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SHORT REPORTS

Intravenous infusion of frusemide as treatment for ascites in malignant disease

Continuous intravenous infusion of frusemide is useful in the management of renal failure and congestive cardiac failure.^{1,2} We report on an adaptation of the technique for the rapid relief of patients with tense ascites associated with malignant disease.

Case reports

Case 1—A 66 year old woman with a serous papillary cystadenocarcinoma of the ovary without liver metastases presented with ascites that yielded positive results on cytological examination. Her condition failed to improve despite chemotherapy with cisplatin, chlorambucil, and cyclophosphamide 0.75 mg daily with potassium. Ascites continued to accumulate over three weeks, causing abdominal distension, dyspnoea, and weight gain of 5 kg. She received spironolactone 100 mg twice daily and frusemide 100 mg given as an intravenous infusion over 24 hours in a total volume of 48 ml physiological saline; diuresis of 2.84 l occurred during the infusion, and she lost 7.7 kg in weight over the next 10 days.

Case 2—A 42 year old woman with carcinoma of the breast, liver metastases, and hypoalbuminaemia (27 g/l, normal range >30 g/l), did not respond to cytotoxic treatment and had tense ascites. The fluid had a protein content of 7 g/l and yielded a negative result on cytological examination. After one week's treatment with frusemide 120 mg daily by mouth and spironolactone 100 mg daily there was no reduction of ascites. Frusemide 100 mg in 500 ml physiological saline was then infused intravenously over 24 hours and produced a diuresis of 2700 ml, weight loss of 1.8 kg, a decrease in abdominal girth of 4.5 cm, and complete resolution of the signs and symptoms of ascites. Ascites had not returned at the time of her death six weeks later.

Case 3—A 35 year old woman with hepatic metastases from carcinoma of the breast and deranged liver function (albumin concentration 25 g/l) presented with tense ascites. Frusemide 100 mg daily and spironolactone 100 mg daily gave no relief after 48 hours. Frusemide 100 mg in 100 ml physiological saline was infused intravenously by a syringe pump at a rate of 5 ml/h. By 16 hours she had achieved a diuresis of 1060 ml, weight loss of 1.9 kg, and a reduction in abdominal girth of 2 cm. She was discharged taking frusemide 40 mg and spironolactone 100 mg daily by mouth; 19 days after the infusion her total reduction in girth was 11 cm. The primary tumour did not respond subsequently to chemotherapy, but ascites did not recur.

Case 4—A 61 year old woman with carcinoma of the breast and hepatic

metastases had ascites that yielded a negative result on cytological examination. Paracentesis of 3 l had been followed by deterioration of liver function (albumin concentration 29 g/l). The ascites reaccumulated and was unresponsive to oral spironolactone 200 mg and frusemide 80 mg daily. Frusemide 100 mg in 500 ml physiological saline was infused intravenously over 24 hours and led to a diuresis of 1600 ml, weight loss of 1.4 kg, and reduction in abdominal girth of 5.5 cm. The infusion was repeated 48 hours later with complete clinical resolution of ascites.

Comment

These four patients with intra-abdominal malignancy sustained immediate relief of ascites after the intravenous infusion of frusemide. The major reductions in symptoms and girth measurements were associated with a fairly small diuresis, suggesting a redistribution of body fluids as well as an absolute loss. The presence or absence of hepatic dysfunction did not affect outcome. The procedure was well tolerated, and there were no appreciable electrolyte disturbances, probably because of the small dose of frusemide given in only a short time by this technique.³ It is more logical to minimise the volume of saline given by infusing more concentrated frusemide solutions with the aid of an electric pump, as was done in cases 1 and 3. The procedure was free of the hazards of paracentesis and more effective than giving an oral diuretic. It offers a useful treatment for this distressing complication of malignant disease.

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