disease. Her preoperative ECG findings were a heart rate of 65 beats/min and ventricular premature contractions (Figure 1).

Figure 1. preoperative ECG.

She showed no signs or symptoms relating to cardiac dysfunction. During surgical manipulation of right mandibular angle, severe bradycardia (HR=20bpm) occurred. Immediately the surgical manipulation was stopped, and 0.5 mg atropine was administered intravenously. After 60 seconds, heart rate normalized. Then, during surgery, severe bradycardia occurred one more time.

It disappeared spontaneously as soon as surgical manipulation was stopped. The surgery was completed uneventfully.

Discussion

TCR manifests as sudden cardiac perturbations including bradycardia, arterial hypotension, asystole, apnea, and gastric hypermobility. TCR is subtyped central TCR and Peripheral TCR based on the trigger points. Peripheral TCR is further subdivided into oculocardiac reflex and maxillomandibulocardiac reflex (MCR) based on the branches of the affected trigeminal nerve (figure 2). The risk of TCR always needs to be considered if an intervention in the territory of the trigeminal nerve is performed.

Figure 2. TCR pathway.¹

Avoidance or minimization of traction is usually recommended as first line of therapy. TCR may produce very poor outcome; however, with vigilant monitoring and prompt management, these episodes can be aborted in majority of the cases.

References

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Conclusions

Given the possibility of profound bradycardia, asystole, or even death when evoked, it is important to be aware of the trigemino-cardiac reflex during surgical stimulation of the mandibular divisions of the trigeminal nerve, in particular surgical stimulation of TMJ.