Physiological comparison of assist ventilation mode on work of breathing (WOB): Neurally adjusted ventilatory assist (NAVA) versus Pressure support ventilation (PSV) versus Proportional assist ventilation plus (PAV +)

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

INTRODUCTION

On a theoretical point of view, assist ventilation, should prevent diaphragm atrophy and fasten weaning. PSV is the most commonly used assisted ventilation mode. It delivers a fixed support irrespective of patient's effort. On the contrary, NAVA and PAV + algorhytms, are supposed to promote and amplify, breath by breath, patient's spontaneous effort.

OBJECTIVES

To evaluate if the assist ventilation mode has an impact on WOB.

METHODS

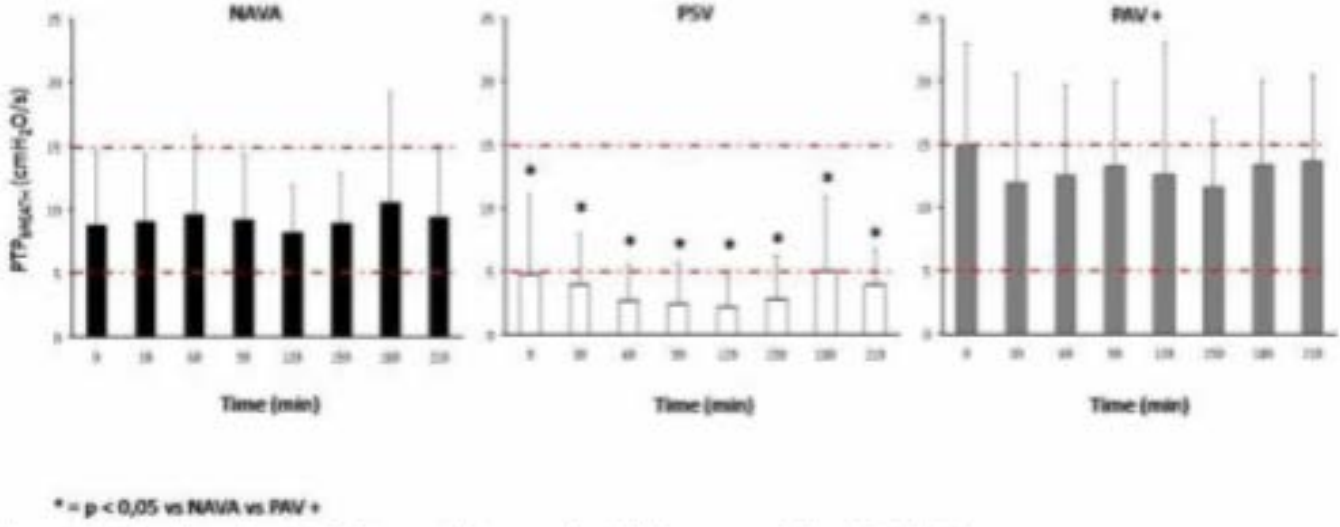
In 12 patients NAVA, PSV and PAV+ were randomly applied in a crossover fashion, for 4 hours each. EAdi was continuously recorded during all the 12 hours. WOB per breath (WOB_{BREATH}) was estimated by converting the EAdi pressure time product (PTP)/breath in muscular PTP/breath (PTP_{BREATH}). The conversion factor was the ratio between EAdi peak and airway opening pressure negative peak during an end-expiratory occlusion.

RESULTS

See figure 1

CONCLUSIONS

PTP_{BREATH} was in the physiological range during NAVA and PAV + whereas during PSV remained constantly below it. We speculate that, as compared to PSV, NAVA and PAV+ favored a correct matching between diaphragm contraction and ventilator assistance. Further studies are required to test if the WOB pattern during assisted ventilation has an impact on mechanical ventilation duration and other clinically meaningful outcome parameters.



* = p < 0,05 vs NAVA vs PAV +

Figure 1 PTP,breath vs time in the three ventilatory modes. Red lines: range of physiological PTP_{BREATH}