CASE REPORT

Septic abortion presenting as a right lower trapezius abscess secondary to *Bacteroides fragilis* bacteraemia

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SUMMARY

A 43-year-old Japanese woman was evaluated in the outpatient department for right shoulder pain and fever, which began 5 days earlier. MRI of the right shoulder revealed a high-intensity area deep in the right trapezius muscle. Aspiration revealed purulent fluid, and Gram staining of the fluid showed Gram-negative bacilli. The patient was also found to be profoundly anaemic and to have a positive urine pregnancy test. On admission, we initiated intravenous ampicillin–sulbactam and aztreonam. She underwent dilatation and curettage for septic abortion and surgical drainage of the right shoulder abscess. *Bacteroides fragilis* was isolated from the blood, uterine aspiration and abscess samples. On hospital day 4, a whole-body CT scan revealed no other abscesses, and ampicillin–sulbactam was continued for 28 days. The patient was discharged on hospital day 29. Gram staining is an important tool for evaluating infectious aetiologies.

BACKGROUND

Septic abortion is mainly reported in developing countries and is often related to illegal abortion.¹ In Japan, the incidence of septic abortion is unknown, but it is rare. Occasionally, septic abortion can cause disseminated intravascular coagulation and intrapelvic abscesses. In culture-positive patients, the main organisms involved are *Escherichia coli*, *Staphylococcus aureus* and *Peptostreptococcus* spp.¹ In this study, we describe a case of septic abortion in a patient with a right shoulder abscess secondary to *Bacteroides fragilis* infection.

CASE PRESENTATION

A 43-year-old previously healthy Japanese woman was evaluated in the outpatient department for fever and right shoulder pain that developed 5 days earlier. Five days before the hospital visit, she came to the emergency department at our hospital and complained of fever and right shoulder pain. Loxoprofen was prescribed, but she did not experience any pain relief. She was evaluated twice by another orthopedist 3 days and 2 days before the visit, and the radiograph of the right shoulder did not reveal any remarkable findings. She received two steroid injections in the right shoulder joint. Her pain did not improve; therefore, MRI scan was obtained. As the MRI finding indicated an abscess or malignancy, the patient was referred to our hospital. She had undergone a recent

annual health check with no faecal occult blood. Her medical history was unremarkable, and she took no medications, including over-the-counter medications. She lived with her husband and two children. She had unprotected sexual intercourse with her husband in the previous 2 months. Her menstrual cycle was 28–30 days, and her period was mostly regular, but she had metrorrhagia 1 month before the hospital visit. She never smoked cigarettes, and she drank alcohol occasionally. She denied any illegal drug use. Laboratory data obtained on admission revealed a white cell count of $27.3 \times 10^9/\mu\text{L}$ (normal range: $3.5\text{--}9.7 \times 10^9/\text{L}$), haemoglobin level of 4.8 g/dL (normal range: 11.2–15.2 g/dL), platelet count of $640 \times 10^9/\text{L}$ (normal range: $140\text{--}379 \times 10^9/\text{L}$) and serum C reactive protein of 19.0 mg/dL (normal range: 0.03–0.3 mg/dL). Liver, renal and electrolyte levels were unremarkable.

INVESTIGATIONS

The patient's general appearance was distressed. Vital signs were as follows: blood pressure, 107/73 mm Hg; pulse rate, 111/min; temperature, 37.1°C; respiratory rate, 20 breaths/min and SpO₂ level, 98% while breathing on ambient air. On physical examination, her face and conjunctivae were pale. She had a grade II/VI systolic murmur. The right trapezius muscle was swollen and warm but not erythematous. The range of motion of the right shoulder was limited due to pain. The remainder of the examination revealed unremarkable findings. The radiograph of the right shoulder joint revealed no fracture, and the MRI scan of the right shoulder demonstrated fluid deep in the right trapezius with a small amount of inflammation in the articular capsule (figures 1–3). We aspirated the fluid under ultrasonic guidance, and the aspirated fluid was foul-smelling purulent fluid. Gram staining of the aspirate was performed, and results showed large and small Gram-negative bacilli (figure 4). As Gram-negative bacilli are atypical as a muscle abscess pathogen and because the patient had profound anaemia and a recent history of sexual intercourse, we performed a urine pregnancy test; the result of the test was positive. We consulted a gynaecologist, and the gynaecologist found the fetus had no heartbeat on transvaginal ultrasonography. We diagnosed the patient as having septic abortion and right lower trapezius muscle abscess secondary to haematological seeding.

