ASSESSMENT OF THE SEVERITY OF PAIN SYNDROME DURING VENTILATION BY BPS AND VAS SCALES

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Background: The use of scales to assess the degree of pain in patients with ventilation is still insufficiently studied, requiring additional study [1].

Goal of Study: To evaluate the relationship between the evaluation of the severity of pain syndrome in the conduct of mechanical ventilation in patients after surgery for supratentorial tumors (meningiomas) of the brain in the early postoperative period.

Materials and Methods: A prospective observational study was conducted, which included 20 patients with meningiomas (men 8 (40%) and women 12 (60%)) aged 28-55 years (44.3 ± 8.6) operated on a routine basis. The level of consciousness before surgery in all patients was 15 on the CGS.

Anesthesia: Induction - Propofol (2-3 mg/kg) and Fentanyl (2-4 μ g/kg). Maintenance of anesthesia with an inhalational anesthetic (Sevoflurane) in a concentration of 0.8-1.0 MAK and Fentanyl 100-400 μ g/h, depending on the response of hemodynamics to surgical trauma. Myoplegia was provided by Esmeron - induction 0.5-1.2 mg/kg, bolus support as needed. The inhalation anesthetic was administered until the end of the operation without changing the concentration, at the end of the operation, the supply of anesthetic was stopped, the respiratory circuit was purged with a fresh respiratory mixture. The duration of operations was from 100 to 240 minutes.

Extubation on the operating table was not performed. All patients were transferred to the NICU on an extended mechanical ventilation.

The pain assessment was carried out at the following stages: when the clear consciousness was restored before extubation (Stage I) according to the Behavioral Pain Scale (BPS) and after extubation (II stage) on the Visual Analogue Scale (VAS). The correlation coefficient was estimated between the values of the degree the severity of the pain syndrome according to the BPS and the VAS.

Results and Discussion: The severity of pain syndrome according to BPS and VAS is presented in Table, while the correlation coefficient R^2 was 0.111

Discussion: In the present study, we evaluated two different pain scales in mechanically ventilated patients after neurosurgery. Our data do not suggest that BPS was actually equivalent to VAS in sensitivity and accuracy for pain evaluation for mechanically ventilated patients after neurosurgery.

We found that VAS and BPS separately increased during mechanical ventilation in conscious patient.

We found that compliance with mechanical ventilation was the most important parameter related to assessment of increases scores of pain during mechanical ventilation.

Conclusion(s):

1. BPS scales have a weak correlation ($R^2 = 0.111$) with VAS in patients after surgical interventions for supratentorial tumors (meningiomas) of the brain in the early postoperative period
2. When assessing the pain syndrome according to the BPS scale, there is an overestimation of the indices compared to the VAS due to asynchrony with a respirator

Reference:

1. Rijkenberg S, Stilma W, Endeman H, et al. Pain measurement in mechanically ventilated critically ill patients: Behavioral Pain Scale versus Critical-Care Pain Observation Tool. J Crit Care. 2015;30(1):167–72.