Continuous Intra Arterial Vasopressin Infusion For Control Of Typhoid Hemorrhage

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Abstract
A 35 year old man presented with massive lower gastrointestinal hemorrhage due to typhoid enteritis. After confirming the site of bleeding on a selective superior mesenteric angiogram, a vasopressin infusion was given at the rate of 0.2–0.4 units/min initially, followed by tapering doses over 36 hours. Cessation of bleeding was achieved immediately. The patient did not have any complications due to the procedure. Continuous vasopressin infusion is an effective method for the treatment of uncontrolled bleeding from typhoid enteritis.

Key words: Typhoid enteritis, lower gastrointestinal hemorrhage, angiography.

Introduction
Intestinal hemorrhage is a major complication of typhoid fever, occurring in 1–13% of patients.1,2 The conventional approach to this problem has been conservative; however, despite repeated blood transfusions the mortality rises to 25% in patients with incessant hemorrhage. Surgery has been the only alternative in these circumstances, but is accompanied with a high mortality.3 Angiography can localise the site of bleeding, and may be effective in controlling the bleeding by therapeutic embolisation or infusion of vasoconstricting agents.4

We report a patient with typhoid enteritis with massive lower gastrointestinal hemorrhage in whom successful control of the bleeding was achieved with selective infusion of vasopressin into the superior mesenteric artery.

Case Report
A 35 year old man had high fever for 3 weeks, for which he was being treated by a general practitioner. He then developed massive bleeding per rectum, which continued for three days before he was referred to our hospital. He had no abdominal pain. There was no present or previous history suggesting a generalized bleeding disorder. The pulse rate was 100/min and the systolic blood pressure was 60 mmHg. The patient was pale with no peteculae. Abdominal examination was unremarkable. No local lesion was felt on digital examination per rectum. The nasogastric aspirate was clear. An enema yielded fresh blood and blood clot. Precipipalmoendoscopy done after initial stabilisation revealed a normal, though blood stained, rectal mucosa.

The hemoglobin was 5.7 g/dl (57 g/L) with a PCV of 15%. The WBC count was 6.100/mm³ (6.1 x 10⁹/L) with normal differentiation. Serum chemistry and the coagulation profile were within normal limits. The Widal test was subsequently found positive for S typhi (titres O 1:120, H 1:240, CIEP test for Salmonella antibodies positive). Intravenous cotrimoxazole, intravenous fluids and 5 units of blood were given in the first 12 hours with a clinical suspicion of typhoid. As fresh bleeding continued and the patient was hemodynamically unstable, an angiogram was done to identify the site of bleeding. A polyethylene side winder catheter was introduced percutaneously through the right femoral artery, and superior and inferior mesenteric angiograms were done. Extravasation of contrast was seen in the branches of the ileocolic artery, corresponding to the terminal ileum. The inferior mesenteric angiogram was normal (Fig 1).

Vasopressin was infused into the superior mesenteric artery at a rate of 0.2 units/min. Since an angiogram done after 20

![Image of angiogram showing extravasation of dye (arrow).](image-url)
min showed persisting extravasation, the infusion rate was doubled to 0.4 units/min and given over 20 min. This time a check angiogram showed cessation of bleeding (Fig 2). With the catheter in place, further infusions of 0.2 units/min, 0.1 units/min and 0.05 units/min were given over 12 hours each, with the aid of an infusion pump. The catheter was retained for a further 6 hours and then removed. No complications were observed during the procedure.

The value of angiography in the localisation and pharmacological control of bleeding from colonic diverticulosis has been recognised. Collins et al in 1975 first reported the use of vasopressin for the successful control of bleeding from typhoid enteritis. This bleeding is due to multiple ulcers and erosions which expose the underlying blood vessels, notably in the distal 70 cm of the ileum and the proximal colon. Vasopressin infusions cause a temporary control of the bleeding, allowing mucosal healing, thus diminishing the chances of further bleeding. If, however, there is a recurrence, accurate localisation of the bleeding points by arteriography permits selective surgery. Furthermore, the time gained during the temporary control of bleeding may be utilised in stabilising the patient and preparing him for surgery under optimum conditions.

It may be argued that the cessation of bleeding in our case was incidental; but this is unlikely as the bleeding which continued for over 12 hours on conservative management stopped within a few minutes of initiating vasopressin infusion under angiographic control.

Vasopressin infusions may cause intestinal colic and minor changes of fluid and electrolyte balance in the form of hypotension and water retention. Cardiac symptoms, intestinal infarction and local vascular thrombosis have been reported, but these are unlikely to occur when a low dose infusion of 0.2—0.4 units/min is used through the intraarterial route. When given by this route, vasopressin is partly metabolised in the liver before entering the general circulation.

It has been reported that an intraarterial infusion of vasopressin has little advantage over intravenous administration, for the control of bleeding from esophageal varices. This may not apply to lower gastrointestinal bleed where arteriographic localisation has immense value if surgery has to be resorted to.

Discussion
Initial conservative treatment has been recommended for lower gastrointestinal bleeding in typhoid enteritis; the management of continuing intestinal hemorrhage, however, has been a subject of controversy. Some workers have suggested surgery, while others have noted that the bowel may be friable and multiple bleeding points on the mucosa may make it difficult to locate the errant bleeder. This may lead to extensive surgery like right hemicolectomy with excision of the terminal ileum. Surgery in this setting therefore has a high mortality.

References