

Abstract

This thesis focuses on the strategy of daily sedation interruptions, as one of the approaches to minimizing complications of sedation in mechanically ventilated patients in intensive care units. The theoretical part summarizes the rationale and evolution of sedation over time as well as the evolution of the concept of daily sedation vacation. The practical part is a cross-over cohort study in which we processed record-level retrospective data from a clinical information system and compared the incidence of several a priori defined complications during the period of sedation interruption and a control period of the same duration in the same patient. We compared 269 sedation interruption periods (median duration of 14.9 hours [interquartile range 5.7-31.9]) and the same number of equally long control periods in 111 patients. The following complications occurred during sedation interruption vs. during control period: inadvertent extubation 0 vs 1, other tubes removal 1 vs 2, fall 0 vs 0, desaturation 33 vs. 23 ($p=0,12$), tachycardia 10 vs. 6 ($p=0,3$), hypertension 8 vs. 9 ($p=0,8$) and hypotension 13 vs. 22 ($p=0,01$). We also compared proportions of time spent in physiological functions deteriorations between studied periods with the following results: desaturation 0.20 % vs 0.16 % ($p=0.11$), tachycardia 0.07 % vs 0.05 % ($p=0.24$), hypertension 0.02 % vs 0.01 % ($p=0.26$), hypotension 0.06 % vs 0.19 % ($p=0.08$). We conclude, that during the total observation period of 2662 patient-hours was the incidence of the a priori defined significant complications very low and not differ during both sedation holds and during control periods when sedatives were being administered. Similarly, there was no difference in the proportions of time with dangerously deranged physiological functions. Only the frequency of hypotension in the control period was significantly higher. However, the proportions of time spent in hypotension did not significantly differ. Our data, in line with the results of other studies, suggest the daily sedation interruption is a safe approach in critically ill patients, provided that safety criteria are adhered to. Concerns about haemodynamic and ventilation instability induced by sedation holds are unjustified and should not be an obstacle to its routine use.