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Bleeding from gestational trophoblastic neoplasia: embolotherapy efficacy and tumour response to chemotherapy

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AIM: To evaluate retrospectively the impact of selective arterial embolisation (SAE) on the prognosis of patients with gestational trophoblastic neoplasia (GTN).

MATERIALS AND METHODS: A retrospective analysis of the records of all patients with GTN between January 2005 and January 2015 was performed. Forty-one patients (mean age, 28.9 ± 7.6 years) with massive vaginal haemorrhage from GTN (including 27 cases of choriocarcinoma and 14 cases of invasive mole) were treated with SAE. The complications, control of haemorrhage, and outcome of chemotherapy were reviewed retrospectively.

RESULTS: SAE successfully controlled the haemorrhage for 38 patients (92.7%). All patients with successful SAE received systemic chemotherapy without recurrent massive bleeding during the period of chemotherapy. The average number of chemotherapy cycles was 9.8 for every patient. Complete remission (CR) was achieved in 34 patients (89.5%), two patients had partial remission, and two patients died. Two patients with CR required repeated embolisation for recurrence of massive bleeding 30 and 47 months after the first embolisation procedure due to uterine arteriovenous malformation (AVM).

CONCLUSIONS: SAE can effectively control haemorrhage from GTN and these patients had good response to systemic chemotherapy following successful SAE. Uterine bleeding may recur due to uterine AVMs, even following complete embolisation and CR of GTN.

Introduction

Gestational trophoblastic neoplasia (GTN) has been recognised as the most curable gynaecological malignancy, as it is sensitive to many chemotherapeutic agents[1,2]; however, GTN is highly vascular and is associated with massive haemorrhage.[3,4] Bleeding from GTN may be very difficult to control, because of the proliferation of trophoblastic tissue and its invasion of the endometrium and myometrium leads to the development of many small vessels. Selective arterial embolisation (SAE) is widely used for the control of life-threatening haemorrhage[5–7]; however, will embolisation of a tumour-feeding artery affect subsequent systemic chemotherapy? The aim of the present study was to evaluate the efficacy of SAE to control bleeding and the impact of SAE on the tumour response to chemotherapy.

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Materials and methods

This retrospective study did not require institutional review board approval. A retrospective analysis of the records of all patients with GTN between January 2005 and January 2014 was performed. Forty-one patients (mean age, 28.9 ± 7.6 years) with massive vaginal haemorrhage from malignant GTN (including 27 cases of choriocarcinoma and 14 cases of invasive mole) were treated with SAE.

Embolisation

Embolisation procedures were performed by an interventional radiologist in the interventional radiology suite. Informed consent was obtained before the embolisation procedure. With the patient under local anaesthesia, angiography was performed via the unilateral femoral artery approach using a 5-F vascular sheath (Cordis Corporation, Europa N.V., Netherlands). A 5-F pigtail catheter was used to obtain a non-selective pelvic arteriogram to outline the main blood supply to the malignant GTN. A Roberts uterine catheter (Beacon Tip Torcon NB Advantage Catheter COOK, Bloomington, IN USA) or a Cobra catheter (TERUMO CORPORATION, TOKYO, JAPAN or Cook, Bloomington, IN USA) was then used to select each uterine artery. Microcatheters (2.7/2.9 F Progreat, Terumo) were used when Roberts uterine catheters or Cobra catheters could not be advanced into the distal artery. Embolisation was performed using coils (Cook) and gelatin sponge particles (Gelfoam, HangZhou Alicon Pharm, HangZhou, China) or pledgets (gelfoam cut into small 1–2 mm pieces) as embolic agents. No residual opacification of tumours after the procedure was defined as a technically successful embolisation. All patients were closely monitored after embolisation and were evaluated for procedure-related complications.

Outcomes

Data on the control of haemorrhage, chemotherapy regimen, and treatment response were obtained retrospectively from the clinical notes. Complications of SAE, such as pain, infection, groin haematoma, or uterine necrosis, were also documented.

Results

The mean age of the patients was 28.9 ± 7.6 years. Sixteen patients (39%) started their treatment at Peking Union Medical College Hospital, whereas the other 25 patients (61%) were transferred from other hospitals. The diagnosis of GTN was confirmed by histopathological examination in 33 cases. Eight cases without histological evidence were diagnosed postpartum because of metastases associated with an elevated human chorionic gonadotropin (hCG) level. Based on the International Federation of Gynecology and Obstetrics (FIGO) staging and scoring system,[8] three patients (7.3%) were diagnosed as stage I; six patients (14.6%) were diagnosed as stage II; 22 patients (53.7%) were diagnosed as stage III; and 10 patients (24.4%) were diagnosed as stage IV. The mean score was 7.5 ± 3.3.

Twenty-three patients had received chemotherapy before massive vaginal haemorrhage. The mean total blood loss was estimated to be 850 ml. The mean haemoglobin count of these patients was 73.2 ± 12.7 g/l before SAE, and 34 patients had received a blood transfusion before SAE.

Angiography showed gross enlargement of the uterus with dilated uterine arteries (Fig 1). Arteriovenous communication in the tumour nidus and early venous drainage were obvious in 31 patients. Angiography showed contrast medium extravasation in the uterine cavity in eight patients. All patients underwent bilateral uterine artery embolisation. Tumours were supplied by branches of the internal iliac artery in addition to the uterine artery in nine patients, and these arteries were also embolised. In eight procedures, coils were used to embolise the large fistula and then gelatin sponge was used to embolise the entire uterus. Gelatin sponge only was used in the other procedure.

The technical success rate of embolisation was 100%. Bleeding was controlled in 27 patients immediately after SAE. Bleeding was markedly reduced in 11 patients immediately after SAE and was successfully controlled within 1 week after SAE. Hysterectomy was performed in three failed cases, and uterine perforations were found during hysterectomy. The overall clinical success rate for controlling the haemorrhage after SAE was 92. 7%.

Twelve patients (29%) had post-embolisation syndrome with pelvic pain and/or low fever. The pelvic pain required analgesia, and the low fever resolved spontaneously. No other complication occurred.

Thirty-eight patients with successful SAE received systemic chemotherapy. The adopted chemotherapy regimens varied in type, dose, and scheduling and were given to the patients based on prognostic scores and clinical stage. Chemotherapy regimens containing 5-fluorouracil (5-FU) were used to treat 27 patients [5-FU and actinomycin D (Act-D) or vincristine (VCR)], and a regimen of etoposide, methotrexate, dactinomycin (EMA) with cyclophosphamide and vincristine (CO), or alternating EMA with etoposide and cisplatin (EP), was used to treat 11 patients. The cycles of the chemotherapy for each patient ranged from 6 to 18 weeks, and averaged 9.8 weeks. Embolisation controlled the bleeding in 38 patients without recurrent massive bleeding during the period of chemotherapy.

Complete remission (CR) was achieved in 34 patients (89.5%). Two patients had partial remission (PR) and transferred to other hospitals for further therapy. Two patients died due to cerebral haemorrhage and lung infection, respectively.

Colour Doppler ultrasound of the uterus was performed in 34 patients with CR at the end of chemotherapy. In five patients, arteriovenous malformations (AVMs) were detected, and these patients had no further therapy because they had no recurrence of bleeding at the end of chemotherapy.

Follow-up was provided to 34 patients, and two patients were lost to follow-up. The median follow-up time was 32 months (range, 6–96 months). No patients had tumour recurrence during the follow-up period. Two patients

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