

Efficacy of naloxone treatment and its impact on pulmonary hemodynamics in patients with acute high-altitude pulmonary edema monitored by echocardiography

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Abstract: The purpose of this study was to observe the efficacy of naloxone treatment and its impact on pulmonary hemodynamics in patients with acute high-altitude pulmonary edema through echocardiographic monitoring. A study was conducted involving 120 patients diagnosed with acute high-altitude pulmonary edema treated at our hospital between January 2021 and January 2023. Echocardiographic monitoring was voluntarily undergone by all patients who met the inclusion criteria. These patients were randomly divided into two groups: a CG (control group) and an OG (observation group), each comprising 60 patients. The CG received standard treatment, while the OG received additional naloxone therapy alongside the standard treatment. The clinical efficacy, recovery indicators, pulmonary hemodynamic parameters, respiratory parameter levels and adverse reactions were compared between the two groups. The total effective rate of treatment was 86.67% in the CG and 98.33% in the OG, with the OG showing a significantly higher total effective rate than the CG ($P < 0.05$). The time to resolution of pulmonary edema, disappearance of pulmonary rales and length of hospital stay were significantly lower in the OG compared to the CG ($P < 0.05$). Before treatment, there was no significant difference in the levels of systolic pulmonary artery pressure (SPAP), diastolic pulmonary artery pressure (DPAP), mean pulmonary artery pressure (MPAP) and pulmonary vascular resistance (PVR) between the two groups ($P > 0.05$). After treatment, the SPAP, DPAP, MPAP and PVR levels were significantly lower in the OG compared to the CG ($P < 0.05$). Before treatment, there was no significant difference in the levels of arterial oxygen pressure (PaO₂), arterial carbon dioxide pressure (PaCO₂), arterial oxygen saturation (SaO₂), and respiratory rate (R) between the two groups ($P > 0.05$). After treatment, the PaO₂ and SaO₂ levels were significantly higher in the OG, while the PaCO₂ and R levels were significantly lower in the OG compared to the CG ($P < 0.05$). The incidence of adverse reactions was 3.33% in the CG and 6.67% in the OG, with no significant difference in the incidence between the two groups ($P > 0.05$). Compared to conventional treatment, the combined use of naloxone in the treatment of acute high-altitude pulmonary edema demonstrates more significant clinical efficacy. It further promotes patient recovery and improves pulmonary hemodynamics and respiratory parameters. Moreover, the combined application of naloxone does not significantly increase the risk of related adverse reactions. Additionally, this study found that echocardiographic examination allows for effective observation and evaluation of the pathological changes associated with acute high-altitude pulmonary edema. Therefore, the clinical application of echocardiography is recommended.

Keywords: Echocardiography, Naloxone, Acute high-altitude pulmonary edema, Efficacy, Pulmonary hemodynamics, Impact