

The clinical experience in treatment of wasp sting in Mianyang city, Sichuan, China.

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Abstract

Objective: This study aimed to explore the clinical experience in treatment of wasp sting in Mianyang city, Sichuan, China.

Method: 60 patients with wasp sting admitted by our hospital were selected from January 2016 to October 2016. The patients were randomly divided into control group and observation group, 30 patients in each. Patients in control group were treated with conventional therapy while those in observation group received comprehensive treatment including sting removal, local block with 1%-2% lidocaine and dexamethasone, focal flushing with 5% sodium bicarbonate and early preventive dialysis treatment. Hospitalization time, total effective rate and incidence of complications in two groups were compared.

Results: The hospitalization time of the observation group (9.23 ± 2.36 d) was obviously shorter than that of the control group (12.69 ± 3.02) ($p=0.032$). Total effective rate (was significantly higher (96.67% vs. 56.67%, $p=0.017$)) and the adverse reaction rate (3.33% vs. 26.67%, $p=0.015$) was significantly lower in observation group than in control group.

Conclusion: Patients with wasp sting should be timely treated with early antianaphylactic therapy to shorten hospitalization time.

Keywords: Wasp sting, Treatment.

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Introduction

Wasp sting is a common clinic disease in emergency department. In recent years, with the ecological improvement and environmental protection carried out in China, the incidence rate of wasp sting shows an increasing tendency in Mianyang, one of subtropical regions in China. Without timely treatment, wasp sting can severely impair the health and living quality of patients [1,2]. The clinical experience in treatment of wasp sting in Mianyang city, Sichuan was explored and analysed in this study. The report is as follows.

Materials and Methods

General data

From January 2016 to October 2016, 60 patients with wasp sting admitted by our hospital were selected in our study. The patients were randomly divided into control group and observation group, 30 patients in each. In observation group, there were 18 males and 12 females, and the age ranged from 15 to 76 years with a mean value of (42.9 ± 2.1) years for male patients to (48.28 ± 2.7) for female patients. In control group, there were 19 males and 11 females, and the age ranges from

15 to 77 with a mean value of (48.91 ± 3.2) for male patients and (43.15 ± 2.4) for female patients.

There was no significant difference in basic information between those two groups ($p=0.15$).

Methods

Patients in control group received conventional treatment (oral anti-allergy drug and local block with dexamethasone acetate). The treatments for the patients in observation group included: 1, the sting site was fully exposed and wound area (redness) was identified; the sting was removed and the wound was washed with 5% sodium bicarbonate followed by a topical disinfection with alcohol and iodine [3]. 2, antianaphylactic treatment: intravenous injection with methylprednisolone (40mg) was performed once a day for 3 to 5 consecutive days [4]. 3, the wound area was sealed with 2% lidocaine and 2 mg hexadecadrol, a skin spot would form when the drug reached subcutaneous tissue of wound area. Sting was then removed gently with cotton swabs if it was completely exposed in the skins pot [5]. 4, alkaline solution was applied to dilute the remaining venom [6]. 5, hemodialysis: the patients were immediately treated with bicarbonate dialysis by the time of their arrival. Bicarbonate dial was performed for 1 to 4 times

according to the patients' conditions. The patients with nausea, vomiting dizziness, disorders of nervous system and toxic myocarditis were subjected to proper treatments [7].

Observation indexes and treatment effect

Observation indexes: Clinical indexes including hospital time, treatment effects and the occurrence of adverse reactions (symptoms like nausea, vomiting and disorders of nervous system) were monitored and recorded.

Treatment effects: Significantly effective: After treatment, the toxic symptoms completely disappeared and the patients showed normal eating and other behaviors.

Effective: After treatment, the toxic symptoms were improved obviously and the patients' eating and other behaviors were basically recovered.

Invalid: After treatment, the toxic symptoms were not improved or even became worse.

Statistical analysis

All the data were processed by Microsoft office excel and SPSS 20.0 software. Total effective rate and incidence of complication were expressed as "percentage" (%) and hospital time was expressed as mean \pm standard deviation ($\bar{x} \pm SD$). Chi-square test and t test were applied for statistical analysis. $p < 0.05$ was considered to be statistically significant.

