**Comparison of intermittent and continuous monitoring on endotracheal cuff pressure changes in patients in intensive care units of educational therapeutic centers, Rasht**

Khalighdost Mohammadi T, MScN, Taslimi L, MScN, Ghanbari A, PhD, Kazem Nejad Lelli F, PhD, MScN, Khoshrang H, Anesthesiologist

*Khalighdost Mohammadi T, Nursing instructor and faculty member, social determinants of health research center (SDRC), Guilan University of Medical Sciences, Rasht, Iran*

**Introduction**

During patients’ admission to intensive care units (ICUs) and use of an endotracheal tube, the cuff pressure may increase or decrease, both of which are harmful for patients. The best method to measure and maintain the endotracheal tube cuff pressure and also the appropriate times for measurement are not known. This study was conducted to compare the effect of intermittent and continuous monitoring methods on changes in endotracheal tube cuff pressure in patients admitted to ICUs.

**Method & materials:**

This descriptive comparative study was conducted on 61 intubated patients undergoing mechanical ventilation, aged over 18 years, and admitted to ICU. The cuff pressure was first controlled using a manometer, adjusted on 25cm water, monitored continuously using the transducer attached to the monitor, in a continuous manner, each time the cuff pressure in the Trend Monitor, which is adjustable for each hour view by selecting ten-point average calculated over an hour and the mean pressure cuff at the end of the period continued 6 hours respectively and finally, controlled again using the manometer and modified if necessary. After these procedures, mean cuff pressure and its changes during the continuous monitoring were compared with those during the two times of intermittent monitoring, and the error rate and limits of agreement were compared using Bland-Altman test.

**Results:**

Findings showed that the mean age of the study was 20 ± 42 years, the majority (7/68%) were male and most of diagnosis (77%) had been trauma. Also mean cuff pressure in the two times of intermittent monitoring was fluctuated, but these variations were not statistically significant (P=0.05). Results showed that the mean pressure cuff in the first of stage intermittent method to continuous method is more 9/10±7/81 cmH2o. While the difference between the second stage of intermittent monitoring to continuous method is lower than the average -43±11±9/3 and this difference was statistically significant (p=0.001). The average pressure cuff on two times intermittent method and continuous method with body mass index, days of intubation, endotracheal tube size and RASS score at the beginning and the end, was a significant relationship (p=0.05). The relationship between endotracheal tube cuff pressure in two ways, with sex and type of valve endotracheal tube and ventilator mode and type of diagnosis was not statistically significant (p>0.05). Bland and Altman test showed that the error rate and limits of agreement in both monitoring methods were -1.43±1.99 and -9.41-6.32, respectively.

**Discussion& Conclusion:**

The results showed that only 16.4% of the first cuff pressure in the normal range (30-20 cmH2o) has, while the second time this amount will rise to 87.7 percent. The average twice cuff pressure measurement was statistically significant (P<0.005).

The study Ranaweera mean cuff pressure 26 ± 7.85 high pressure 60 and low pressure 10 cmH2o were reported and only 62.5% of cuff pressure in the normal range, and stated that this could be indicative of a lack of regular measuring cuff pressure is routinely (1). In our study, despite the 6-hour monitoring, pressure cuff was still at 21.3 percent out of the normal range and may require to measure control the cuff pressure an interval less. Also results showed that during the period of continuous monitoring, pressure cuff average in the range of 30-20 cm H2o, or close to it has been and this difference was not statistically significant.

In the study of Sefaty etal significant change in the cuff pressure was not observed during 12 hours of continuous monitoring (p=0.38) (2). However, in another study, results showed reduced pressure cuff during the 12-hour continuous monitoring (p<0.001) (3). This indicates the cuff pressure control with a manometer measurement and monitoring method almost same as each other and the safe to keep it within the normal range that is important. The results showed that the error rate and limits of agreement in both monitoring methods were -1.43±1.99 and -9.41-6.32, respectively that according to the study sole was not be accepted.

The study also found the average pressure cuff on two times intermittent method and continuous method with body mass index is significant While Hoffman and colleagues studied the relationship between cuff pressure was tall patients, this relationship was not statistically significant (4). Perhaps this issue, as stated in Hamilton study anatomical and physiological differences between patients with varying amounts of air that may be needed to achieve the target pressure cuff endotracheal tube (5). The relationship between the average pressure cuff with RASS score showed that this relationship between these two variables was significant. As expressed in the sole of patients with a higher level of consciousness often in the cuff pressure was highest (2) in patients who are calm cuff pressure changes, occur less frequently. Practical purpose was determine the appropriate method to measure the endotracheal tube cuff pressure in patients hospitalized in intensive care unit, considering the error rate and limits of agreement in both methods and their clinical importance, more studies are needed to distinguish the more suitable and preferable method for cuff pressure monitoring. However, it can be argued that regular measurement intermittently can keep the cuff pressure in the normal range to a great extent.

I stated to have no potential conflict of interest.

**References:**