



Assessment of Stress in Ear, Nose, and Throat (ENT) Residents of Tonsillectomy

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Editorial

Physician training and practice contain a significant amount of stress for individuals. Stress for residents is an inevitable phenomenon and due to numerous complex neural and vascular vicinities and high risk of vascular and neural damages, ENT surgeries are highly sensitive and vital in some cases [1]. Chronic and long-lasting stress for residency increases the risk of cardiovascular diseases, decreases the quality of life and impairs learning and medical decision making, patient care and safety and also can causes sleep deprivation and the potential effects on suicide, divorce [2,3].

All first-year ENT residents in educational hospital who permitted to perform adenotonsillectomy surgery for the first time on 2015 were included in this study. In this study, all surgeries were performed in the morning and the residents had not night shift before any studies. The residents were assessed for vital signals including blood pressure, heart rate, peripheral oxygen saturation and also salivary cortisol during adenotonsillectomy. This evaluation was done in the first, second, tenth surgeries and in the second year. The vital signs were measured before the surgery, at 10th, 20th, 30th, 40th and 60th minute, and at the end of the surgery. The salivary cortisol was measured before the beginning of surgery and instantly after the end of surgery. The results were analyzed using SPSS v21 and PRISM.

The 12 subjects (7 men and 5 women) aged 27 to 33 years old with a mean age of 31.14 ± 3.07 participated in our study. 66.7% (8 subjects) of participants were married. None of the participants had a history of smoking. Mean systolic and diastolic blood pressure in the first surgery were 142.8 ± 11.16 mmHg and 92.25 ± 6.25 mmHg, respectively. Also mean systolic and diastolic blood pressure were 152.5 ± 10.3 mmHg and 104.37 ± 10.43 mmHg in the second surgery, 128.75 ± 4.49 mmHg and 89.25 ± 7.82 mmHg in the tenth surgery and 126.25 ± 3.19 mmHg and 86.75 ± 3.79 mmHg in the second year. Systolic and diastolic blood pressure increased during surgery, especially at the start of the operation and during tonsils removal, which decreased with experience. The blood pressure in the second surgery was significantly higher than other surgeries ($p < 0.001$) and there was significant decline in blood pressure during the surgery in the second year ($p = 0.014$). The mean heart rate during the first surgery was 100.3 ± 4.5 , then increased at second operation and decreased at tenth and the second year surgery ($p = 0.023$). Heart rate increased intraoperation especially during tonsillectomy and the changes were greater in the first and second surgeries and decreased with more experience. The mean heart rate in the second surgery was significantly higher than other surgeries ($p < 0.001$).

The salivary cortisol increased after each surgeries that cortisol level was 186.3 ± 12.4 ng/ml before the first surgery and subsequently 194.2 ± 9.8 post-operation, and also increased more in the second surgery (before 189.7 ± 8.2 and after 212 ± 10.4). In the tenth surgery, and also in the second year, it was much lower than the previous measurements. There was a significant relationship between salivary cortisol level and the order of surgery ($p = 0.033$). Moreover, there was a significant difference between level of salivary cortisol, before and after the surgery ($p < 0.001$), but increasing of salivary cortisol level was the same after each surgery ($p = 0.14$).

Considerable decline was observed in vital sign changes compared with base levels during the tenth surgery and also in the second year of surgery; blood pressure and heart rate was significantly lower compared with the first and second surgeries. One study reported that anxiety levels can be experienced by 20% to 30% of medical residents [4]. Our study limitations include the small sample size, such as some previous investigations, and the hard control for other confounders (e.g., menstrual cycle, medical specialty, etc.). Also the lack of adequate psychological evaluation and the mental states of the subjects are other limitations of this study that and we recommend to be considered in future studies.

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Conclusion

This study indicated that blood pressure and heart rate increased significantly in ENT residents during surgery. Moreover, the level of salivary cortisol was higher than the normal level indicated high level of stress during surgery. However, these changes decrease as the subject gains more clinical experience and skill. Therefore, it is necessary to find an appropriate solution to decrease or control stress in ENT residents.

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