

Analysis of the application of methylprednisolone injection combined with ambroxol injection in the treatment of asthma

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Abstract: Objective: To observe the effectiveness of different medication regimens in the treatment of asthma diseases. Methods: Sixty-four patients with asthma who attended the medical records department from 2020.6 to 2022.8 were analyzed. 32 patients in group A were treated with methylprednisolone alone, while group B was treated with intravenous amiloride injection in addition to the medication regimen in group A. The improvement time of symptoms in each group was observed, the total effective rate was calculated and the differences between groups were analyzed. Results: In Group B, the improvement time of wheeze, cough, croup and wet rales was earlier than that in Group A ($P < 0.05$). In terms of total effective rate, the difference was 65.63% vs. 93.75% in group A vs. group B ($P < 0.05$). Conclusion: The combination of methylprednisolone and ambroxol injection in the treatment of asthma can provide more rapid relief of symptoms and improve the efficacy, which is worth promoting.

Keywords: Asthma; Methylprednisolone; Ambroxol; Effect Observation

Introduction

Asthma has become a global chronic disease, and airway hyperresponsiveness is one of the main pathological features of the disease. Wheezing, shortness of breath and chronic cough are typical symptoms, and acute attacks occur at night or in the morning [1]. Inadequate treatment may result in irreversible narrowing and remodelling of the airway, disrupting normal life and reducing work efficiency. Methylprednisolone and ambroxol are commonly used in clinical medicine for respiratory diseases both at home and abroad, and this paper focuses on comparing single and combined drug therapy, as reported below.

1. Information and methods

1.1 General data

Sixty-four patients with asthma who came to our department from 2020.6 to 2022.8 were used as the sample for this study, all of whom had a clear diagnosis of the disease, were conscious, had good compliance and tolerated the drugs. The following groups were made according to the randomization principle.

Group A (n=32): The number of males and females was 9:7, the minimum and maximum ages were 22 and 74 years, with a mean value of (45.95±10.23) years.

Group B (n=32): male to female ratio 1:1, minimum and maximum ages 23 and 76 years respectively, mean (50.29±10.34) years.

Patients in the group showed balanced information on the above data, and the differences were not significant ($P > 0.05$) and comparable. This subject meets the ethical requirements.

1.2 Methods

Patients in all groups received oxygen therapy, anti-infection and maintenance of acid-base balance.

(1) Group A: Treatment with injectable sodium methylprednisolone succinate at a dose of 200 p.p. administered intravenously for about 5 min in the early stages, and subsequently reduced to 80 p.p. twice daily in accordance with the patient's condition.

(2) Group B: The treatment regimen of methylprednisolone is the same as that of group A, and combined with 30 p.p.m. of amiloride + 200 ml of 5% dextrose injection twice a day. All groups were given continuous medication for 1 week.

1.3 Observation index

Record the improvement time of wheezing, cough, rales and wet rales in each group. After 1 week of continuous medication, the patient's symptoms disappeared completely and no rales were detected on auscultation of the lungs, which was regarded as effective. The total effective rate was calculated as the percentage of the number of effective cases in the total number of cases in the group.

1.4 Statistical processing

SPSS33.0 software processed the data, and, rate (%) indicated the measurement and counting data respectively, X² test. Difference criteria: P<0.05.

2. Results

2.1 Clinical efficacy

The total effective rate in group A was 65.63%; in group B, it was 93.75%, and the treatment effect of patients in group B was better than that in group A (P<0.05). Table 1.

Table 1 Comparison of the clinical efficacy of patients in the two groups [n,(%)

Group (n)	Effective	Improved	Ineffective	Total effective
Group B (32)	24	6	2	30 (93.75)
Group A (32)	13	8	11	21 (65.63)

2.2 Time to improvement of symptoms

The improvement time of symptoms related to asthma disease was shorter in all patients in Group B than in Group A. The difference in the data reached the level of significance (P < 0.05).

Table 2 Comparison of the improvement time of symptoms between the two groups of patients ($\bar{x} \pm s, d$)

Group (n)	Gasping for breath	Cough	rumbling sound	wet rosin
Group B (32)	3.51±1.24	4.37±1.07	4.23±1.09	4.42±1.23
Group A (32)	4.25±1.39	5.62±1.25	5.22±1.14	5.57±1.39

3. Discussion

Although scholars at home and abroad have conducted a large number of studies on the pathogenesis of asthma, no unified conclusion has been reached so far. Disease research and treatment mostly focus on the control of the inflammatory response, and it is generally believed that the inflammatory response is involved in the process of airway hyperresponsiveness [2].

The timely reduction of asthma symptoms, prevention and control of exacerbations or recurrences, and the normalisation of lung function and the restoration of normal daily activity are the goals that are being pursued in the clinical treatment of asthma. The mechanism of action of methylprednisol is mainly to enhance lysosomal membrane stability, reduce prostaglandin synthesis and release, weaken vasodilatation and inhibit phagocytosis, which in turn exerts immunomodulatory and anti-allergic effects, and is the drug of choice in the treatment of patients with acute asthma attacks. Ambroxol is an expectorant drug whose mechanism of action is to induce the synthesis of more respiratory surface active substances, which can reduce the viscosity of sputum, thereby increasing neutral mucin, reducing acidic urinary proteins and facilitating the coughing up process. Moreover, the drug also intensifies the oscillatory effect of the cilia and enhances their transport capacity in order to further increase the efficiency of sputum excretion [3]. In the current study, the improvement times of wheeze, cough, rales and wet rales in group B were (3.51 ± 1.24) d, (4.37 ± 1.07) d, (4.23 ± 1.09) d and (4.42 ± 1.23) d respectively, which were shorter than those in group A (4.25 ± 1.39) d, (5.62 ± 1.25) d, (5.22 ± 1.14) d and (5.57 ± 1.39) d, a significant difference, suggesting that the treatment effect achieved in group B was better. The reason may be that methylprednisolone has a good inhibitory effect on the inflammatory response of the airways and better regulates the immune function, while amiloride significantly improves the ventilation status of the airways. The combination of drugs can superimpose the effect of drugs, better control the disease, improve the efficacy and improve the prognosis of the disease.

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