CLINICAL RESEARCH

Development of cutaneous gangrene during continuous peripheral infusion of vasopressin

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Abstract

Five patients given vasopressin by infusion to reduce portal hypertension developed signs of cutaneous gangrene 18-24 hours after the start of the infusion. Four patients were treated by application of local dressings; in three cases the lesions healed, but the fourth patient died from variceal haemorrhage. The remaining patient required split skin grafting but died 48 hours after operation.

The mechanism of this effect of vasopressin is not clear, but if local blanching of the skin is noted during infusion the catheter should be flushed immediately with a vasodilator in an effort to counteract the drug's vasoconstrictor effect.

Introduction

Vasopressin reduces portal venous pressure and is consequently a useful pharmacological adjunct in the management of patients with bleeding oesophageal varices. This effect is mediated by vasoconstriction of the splanchnic circulation, the drug being most active at the arteriolar and precapillary sphincter levels. Pallor and abdominal colic due to increased intestinal motility are common side effects. Myocardial infarction and subsequent death has been reported after injection of vasopressin, and the drug should be used with caution in patients with coronary insufficiency.[1] There have been few reports of cutaneous gangrene occurring after infusion of vasopressin.[2-4] We report on five patients who presented with haematemesis from oesophageal varices and who developed cutaneous gangrene after peripheral infusion of vasopressin.

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Case reports

The table summarises the details of the five patients. Two patients (cases 2 and 5) had maturity onset diabetes, which was well controlled by oral hypoglycaemic agents. The patient in case 2 also had hypertension.

Cases 1, 2, and 3—The patient in case 1 developed a 5×2 cm area of cutaneous necrosis immediately proximal to the site of the intravenous catheter after a 24 hour infusion of vasopressin at a dose of 20 units/hour. There was no evidence of subcutaneous extravasation of the infusate. Local dressings were applied, and the area had completely healed without surgery four weeks later. Two other patients (cases 2 and 3) developed similar sized lesions after 24 hours of infusion of vasopressin in the same dose. The lesions had healed by secondary intention within six weeks.

Case 4—The patient was an obese woman with poor venous access. Vasopressin was administered via a catheter in the long saphenous vein of the left leg (20 units/hour). After 24 hours an extensive mottled area extending along the line of the long saphenous vein to above the knee was noted. The area became gangrenous and was managed initially with local dressings but required split skin grafting 41 days later. She died 48 hours postoperatively from a massive pulmonary embolus.

Case 5—The patient received an infusion of vasopressin (20 units/hour) into a vein in the left antecubital fossa. After 18 hours considerable extravasation of the infusion fluid was noted and a tri-

Clinical details of patients who developed gangrene

Case No	Sex	Age (years)	Aetiology of portal hypertension	Child's grade[5]	Site of gangrene	Treatment	Outcome
1	F	44	Alcoholic cirrhosis	C	Right forearm	Local dressings	Healed by secondary intention
2	F	68	Cryptogenic cirrhosis	C	Left forearm	Local dressings	Healed by secondary intention
3	M	75	Alcoholic cirrhosis	C	Right forearm	Local dressings	Healed by secondary intention
4	F	75	Cryptogenic cirrhosis	C	Left lower leg	Local dressings + split skin graft	Died of pulmonary embolus 48 hours postoperatively
5	F	72	Portal vein thrombosis	A	Left antecubital fossa	Local dressings	Died four days later

angular area of pale cold mottled skin measuring $8 \times 6 \times 10$ cm was seen. This became gangrenous. She died four days later after repeated variceal haemorrhages. The area would probably have required skin grafting had she survived.

