

Pyogenic Arthritis of the Hip Due to Campylobacter Fetus

- A case report -

Chang-Dong Han, Jin Woo Lee and Yunsop Chong¹

Septic arthritis of the hip caused by Campylobacter fetus subsp. fetus is very rare. The author is isolated C. fetus subsp. fetus from a specimen of the left hip.

The patient was a 53-year old man with a history of heavy drinking, diabetes, and chronic hepatitis, and had been suffering from avascular necrosis of both femoral heads. It was considered that the organism invaded already damaged tissue of the joint. The patient was treated with intravenous antibiotics and later received successful total hip replacement.

Key Words : Pyogenic, hip, Campylobacter fetus

Campylobacter is gram negative, curved rod (Pernner 1988). Campylobacter fetus is classified into Campylobacter fetus subsp. fetus and Campylobacter fetus subsp. Venerealis; of those human infection of Campylobacter fetus subsp. fetus are rare. Generally, infections of this organism present as a clinical manifestation of sepsis (Toala et al. 1970) in patients with serious underlying disease; however, meningitis (Collins et al. 1964), endocarditis (Dazu et al. 1976), peritonitis, salpingitis, abscess, and arthritis (Al Mohaya 1986; Joly et al. 1986; Katner and Arnold 1970; Kilo et al. 1965; King and Bronsky 1961) also occur rarely. Since infection of Campylobacter fetus was first reported in 1947, few instances have been reported. Septic arthritis due to this organism is also very rare and just 12 cases have been published in the world. These cases of arthritis occurred in the knee and ankle joints. Septic arthritis of the hip caused by Campylobacter fetus subsp. fetus was reported only as a delayed

infection after total hip arthroplasty (Joly et al. 1986). We report a case of septic arthritis of the hip that occurred with avascular necrosis of the femoral head in a patient who had had severe alcohol drinking history, diabetes, and chronic liver disease.

REPORT OF A CASE

A 53 year-old male patient, under Navy service, was admitted to Severance Hospital in April 1990 for the treatment of joint pain in both hips of 21 months duration. He had drunk alcohol (Soju) in the amount of 700 milliliters per day (40 proof) for 30 years and had smoked 1 pack per day for 20 years. He had no other medical history, and also had no contact with household animals or farm animals. He had fallen prior to development of joint pain in both hips 22 months ago. Since then he had been aware of discomfort in both hips; so, he visited a private clinic and was treated conservatively; however, the symptoms did not improve. In November 1989 the collapse of the femoral heads was observed in radiological evaluation, for which he declined to have the recommended operative treatment. Recently the pain in both hips became worse; so, he was admitted to Severance Hospital (Fig. 1).

Clinically he was chronically ill-looking. Physical

Received December 16, 1991

Accepted March 23, 1992

Departments of Orthopaedic Surgery and Clinical Pathology¹, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea

Address reprint requests to Dr. C-D Han, Department of Orthopaedic Surgery, Severance Hospital, Yonsei University College of Medicine, CPO Box 8044, Seoul, Korea, 120-752



Fig. 1. Anteroposterior roentgenogram of patient's hips on admission. The X-ray shows collapse of the femoral head and arthritic change on acetabular sides. Avascular necrosis of femoral heads (Ficat stage IV) was diagnosed.



Fig. 2. Anteroposterior roentgenogram of patient's right hip on the 12th hospital day. Tobramycin beads were inserted into the right hip joint.

examination hips caused moderate pain. His blood pressure was 140/100 mmHg; his pulse was 70 per minute and regular. His axillary temperature was 37.2°C. The motion in both hips was limited by pain in all directions, especially abduction and rotation. His face was moon-shaped, probably due to self-administration of oral steroids for the relief of joint pain in both hips. There was no tenderness around either hip, and he could walk with a cane. All other joints were normal as was the remainder of the physical examination.

