Endoscopic Sclerosing Agent Injection for Treatment of Mallory-Weiss Syndrome

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ABSTRACT Objective: To investigate the effect of endoscopic sclerosing agent injection on treatment of Mallory-Weiss syndrome. Methods: The 58 patients who diagnosed as Mallory-Weiss syndrome by immediate endoscopy and received endoscopic therapy were randomly divided into 2 groups: endoscopic aethoxysklerol injection (n=29) and endoscopic 1:100000 epinephrine injection (n=29). The hemostasis rate, re-bleeding rate and complication rate were compared. Results: Initial hemostasis in therapy group was 96.55%. Initial hemostasis in control group was 93.10%. There was no significant difference (P>0.05). The rate of early re-bleeding in therapy group was 7.41%, which was significantly lower than that of 29.63% in control group. The rate of re-bleeding in the near future and long-term in therapy group was both 3.57%, while which in control group was both 3.70%, and there was no significant differences between the 2 groups. There was no patient complicated of ectopic embolism, perforation and death in the two groups. Conclusions: Endoscopic aethoxysklerol injection is better than endoscopic 1:10 0000 epinephrine injection in treating Mallory-Weiss syndrome.

Key words: Endoscopic hemostatic; Mallory-Weiss syndrome; Aethoxysklerol; Epinephrine

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Introduction

Cardiac mucosal laceration syndrome (Mallory-Weiss syndrome) is induced by severe omitting and/or suddenly increase of intra-abdominal pressure with the manifestation of mucous membrane laceration in inferior segment of esophagus and/or cardia-esophagus conjunction site in length wise complicated with massive bleeding in digestive tract [1]. The ratio of Mallory-Weiss syndrome in causes of upper gastrointestinal hemorrhage increased recently. 1.3%～7.3% upper gastrointestinal hemorrhage reported in domestic literatures and 5%～15% in foreign literatures were induced by Mallory-Weiss syndrome [2,3]. With development of endoscopic technique, the treatment under endoscope became more and more effective. The aim of the present study was to compare the effectiveness and safety between 2 treatments under endoscope: injection of 1% aethoxysklerol and injection of 1:10 0000 epinephrine, and to find the treatment with more safety and effectiveness.

1 Clinical data and methods

1.1 Clinical data

58 subjects with Mallory-Weiss syndrome were selected from patients hospitalized in digestive system department during Dec. 2009 to May 2011. All patients were diagnosed by gastroscope and treated with endoscopic hemostasis. 36 males and 22 females, aged 18～56 yrs (average age: 35.6 yrs), were divided equally into treatment group (injection of aethoxysklerol) and control group (injection of epinephrine). There was no significant difference in age and sex among patents between two groups.

1.2 Methods

1.2.1 Equipments and medicines FUJINON4400 EG-590 type electronic gastroscope, OLYMPUS NM-200L-0525 type injection needles for endoscope, Fujinon. INl 824T134N6 type injection needles for endoscope, 1% aehoxysklerol, 1∶10 0000 epinephrine and physiological saline etc were used.

1.2.2 Preoperative preparation Blood pressures of patients in the two groups were all kept above 90/60mmhg through increasing blood volume, other conventional therapies, such as fasting, antacid, blood transfusion, hemostasis, and transfusion, were performed simultaneously. All patients were treated by using gastroscope after vital sign got stable and effective circulating blood volume recovered. First-aid outfit were prepared for using during operation.

1.2.3 Methods Lesion was washed by physiological saline to expose the bleeding area before treatment. Treatment group: 1% aethoxysklerol was injected at 3-6 points under endoscope to stop bleeding. Every point was injected with 0.5mL^{-1}~1.0mL and the total volume was less than 5.0mL. The injection depths were less than 2mm-3mm. Swelling and blanching was showed in mucosal membrane after injection. Control group: 1:10 0000 epinephrine was injected at 3-6 points under endoscope to stop bleeding. Every point was injected with 1mL~2mL and the total volume was about 6mL ~10mL. Swelling and blanching was showed in mucosal

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membrane after injection.

1.3 Observation indicators

1.3.1 Success rate of first hemostasis under endoscope Percentage of patients with success hemostasis under endoscope. Criterion: the spouting of blood and capillary hemorrhage was stopped immediately under endoscope and the visual field became explicit. Clinical manifestations: haematemesis was disappeared, the blood pressure increased to a stable lever, and pulse rate became slowly and powerful.