Table 2. Comparison of the total effective rate between two groups.

Group	Case	Significant effects	Effective	Invalid	Total effective rate
Observation	30	28	1	1	96.67%*
control	30	16	1	13	56.67%

Note: *Compared with control group, $p=0.017$.

Table 3. Comparison of incidence of adverse reactions in the two groups (%).

Group	Case	Nausea	Vomiting	Neurological symptoms	Incidence of adverse reactions
Observation group	30	1	0	0	3.33%*
Control group	30	5	2	1	26.67%

Note: *a compared with control group, $p=0.015$

Discussion

Wasps in China are usually quite venomous. After wasp sting, cholinesterase, serotonin, histamine and antigens will be released into the body to cause severe pain, bleeding, central nerve damage and hemolysis [8,9]. Without proper treatment, toxins in blood circulation will cause coma, shock, and even anaphylactic shock, severely threatening patient's life [10,11].

Bee venom is a complex toxin mixture containing multiple enzymes, such as phospholipase A and hyaluronidase, and multiple peptides, such as mast cell degranulation peptide and

Results

Comparison of the hospital time between two groups

The hospital time of the observation group (9.23 ± 2.36 d) was significantly shorter than that of control group (12.69 ± 3.02 d), ($p=0.032$, Table 1).

Comparison of the total effective rate between two groups

The total effective rate in the observation group was 96.67%, which was significantly higher than that of the control group (56.67%), ($p=0.017$, Table 2).

Comparison of the occurrence of adverse reactions between two groups

The adverse reactions rate of the observation group was 3.33%, which was significantly lower than that of control group (26.67%), ($p=0.015$, Table 3).

Table 1. Comparison of the hospital time between two groups.

Group	Cases	Hospital time (d)
Observation group	30	$9.23 \pm 2.36^*$
Control group	30	12.69 ± 3.02

Note: *compared with control group, $p=0.032$.

bee venom peptide and other inflammatory mediators [12,13]. In this study, most of the patients with wasp sting showed impairment of multiple organs. The damage was mostly found in kidney, followed by heart and liver. Therefore, regardless of the severity of clinical symptoms, patients with renal function, myocardial enzymes and Electrocardiogram (ECG), blood routine and liver function of patients with wasp sting should be tested to evaluate organ damages [14,15]. In this study, the patients with identified wasp sting were treated with hemodialysis immediately after admission to reduce mortality rate [16,17]. The application of hemodialysis can

filter out the harmful metabolites and small molecular melittin to maintain acid base balance and prevent electrolyte disorders [18]. Blood perfusion can remove melittin through the functions of macro-molecule metabolites and plasma protein [19]. Hematodialysis or early prevention combined with blood perfusion can effectively prevent the occurrence of early MODS, thus decreasing the mortality rate. Therefore, this method has become an important treatment of wasp sting [20]. Wasp venom, which is acidic in nature, contains nerve toxin and formic acid that can invade into the nervous system of the human body. In this regard, lidocaine can rapidly relieve the pain and promote ventricular arrhythmia. Dexamethasone has the functions of anti-allergy, anti-shock, anti-inflammation and anti-toxin. With rapid effects, dexamethasone can quickly relieve clinic symptoms without bring pain to patients. Results of this study showed that the hospitalization time of the observation group (9.23 ± 2.36 d) was obviously shorter than that of the control group (12.69 ± 3.02) ($p=0.032$). In addition, total effective rate (96.67% vs. 56.67 %, $p=0.017$) was significantly higher (96.67% vs. 56.67 %, $p=0.017$) and the adverse reaction rate (3.33% vs. 26.67%, $p=0.015$) was significantly lower in observation group than in control group.

In conclusion, the treatment method used in this study, which combined sting removal, local block with 1%-2% lidocaine and dexamethasone, focal flushing with 5% sodium bicarbonate and early preventive dialysis, is effective in the treatment of wasp sting and should be popularized in clinical practice.

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