Laboratory studies on admission revealed a hemoglobin concentration of 12 grams per microliter; the white blood cell count was 4100 with 70% polymorphonuclear leukocytes, 25% lymphocytes and 5% monocytes; platelet count was 88000 per microliter. The corrected erythrocyte sedimentation rate (Wintrobe) was 39 millimeters per hour. Urinalysis revealed glucose 2+. Blood chemical studies revealed aspartate aminotransferase (AST) of 16 international unit per liter; alanine aminotransferase (ALT) of 16 international unit per liter; alanine aminotransferase (ALT) was elevated at 81 international units per liter; alkaline phosphatase was elevated at 129 international units per liter; glucose was elevated at 214 milligrams per deciliter; triglyceride was elevated at 286 milligrams per deciliter. Total protein was 6.5 grams per deciliter, but albumin was decreased to 0.9 milligrams per deciliter. Prothrombin time and partial thrombin time

were within normal limits. On the fourth hospital day the liver scan revealed chronic liver disease, and viral marker of type B hepatitis was HBs antigen (-), anti-HBc antibody (+) and anti-HBs antibody (+). The VDRL test was negative. An electrocardiogram and chest posteroanterior view were normal.

The patient was found to have avascular necrosis of the femoral heads (right; Ficat stage IV, left; Ficat stage IV, Ficat 1985), diabetes and chronic liver disease. The diabetes was initially controlled by diet and later by an oral hypoglycemic agent. Treatment with total hip arthroplasty was planned, but on the tenth hospital day a high spiking fever developed. So, a blood culture and aspiration at the right hip joint were done. The blood culture was negative. The aspirated joint fluid was thick and turbid. The *Campylobacter fetus* subsp. *fetus* was isolated from aspirate. Sensitivity determination by disc method indicated sensitivity to ampicillin, ampicillin/sulbac-



Fig. 3. Postoperative one year anteroposterior roentgenogram of patient's hips. The implants were stable.

tam, cephalothin, cefotaxime, ceftizoxime, chloramphenicol, erythromycin, tetracycline, amikacin, gentamicin, and tobramycin. There was resistance to aztreonam, cefamandole, cefotetan, and cotrimoxazole. On the 12th hospital day arthrotomy, curettage and resection of femoral head on the right hip joint were done, and tobramycin beads were inserted into the right hip joint (Fig. 2). During this operation the joint fluid was taken, and a culture study was done. But it revealed negative for *Campylobacter fetus* subsp. *fetus*. From the 50th hospital day the intermittent high fever was normalized and the blood sugar was well controlled. On the 121st hospital day total hip arthroplasty on the right hip joint was done; no evidence of infection was observed and the culture study was negative. On the 163rd hospital day a total hip arthroplasty on the left hip was done. The patient was ambulated with bilateral crutches for 6 weeks postoperatively. Later he could walk normally without support and no signs of infection were found at 12 months follow-up. The patient received four grams of cefotaxime intravenously over 6 weeks and 4 grams of ceftizoxime intravenously over 3 weeks. Preoperative Harris hip scores (Harris 1969) were 33.9 points for the right and 33.9 points for the left. Postoperative one year Harris hip scores were 93.9 points for the right and 93.9 points for the left and the implants were stable (Fig. 3).

DISCUSSION

Campylobacter fetus subsp. *fetus* is a gram negative, curved or spirillar rod (Morris and Patton 1985). It has been called a *Vibrio fetus*, *Vibrio fetus* var *intestinalis*, *Campylobacter fetus* subsp. *intestinalis* in the past; so, it was easily confused with other *Campylobacter* species (Penner 1988). Infection of this organism are very rare. This organism is difficult to culture in vitro; so, it is possible such infections may be more frequent than reported. *Campylobacter fetus* subsp. *fetus* is well known to the veterinarian as a cause of abortion in animals. It is not normal flora in man (Penner 1988). The source of this organism is considered to be animals. It has been reported that most of the patients infected with this organism had severe underlying diseases such as liver cirrhosis, malignant disease, and cardiovascular disease. Reported cases in Korea include 13 sepsis cases (Chong et al. 1979; Chong and Lee 1970), 3 endocarditis cases, 3 peritonitis cases, one liver abscess case, one brain abscess case, and one acute cholecystitis case. It appears that this case is the first case of septic arthritis in Korea. Previously, 12 cases of septic arthritis due to *Campylobacter fetus* have been published in the world literature. Those septic arthritis occurred in the knee and ankle joints. Septic arthritis of the hip due to this organism occurred only as a delayed infection after total hip arthroplasty (Al Mohaya 1986; Joly et al. 1986; Kathner and Arnold 1970; Kilo et al. 1965; King and Bronsky 1961). Febrile monoarthritis occurred in 83% of the reported cases, and an underlying diseased joint was involved in 7 of those cases (Joly et al. 1986). This monoarticular septic arthritis of the hip occurred in a previously diseased joint, avascular necrosis of the femoral head. This patient had serious underlying diseases such as diabetes and chronic liver disease. And also he had severe alcohol drinking history. Probably these underlying conditions contributed to the development of avascular necrosis of the femoral head. This case is the first case reported of infection by *Campylobacter fetus* subsp. *fetus* without large implant or previous operation history.