1.3.2 Rate of re-bleeding at early stage, intermediate stage and later stage after endoscopic hemostasis Percentage of patients with re-bleeding of upper digestive tract within 14 days, 14 days -2 months and 2-6 months of endoscopic hemostasis in patients who had been treated successfully. Criterion: haematemesis was showed again or dark loose stools increased, and the decrease of hemoglobin was more than 20g/L or hypovolemia was confirmed by clinical evidence.

1.3.3 Mortality Percentage of patients died of recurrent alimentary tract hemorrhage at the same focus after 6 months of endoscopic hemostasis in patients followed up during the corresponding time period.

1.3.4 Incidence rate of complication Percentage of cases with complication after endoscopic hemostasis in all patients treated by endoscopic hemostasis. Complication was defined as follows: perforation of alimentary tract, embolism and accident of heart and lung after being treated by endoscopic hemostasis.

1.4 Statistical treatment

Statistical software SPSS, version 17.0, was used for statistical analysis. Chi-square test was performed to compare difference between groups, and $P < 0.05$ was considered to be statistical significant.

2 Results

2.1 Success rate of first hemostasis

The success rate of first hemostasis in treatment group was 96.55% (28/29, 1 patients with failed hemostasis was sent to another department for interventional embolotherapy); The success rate of first hemostasis in control group was 93.10% (27/29, 2 patients with failed hemostasis were sent to another department for interventional embolotherapy). There was no significant difference in success rate of first hemostasis between groups (P>0.05).

2.2 Rate of re-bleeding at early stage, intermediate stage and later stage after hemostasis under endoscope

2.2.1 Rate of re-bleeding at early stage Rate of re-bleeding in treatment group at early stage was 7.41%(2/28; 1 patient accepted the second injection of aethoxysklerol under endoscope and cured, the other patient was sent to surgical department for operation after the second injection of aethoxysklerol failed again).Rate of re-bleeding in control group was 29.63%(8/27; 2 patients accepted the second injection of aethoxysklerol under endoscope and cured, 3 patients accepted injection of epinephrine and cured, 2 patients accepted interventional embolotherapy after the second injection of epinephrine under endoscope failed again, and 1 patient accepted operation). There was significant difference in rate of re-bleeding at early stage between the two groups (P<0.05).

2.2.2 Rate of re-bleeding at intermediate stage and later stage Rate of re-bleeding in treatment group at intermediate stage and later stage was 3.57% (1/29), the rate in control group was 3.70 (1/27), the difference between the two groups had no statistical significance (P>0.05).

2.3 Mortality and incidence rate of complication

There was no case with complications, such as perforation of alimentary tract, embolism and accident of heart and lung, in the two groups.

Table 1 Therapeutic effect comparison of treatment group and control group (n, %)

	Treatment group	Control group	P-value
Success rate of first hemostasis	28 (96.55)	27 (93.10)	0.553
Rate of re-bleeding at early stage	2 (7.41)	8 (29.63)	0.031
Rate of re-bleeding at intermediate stage and late stage	1 (3.57)	1 (3.70)	0.820
Mortality	0	0	1

3 Discussion

Mallory-Weiss syndrome (MWS) was the serious upper gastrointestinal hemorrhage described firstly by Kenneth Mallory and Soma Weiss in 1929. In 1956, the disease was diagnosed by using endoscope by Hardy for the first time. Researches in the early stage showed that MWS was not the major cause of upper gastrointestinal hemorrhage, and final diagnosis must be made by surgery or autopsy. With the increasing of knowledge about MWS and widespreading application of fiberendoscope, the ratio of MWS in the causes of upper gastrointestinal hemorrhage increased, and the information about its characteristic was more detailed. The manifest of Mallory-Weiss syndrome were mucous membrane laceration in length wise complicated with arterial hemorrhage. Red or white longitudinal fissure on mucous membrane could be seen under endoscope. The lesions were located at cardia

or junction of stomach and esophagus in 90% patients and inferior segment of esophagus in 10% patients. Single laceration was the most frequent injury type, and multi-laceration was fewer. One of the typical clinical manifestations was abrupt acute hemorrhea, and the bleeding volume was correlated with the extent, degree and location of mucous membrane laceration. Due to the massive bleeding, the mortality in patients without proper treatment was very high.