Discussion

The vasoconstrictor effect of vasopressin is not specific for the splanchnic circulation. Only one patient (case 5) developed obvious subcutaneous extravasation of the infusion fluid. In the remaining four patients the exact mechanism is not clear. Subclinical extravasation or diffusion of the drug through the vein wall secondary to poor flow are possibilities. Analysis of these five cases and of the four reported previously[2-4] failed to elicit any common factors. Five of the nine patients had obvious extravasation of the infusion fluid, three were diabetic, and two were known to have hypertension. Two of the patients reported on previously developed gas gangrene secondary to clostridial sepsis,[2 3] but this did not occur in any of our patients.

Before 1980 it was the policy of this unit to administer vasopressin by bolus infusion of 20 units over a period of 20 minutes every three to four hours. Cutaneous gangrene did not occur with this regimen. Since 1980 vasopressin by continuous infusion has been used on about 200 occasions. Many of the patients treated require a central venous catheter for pressure monitoring, and it is our practice to use this route for the infusion of vasopressin. When vasopressin has to be infused via a peripheral vein, however, the infusion site and catheter should be covered by a transparent sterile dressing and not bandaged in the traditional fashion. The nursing staff should inspect the site at hourly intervals, and if local blanching of the skin is noted the infusion should be stopped. Although there is no proved antagonist to the vasoconstrictor effect of vasopressin we would advocate immediate flushing of the catheter with a vasodilator. Treatment with vasopressin should be continued only if absolutely necessary and then via a central catheter.

The Committee on Safety of Medicines and the manufacturers of vasopressin have not received any reports of this complication.

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Vertebral osteomyelitis due to coccobacilli of the HB group

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Abstract

Three cases of pyogenic vertebral osteomyelitis occurred in which unusual, fastidious, Gram negative coccobacilli belonging to the "HB" group were isolated. The organisms were Haemophilus aphrophilus in case 1, intermediate between H aphrophilus and Actinobacillus actinomycetemcomitans in case 2, and Eikenella corrodens in case 3. All HB bacteria are sensitive to a wide range of antibiotics.

Introduction

Haemophilus aphrophilus, *Eikenella corrodens*, and *Actinobacillus actinomycetemcomitans* form the "HB" group of fastidious, Gram negative bacilli defined by King and Tatum.[1] They are commensals of the mouth and pharynx in man[2 3] but have been isolated (though infrequently and usually in mixed culture) from infections in various sites, especially those close to the upper respiratory tract. We report three cases of pyogenic vertebral osteomyelitis in which HB bacteria were isolated in pure growth from spinal pus and blood cultures.

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Case reports

Table I summarises the clinical details of the three patients with vertebral osteomyelitis; further features in case 1 were worthy of note. The patient, a 59 year old woman, was admitted in February 1981. She had had seronegative polyarthritis for 20 years and many previous episodes of back pain and sciatica sometimes associated with prolapse of intervertebral discs. Eight months before this admission her left hip joint had been replaced successfully with a Muller prosthesis, but two months later she had been admitted with severe back pain and right sided sciatica. During the next four days a plastic epidural catheter was maintained at the L3/4 level, through which injections of bupivacaine, methylprednisolone acetate, and methadone were given. A spike of fever to 38°C occurred on the day that the catheter was removed, but the site was not tender or inflamed. A myelogram obtained after injection of iophendylate showed spondylolistheses and posterior disc protrusions in the lumbar and cervical spine. Her condition improved with bedrest alone, and two months later her right hip joint was also replaced. Prophylaxis with flucloxacillin was begun preoperatively and continued for two weeks. She was discharged for convalescence.

On admission in February 1981 she looked ill and had a temperature of 37·5°C (table I). A drill biopsy of the L2/3 disc released 10 ml pus under pressure, but no organisms could be seen in Gram stained smears. This procedure was followed by clinical deterioration, so empirical treatment was started with oral flucloxacillin and fusidic acid; this was stopped after three days when a Gram negative coccobacillus subsequently identified as *H aphrophilus* was isolated from the pus. The same organism was grown on subculture after 17 days' incubation from one of 16 blood culture bottles. Before full identification and results of sensitivity tests were available her condition