In most reported cases of arthritis by this organism there are known to be radiographically little signs of destructiveness. With treatment, there is usually complete recovery without sequelae and this organism is sensitive to several antibiotics. The recommended antibiotics are chloramphenicol, amino-

glycosides and tetracycline (Rettig 1979). In this case, the organism was sensitive to ampicillin, cephalothin, cefotaxime, and ceftizoxime. And therefore cefotaxime and ceftizoxime were given intravenously, and tobramycin beads were inserted into the joint. Through the above procedures, the infection was eliminated and then total hip arthroplasty was successfully performed.

SUMMARY

The authors describe septic arthritis of the hip due to *Campylobacter fetus* that was superimposed on avascular necrosis of femoral head. This 53 year old male patient was an alcoholic and a diabetic, and had chronic liver disease. This organism was isolated from aspirated fluid of the right hip joint. The patient was treated with an intravenous injection of cefotaxime and ceftizoxime according to sensitivity of the organism, and then total hip arthroplasty was performed successfully.

REFERENCES

- Al Mohaya SA: *Campylobacter* arthritis. *JAPI* 34: 885, 1986
- Chong T, Lee SY: *Vibrio fetus* infection: Isolation from a subacute bacterial endocarditis case. *Yonsei Med J* 11: 126, 1970
- Collins HS, Blevins A, Bentner E: Protracted bacteremia and meningitis due to *Vibrio fetus*. *Arch Intern Med* 113: 361, 1964
- Dazu VJ, Schur RH, Weistein L: *Vibrio fetus* endocarditis in a patient with systemic lupus erythematosus. *Am J Med Sci* 272: 331, 1976
- Ficat RP: Idiopathic bone necrosis of the femoral head. Early diagnosis & treatment. *J Bone & Joint Surg* 67 (B): 3-9, 1985
- Harris WH: Traumatic arthritis of the hip after dislocation and acetabular fractures: Treatment by mold arthroplasty. An end result study using a new method of result evaluation. *J Bone & Joint Surg* 51 (A): 737-755, 1969
- Joly P, Boissonnas A, Fournier R, Khalifa P, Vedel G, Cremer GA, Languipin A, Kerboull M, Laroche F: Septic arthritis caused by *Campylobacter fetus*. *Rev Rheu Mal Osteoartic* 53 (4): 223-6, 1986
- Katner LJ, Arnold WD: Septic arthritis due to *Vibrio fetus*. Report of a case. *J Bone and Joint Surg* 52-A: 161, 1970
- Kilo Hageman PO, Marzi J: Septic arthritis and bacteremia due to *Vibrio fetus*. Report of an unusual case and review of literature. *Am J Med* 38: 962, 1965
- King S, Bronsky D: *Vibrio fetus* isolated from a patient with localized septic arthritis. *JAMA* 175: 1045, 1961
- Morris GK, Patton CM: *Campylobacter*. *Manual of clinical microbiology*, 4th ed: Edited by Lennette EH, Balows A, Hausser WJ Jr, Shadowy HJ, Am. Sco. Microbiol, Washington D.C., 1985, 302
- Penner JC: The genus *Campylobacter*: A decade of progress. *Clin Microbiol Rev* 1: 157, 1988
- Rettig PJ: *Campylobacter* infections in human beings. *J Pediatr* 94: 855, 1979
- Toala P, McDonald A, Kass EH: Septicemia caused by *Vibrio fetus*. *Arch Intern Med* 126: 306, 1970