Treatments for Mallory-Weiss syndrome included pharmacotherapy, intervntional therapy, surgery and endoscopic hemostasis. With the development of endoscope technique, endoscopic hemostasis had taken the place of surgery, and become the preferred treatment for MWS. Research form Quirk showed that the length of stay and medical care costs of treatments under endoscope were less than that of expectant treatments in internal medicine and surgery methods [4]. Haemostatic methods such as spraying hemostasis, argon plasma coagulator, local drug injection, metal titanic clip and combination methods were confirmed by lots of researches [5,6]. The methods were especially suitable to patients who could not be treated by surgery. Due to the superiorities such as simple possess, less cost, better safety, effectiveness and repeatability, local drug injection had become the most preferred treatment for MWS.

Hemostatic effect of local drug injection under endoscope can be achieved via the following mechanisms: tissue swelling caused after injection induces vascular compression and constriction as well as generates vascular and perivascular aseptic inflammation, which leads to vascular fibrosclerosis and intravascular thrombosis, etc to stop bleeding [7,8]. Frequently used agents contain 1:10 000 epinephrine-saline solution, hypertonic saline-epinephrine solution (HSE), hardening agents and other agents [9,10].

The success rates of first hemostasis after injection of aethoxysklerol and 1:10 0000 epinephrine were 96.55% and 93.10% respectively in the present study, and the difference had no statistical significance (P>0.05). Rates of re-bleeding at early stage in treatment group and control group were 7.41% and 29.63% respectively, the difference was statistical significant. The differences in rate of re-bleeding at intermediate stage and later stage between treatment group and control group were not significant (P>0.05). Injection of epinephrine under endoscope was an effective hemostasis accepted widely, which could stop bleeding through inducing vascular compression and constriction to reduce volume of blood flow and promoting platelet aggregation and thrombopoiesis [11]. The reported success rates of hemostasis and rate of re-bleeding were 80 %～100 % and 9 %～36 % respectively. The results of this study were consistent with the aforementioned studies[12]. After endoscopic injection of aethoxysklerol was performed, local tissue swelling would induce vascular compression, vascular fibrosclerosis and intravascular thrombosis, and then the blood vessel with bleeding was blocked. Otherwise, the hyperplasia and fibration of perivascular connective tissue caused by the injection could also supply a protective effect to the bleeding vessels, so the hemostatic effect was finally achieved[13]. The induction effect of aethoxysklerol on organization and thrombosis was more powerful than that of epinephrine, so the rate of re-bleeding after injection of aethoxysklerol was very low. No patient with serious complication was found in the two groups in this study. It was reported by Bataller that local injection of sclerosing agent in a wider range would result to stenosis of esophagus and preventriculus, and the incidence rate of complication was positively correlated with the injection volume [14]. So, attention should be paid on the volume, depth and site of injection to avoid the development of complication. There was a limitation in the present study that the comparison of success rate of the second hemostasis between groups was not performed. The comparison of success rate of the second hemostasis for Mallory-Weiss syndrome with different methods under endoscope should be investigated in further study.

In conclusion, massive hemorrhage of upper alimentary tract induced by Mallory-Weiss syndrome could be treated by endoscopic injection of aethoxysklerol, which was a safe and effective method with high success rate of first hemostasis and low rate of re-bleeding. The method could be applied to clinical practice.

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内镜下注射硬化剂治疗食管贲门粘膜撕裂综合症的临床研究

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摘要 目的:研究内镜下注射1%乙氧硬化醇和注射1:10 0000肾上腺素治疗食管贲门粘膜撕裂综合症的疗效及安全性。**方法:**按照随机抽样的原则,从行急诊胃镜检查确诊为食管贲门粘膜撕裂综合症并行内镜下止血治疗的患者中,随机抽取58例患者,按随机数字表法分为治疗组29例和对照组29例,治疗组采用内镜下注射1%乙氧硬化醇,对照组采用内镜下注射1:10 0000肾上腺素,观察两组患者首次止血成功率,早期、近期、远期再出血率,并发症发生率等。**结果:**治疗组首次止血成功率96.55%(28/29),对照组首次止血成功率93.10%(27/29),两组差异无统计学意义(P>0.05),治疗组早期再出血率7.41%(2/28),显著低于对照组29.63%(8/27)(P<0.05),治疗组近期及远期再出血率为3.57%(1/28),对照组近期及远期再出血率3.70%(1/27),两组差异无统计学意义(P>0.05),两组均无栓塞、穿孔、死亡等并发症出现。**结论:**内镜下注射乙氧硬化醇治疗食管贲门粘膜撕裂综合症优于注射肾上腺素。

关键词:内镜下止血;乙氧硬化醇;肾上腺素;食管贲门粘膜撕裂综合症

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