題名:Clinical application of biphasic positive airway pressure/airway pressure release ventilation on patients with acute respiratory distress syndrome

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摘要:近年來呼吸器的設定與使用已逐漸由正壓通氣(positive-pressure ventilation)模式改變爲增加自主呼吸(spontaneous breath)爲主流的模式；研究指出，正壓通氣合併自主呼吸可降低氣道壓力、改善通氣灌流比、增加氧合、保護心臟功能及減少鎮定劑與肌肉鬆弛劑的使用；因此，雙相氣道正壓(biphasic positive airway pressure, BIPAP)/氣道壓力釋放通氣(airway pressure release ventilation, APRV)模式的使用逐漸受到重視，多種微電腦呼吸器皆具此模式。研究證實BIPAP/APRV可使急性呼吸窘迫症候群(acute respiratory distress syndrome, ARDS)病患的肺部獲得充分的復原以及預防併發症，成爲治療急重症呼吸衰竭病患時的重要通氣模式。本文主要探討病患使用BIPAP/APRV模式的生理效應、通氣與氧合功能及鎮定劑與肌肉鬆弛劑使用之相關研究，並討論各類型呼吸器所具備的功能與臨床使用方法，以提供臨床人員應用與照護病患之參考。

Recent advances in mechanical ventilation have been moved from controlled positive- pressure ventilation to adding spontaneous breathing in a controlled mode. It was suggested that ventilatory modes in which patients breathe spontaneously early in the course of the acute lung injury (ALI) process might have advantages such as improved pulmonary ventilation/perfusion matching, increased blood oxygenation, preserved cardiac function, reduced need for excessive sedatives and muscle relaxants, and prevention of ventilator-associated respiratory muscle dysfunction. Therefore, the biphasic positive airway pressure (BIPAP)/airway pressure release ventilation (APRV) modes are being increasingly used as alternative strategies to conventional assisted-control ventilation for critical patients with acute respiratory

failure. Many commercially available ventilators possess these modes. Well-designed studies have demonstrated that these modes produce promising results in treating patients with ALI and acute respiratory distress syndrome. The purpose of this review was to summarize the physiological effects of the BIPAP/APRV modes on the cardiovascular system, ventilation and oxygenation function, the use of sedatives and muscle relaxants, the work of breathing, and blood perfusion of the kidneys, liver, and gastrointestinal tract. The function of the BIPAP/APRV modes in various different ventilators is described, and the methods of clinical application are discussed.