CASE REPORT

CONTROL OF INTRACTABLE GASTRIC HEMORRHAGE BY MONOSODIUM GLUTAMATE

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Monosodium L glutamate (MSG) has been known and used to stop focal bleeding in remote area and around battle fields along Thai-Laos-Cambodian border. The hemostatic effect of MSG was studied by Jaiarj et al. (1985a). It was found that MSG decreased the bleeding times of the wounds made by excising the tails or by incising the femoral veins of Wistar rats. In an in vitro study with human blood, thrombin time was shown to be shortened and there was a prolonged euglobulin lysis time which suggested that MSG probably accelerated the conversion of fibrinogen to fibrin and also affected fibrinolytic system. Jaiarj et al. (1985b) also showed that MSG could potentiate the vasoconstriction effect of norepinephrine in a rabbit aortic strip.

From the property of MSG mentioned above, local application of MSG may be useful to stop bleeding. We report successful hemostasis in a case with uncontrollable massive gastric hemorrhage.

A 7.4 years old Thai girl was admitted with history of hematemesis for 2 days prior to admission. She was a known case of β-thalassemia/hemoglobin E disease and had splenectomy at age 3.5 years of age. Blood transfusion was given at 2-3 months intervals to keep her hematocrit above 20 percent. Her clinical course was complicated with autoimmune diseases: ulcerative colitis and sclerosing cholangitis. Immunosuppressive drugs (prednisolone, cyclophosphamide and azathioprine) were given with decent response.

She experienced an episode of post transfusion hypertension from which she developed convulsion. A 3 x 4 cm hematoma on the left occipital area was identified by CT scan. Ever since she had been on anticonvulsive drugs.

At age 6.4 years she presented with severe cholestasis and hepatomegaly due to exacerbation of sclerosing cholangitis while her symptoms of ulcerative colitis was going on. Prednisolone 2 mg/kg/day was given with some improvement. After 4 months of treatment, prednisolone was reduced to 1 mg/kg/day. Her condition was fairly controlled until 5 days prior to this admission when she developed mucosal ulcer in the mouth, anemia, weakness and was unable to eat. Packed red blood cell transfusion 10 ml/kg was given at the outpatient clinic then returned home. At home she was unable to take fluid by mouth so she was admitted to Srakaew Provincial Hospital for intravenous fluid therapy. On the second day of admission she vomited fresh blood and passed melena; she was transferred to Ramathibodi Hospital after 2 days of intractable hematemesis and melena.

Physical examination on admission revealed a weak chronically ill girl with marked palor, moderate jaundice and cushinoid appearance. Body weight was 13 kg, height was 97 cm. Vital signs were body temperature 37.8°C, pulse rate 120/minute, respiratory rate 120/minute, blood pressure 120/80. Positive findings included shallow ulcers on the tongue and lips, enlarged firm liver 6 cm below right costal margin, liver span 9 cm and clubbing of fingers and toes. Laboratory findings revealed completed blood count: Hb 6.3 g/dl, Hct 18%, WBC 24,000/mm³, neutrophils 83%, lymphocytes 8%, monocytes 2%, band forms 4%, metamyelocytes 2%, platelet 360,000/mm³. Urinalysis: yellow color, clear, sp gr 1.015, pH 6, WBC 0-1, RBC 0-1/HP. Blood chemistry: blood sugar 76 mg/dl, urea 65 mg/dl, creatinine 3.1 mg/dl, Na⁺ 130, K⁺ 3.01, Cl⁻ 101 and total CO₂ content 10.7 mmol/l, total bilirubin 10.2 mg/dl, direct bilirubin 7.3 mg/dl, alkaline phosphatase 549 IU/l, aspartate amino transferase 38 U/l, alanine aminotransferase 12 U/l, G-glutamyl transaminase 386 U/l, total protein 56.1, albumin 20.1 g/l. Coagulation studied revealed partial thromboplastin time 51.3 seconds, prothrombin time 21 seconds, thrombin time 9.9 seconds.

Packed red blood cells plus fresh frozen plasma were given to raise the hematocrit to 25 percent. Sucralfate 1 g was given every 4 hours enterally. Cimetidine 80 mg was administered every 6 hours.
bleeding. She vomitted fresh blood and passed me­
parenterally. Three hours after admission she vomited
coffee ground material with clotted blood, passed me­
given intravenously in place of cimetidine. Somato­
lena continuously.

Twelve hours. Pitression
Saline irrigation was performed but could not stop
bleeding could not be controlled. Endosco­

rhagic gastritis. Neither varices nor ulcer were seen.
Somatostatin was then reduced to

Maintained without dopamine.

Transient vasoconstriction may be helpful in control of bleeding
along with clot formation. The adverse reaction to
MSG is minimal and its effectiveness in hemostasis and
Vasoconstriction has been impressive in the con­

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Monosodium glutamate is a physiological nutrient,
and food additive used as a taste enhancer. MSG is
also widely regarded as the provocative agent in the
"Chinese restaurant syndrome". However discomfort
and flushing which are regarded as part of the reaction
could not be elicited in positive and negative histories
of Chinese restaurant syndrome subjects when they
were challenged with MSG (Kenny, 1986; Wilkin,
1986). A small subset of patients with food allergy and
asthma might develop bronchospasm and wheezing
when high dose (2.5 g) was consumed (Moneret-Vantrin,
1989). Aminocaproic acid an antifibrinolytic
agent has been used to stop bleeding in hyperfibrino­
lytic conditions. MSG has molecular formula of
[HOOC(CH 2 ) 4 CH(NH 2 )-COONa] which is somewhat
similar to aminocaproic acid [HOOC(CH 2 ) 4
CH 2 (NH 2 )] (Hathaway and Goodnight, 1993). MSG
has possible role in hemostatic mechanism as shown by
in vitro study. It shortens thrombin time and pro­
longs euglobulin lysis time which signify antifibrino­
lytic effects. When it was used to inhibit fibrinolysis
at sites of vascular injury in case of hemorrhagic gastritis,
cessation of bleeding was immediately observed.

Other agents such as prostaglandin E 2 which activates
platelet aggregation (Vermyleu et al., 1983) was re­
ported to stop bleeding by local application. The use of
prostaglandin E 1 (PGE 1) analogues in the dose of 18/
µg/kg day in 4 divided dose given euterally was ob­
served to control bleeding in an infant with protracted
hemorrhagic gastritis recovering from acute pancreatitis
(Casaubon et al., 1987). Transient vasoconstric­tion
was evidenced by transient hypertension in our patient.
Vasoconstriction may be helpful in control of bleeding
along with clot formation. The adverse reaction to
MSG is minimal and its effectiveness in hemostasis and
vasoconstriction has been impressive in the con­

control of massive gastric bleeding in our case.

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