Batroxobin

Batroxobin, also known as reptilase, is a snake venom produced by Bothrops atrox and Bothrops moojeni, venomous species of pit viper found east of the Andes in South America. It is a hemotoxin which acts as a serine protease closely related to thrombin, and has been the subject of many medical studies as a replacement of thrombin. Different enzymes, isolated from different species of Bothrops, have been called batroxobin.

It has a coagulative and anti-hemorrhagic properties.

The objective of a study was to evaluate cerebral venous recanalization with magnetic resonance black-blood thrombus imaging (MRBTI) in patients with cerebral venous thrombosis (CVT) who underwent batroxobin treatment in combination with anticoagulation.

A total of 31 CVT patients were enrolled in a real-world registry study. The patients were divided into batroxobin (n = 21) and control groups (n = 10). In addition to the same standard anticoagulation as in the control group, patients in the batroxobin group underwent intravenous batroxobin for a total of three times.

In the batroxobin group compared with the control group, they found better odds of recanalization degree [adjusted OR (95%CI) of 8.10 (1.61-40.7)] and segment-stenosis attenuation [adjusted OR (95%CI) of 4.48 (1.69-11.9)] with batroxobin treatment. They further noted a higher ratio of patients with the attenuation of stenosis [adjusted OR (95%CI) of 26.4 (1.10-635)]; as well as a higher ratio of segments with stenosis reversion [adjusted OR (95%CI) of 4.52 (1.48-13.8)]. However, neurological deficits between the two groups showed no statistical significance at 90-day follow-up (P > 0.05).

Batroxobin may promote venous sinus recanalization and attenuate CVT-induced stenosis. Further randomized study of this promising drug may be warranted to better delineate the amount of benefit. [1)].

Cerebral venous sinus thrombosis (CVST) is an uncommon subtype of stroke with highly variable clinical presentation. Although anticoagulation with heparin and/or warfarin remains the standard treatment for CVST, treatment failure is still common. This study aims to evaluate the safety and efficacy of Batroxobin in combination with anticoagulation on CVST control. In this retrospective study, a total of 61 CVST patients were enrolled and divided into Batroxobin (n = 23) and control (n = 38) groups. In addition to the same standard anticoagulation in control, patients in the treatment group received Batroxobin 5 BU intravenous infusion (10 BU for the first time) every other day, for a total of three infusions. A higher recanalization rate was found in Batroxobin group (adjusted OR [95% CI] of 2.5 [1.1-5.0], p = 0.028) compared to the control group, especially in patients with high levels of fibrinogen (adjusted OR [95% CI] of 4.7 [1.4-16.7], p = 0.015). Statistically significant differences between the two groups were seen regarding the levels of thrombin time, fibrinogen and D-dimer at each cut-off time point (all p < 0.01). Compared with baseline, NIHSS scores at discharge showed significant improvement in the Batroxobin group [0(0, 4.25)-5(2, 11), p = 0.036]. No significant difference in mRS scores was found between the two groups at discharge or at 6-month outpatient follow-up (all p > 0.05). Additionally, Batroxobin did not increase the risk of intracranial hemorrhage. We conclude that Batroxobin is a potentially safe and effective adjunct therapeutic agent promoting

CVST recanalization especially in patients with high level of fibrinogen [2].

The present study found that patients with postoperative fibrinogen deficiency experienced more operative blood loss and a higher rate of postoperative intracranial hematoma, and they were given more blood transfusions, more plasma transfusions, and were administered larger doses of hemocoagulase compared with patients without postoperative fibrinogen deficiency. Likewise, patients with postoperative fibrinogen deficiency had poorer extended Glasgow Outcome Scale (GOSe), longer hospital stays, and greater hospital expenses than patients without postoperative fibrinogen deficiency. Further, we assessed a comprehensive set of risk factors associated with postoperative fibrinogen deficiency via multiple linear regression. We found that body mass index (BMI), the occurrence of postoperative intracranial hematoma, and administration of hemocoagulasewere positively associated with preoperative-to-postoperative plasma fibrinogen consumption; presenting with a malignant tumor was negatively associated with fibrinogen consumption. Contrary to what might be expected, intraoperative blood loss, the need for blood transfusion, and the need for plasma transfusion were not associated with plasma fibrinogen consumption. Considering our findings together, we concluded that postoperative fibrinogen deficiency is closely associated with postoperative bleeding and poor outcomes and merits careful attention. Practitioners should monitor plasma fibrinogen levels in patients with risk factors for postoperative fibrinogen deficiency. In addition, postoperative fibrinogen deficiency should be remediated as soon as possible to reduce postoperative bleeding, especially when postoperative bleeding is confirmed [3]

Wu and Huang evaluated the effects of defibrase DF-521 batroxobin on reducing brain edema formation and the expression of ICAM-1, complement C3d and C9 in the perihematomal area after intracerebral hemorrhage (ICH) in rats. A rat ICH model, involving infusion of autologous blood into the right basal ganglia, were used in this study. The animals were sacrificed at 24 and 72 hours after ICH to determine the water content of the brain tissue with wet/dry weight measurement. While the expression of ICAM-1 and complement C3d was detected using immuno-histochemistry, and C9 was detected semi-quantitatively with Western blot analysis in the perihematomal area. Perihematomal brain edema was reduced after intraperitoneally injection of DF-521 batroxobin 24 and 72 hours after intracerebral hemorrhage. Immunohistochemistry showed that there were less ICAM-I positive cells were found around the hematoma after intraperitoneally injection of DF-521 batroxobin 24 and 72 hours after ICH. Immuno-histochemistry also showed that C3d deposition reduced significantly, and the Western blot analysis also showed the content of C9 protein declined around the hematoma in DF-521 batroxobin treatment group at 72 hours after ICH. Defibrase DF-521 batroxobin down-regulate ICAM-1 and complement C3d and C9 expression in the perihematomal area, and attenuate brain edema formation in ICH rats [4].

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