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Figure 1 MRI (coronal section, T1-weighted imaging) reveals a low-intensity area deep to right trapezius muscle.

TREATMENT

On hospital day 1, the patient was started on empirical therapy with ampicillin–sulbactam and aztreonam, recommended by an infectologist. On the same day, she received dilatation and curettage and underwent surgical drainage of the right shoulder abscess. On hospital days 1 and 2, a total of 6 units of red blood cells were transfused. On hospital day 3, results of the blood, abscess, intravaginal clot and intrauterine aspirate cultures were positive for Gram-negative bacilli. On hospital day 4, *B. fragilis* was speciated from the blood, intrauterine aspirate and subtrapezial abscess. The pathological report of intrauterine tissue showed chorionic tissue, and there was no evidence of malignancy.

OUTCOME AND FOLLOW-UP

On hospital day 4, a whole-body CT scan revealed no other abscesses. She was afebrile, and antimicrobial therapy was

Figure 2 MRI (coronal section, short T1 inversion recovery imaging) reveals an area of high intensity deep to right trapezius muscle.

Figure 3 MRI (coronal section, short T1 inversion recovery imaging) reveals an area of high intensity deep to right trapezius muscle.

de-escalated to ampicillin–sulbactam according to susceptibilities and continued for a total of 28 days. The range of motion of the right shoulder joint improved. She was discharged from the hospital on day 29. Her anaemia improved, and no other laboratory abnormality was shown on discharge. One month following discharge, she was seen by a gynaecologist, and no significant issue was observed.

DISCUSSION

The incidence of septic abortion in Japan is unclear, but the incidence varies greatly between developing and developed countries. The difference in incidence is likely due to available literature on the topic, awareness about the facilities that perform abortion, current legislation and the socio-economic status of the population. According to some reports, the incidence of septic abortion is between 3.88% and 6.78%.^{1 2} The most common symptoms are abdominal pain (85%), vaginal bleeding (69%) and fever (57%). The most common complications are peritonitis, pelvic abscesses and renal failure. Extrapelvic abscesses are a rare complication. In culture-positive patients, *E. coli* is isolated in most patients and followed by *S. aureus*.¹ Anaerobes involving

Figure 4 Gram stain of purulent fluid shows polymorphonuclear cells and Gram-negative bacilli.

B. fragilis are isolated from cervicovaginal discharge, and they account for approximately 7% of the discharge.³ Although infrequent, *B. fragilis* is present in the normal vaginal microflora, especially in the late stage of the menstrual period, and it occasionally causes bacterial vaginosis in women of childbearing age.^{4,5} *B. fragilis* accounts for 40% of anaerobic bacteraemia, and the mortality is high at approximately 30%; however, sepsis cases are attributable to obstetric and gynaecological origins in only 1%–4% of patients.^{6,7} The primary treatment is early curettage to remove infected and devitalised tissue, even in the case of continued fetal heart tones. In our case, because the patient had no abdominal pain and the vaginal bleeding was initially thought to be menstrual bleeding, it was difficult to assume septic abortion on presentation. Additionally, the presence of foul-smelling purulent fluid and the predominance of Gram-negative bacilli on Gram staining prompted us to look for a primary focus of infection. However, *B. fragilis* can cause infections with obstetric and gynaecological origin. In our patient, if we had not

performed Gram staining, we would have chosen antimicrobial coverage for an assumed Gram-positive cocci infection. Gram staining provides useful information in the antimicrobial selection for empirical antibiotic treatment. When a rare organism is detected, it is important for physicians to evaluate the patient for other infectious causes. When physicians diagnose abscesses in atypical parts of the body, they should determine the primary focus of infection.

Contributors YY took care of the patient and drafted the manuscript. AS contributed to the final approval of the manuscript.

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Learning points

- ▶ Gram staining provides useful information in the antimicrobial selection for empirical antibiotic treatment.
- ▶ When a rare organism is detected, it is important for physicians to evaluate the patient for other infectious causes.
- ▶ When physicians diagnose abscesses in atypical parts of the body, they should determine the primary focus of infection.

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