Contents lists available at ScienceDirect

Asian Pacific Journal of Reproduction

Journal homepage: www.elsevier.com/locate/apjr

Document heading 10.1016/S2305-0500(13)60069-X

Mycoplasma hominis septic arthritis and common variable immunodeficiency in a postpartum patient: a case report

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ARTICLE INFO

Article history:
Received 8 March 2012
Received in revised form 12 March 2012
Accepted 15 May 2012
Available online 20 June 2012

Keywords:
Mycoplasma hominis
Septic arthritis
Immunodeficiency
Postpartum

ABSTRACT

Postpartum patients with an unrecognized primary immunodeficiency disease, including common variable immunodeficiency, demonstrate increased susceptibility to *Mycoplasma hominis* infection. Diagnosis, treatment, and clinical course in a postpartum patient presenting with joint pain and episodic fever are presented.

1. Introduction

Mycoplasma hominis (*M. hominis*) is a colonizing microorganism of the lower urogenital tract in up to 50% of pregnant women[1]. Asymptomatic in most healthy adults, it has been identified as a causative agent for febrile abortion, postpartum endometritis, and neonatal sepsis[1,2]. Extrapelvic infection due to *M. hominis* has also been described, including peritonitis, brain abscess, and septic arthritis[2]. Individuals with primary immunodeficiency disorders such as common variable immunodeficiency (CVID) demonstrate increased susceptibility to local and extrapelvic infections due to *M. hominis*[3].

Presented is a case of documented *M. hominis* septic arthritis and concomitant diagnosis of CVID in a postpartum patient. Diagnostic and therapeutic considerations are reviewed.

2. Case report

A 27 year old gravida 2 para 2 was admitted eight weeks after repeat c-section for worsening symptoms of right great toe pain, bilateral hip pain, and new onset of Pfannenstiel incision site drainage. A workup for similar joint complaints two weeks previously revealed negative blood, urine, and joint aspirate cultures. The patient had been prescribed oral cephalexin and indomethacin at that time.

Her past medical history was significant for asthma, recurrent upper and lower respiratory infections since childhood, recurrent lower urinary tract infections, acute proctitis, and peripartum lower respiratory infections with both pregnancies.

Perioperative penicillin G and ampicillin-sulbactam were given at the repeat c-section for preterm premature rupture of membranes and onset of labor at 36 weeks gestation.

On admission, her temperature was 38.3 °C. Physical examination revealed redness, swelling and extreme tenderness of the right first metatarsophalangeal (MTP) joint, tenderness of the left and right trochanteric bursae, and serous drainage from the Pfannenstiel incision site. A minimally tender uterus with nontender cervix and adnexae was noted. The remainder of the examination was unremarkable. There was no adenopathy or hepatosplenomegaly.

Laboratory studies showed a total white blood cell count of 10 900/mm^3, hemoglobin 10.7 g/dL, platelets 483 000/mm^3,

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1+ urine protein, erythrocyte sedimentation rate 25 mm/h, C-reactive protein 10.39 mg/dL, and a normal complete metabolic profile. X-ray and MRI studies of the right foot were consistent with effusion and osteomyelitis of the right first MTP joint. CT of the abdomen and hips identified a 2.5 cm subcutaneous effusion at the Pfannenstiel incision site and bilateral hip effusions (left greater than right). Bilateral lower extremity venous Doppler studies were negative.

Fluid aspirated from the Pfannenstiel incision site and the left hip and right first MTP joints were sent for culture. Organisms were not seen on gram stain and cultures were negative. Progressive left hip pain and right great toe redness and swelling necessitated incision and drainage of the left hip and right first MTP joints. *M. hominis* was subsequently isolated on culture from the left hip aspirate. Intravenous doxycycline was begun. Blood and urine cultures remained negative.

Given the patient's history of recurrent upper and lower respiratory illnesses, immunologic testing was also performed. All immunoglobulin subclasses were low and diagnostic for CVID: IgG less than 60 mg/mL, IgA less than 15 mg/mL, IgM less than 13 mg/mL, and IgE less than 1.5 IU/mL. Serum C3, C4, and C1 levels were normal and C2 was slightly elevated at 51 (25-47). ANA, HIV, and rheumatoid factor were all negative and rubella was non-immune. Immunotherapy with IVIG (550 mg/kg/28 days) was initiated. Clinical improvement in fever and joint pain was subsequently noted. She was discharged on hospital day #9 on oral doxycycline for four weeks and monthly IVIG therapy. Joint sequelae are not evident after 36 months.

3. Discussion

CVID is the most prevalent type of primary immunodeficiency disorder. An impaired humoral immune system results in hypogammaglobulinemia of serum immunoglobulin subclasses IgG, IgM, and IgA. The incidence of CVID is 1:10 000 to 1:200 000 with a male to female ratio of 1:1. Diagnosis is based on identification of low or absent circulating serum immunoglobulins[4,5].

Specific immunologic testing is recommended in patients with a history of recurrent respiratory or urogenital infections or unexplained episodes of fever refractory to appropriate antibiotics. Immunologic testing should also be considered in cases of unidentified disseminated infections, including septic arthritis[3,6].

M. hominis septic arthritis is a rarely seen clinical entity. Unfamiliarity with its clinical presentation in the postpartum patient may result in a delay in diagnosis with subsequent long term joint morbidity. Signs and symptoms of septic arthritis due to *M. hominis* may include mono- or poly-joint swelling, pain, or redness, a milky effusion aspirate with negative organisms on routine culture, or episodic fever unresponsive to typical first line antibiotics[7].

Diagnosis of *M. hominis* infection may be delayed on routine laboratory testing. It is a slow growing organism that does not grow well on nonselective culture media. This bacterium also lacks a cell wall and may elude detection on gram stain. Culture media and polymerase chain reaction (PCR) testing specific for *M. hominis* is currently available[8].

Treatment of septic arthritis in CVID patients includes antibiotic therapy sensitive to *M. hominis* and infusion of serum immunoglobulins with intravenous immunoglobulin (IVIG) therapy. Favorable clinical response to *M. hominis* infection is reported with tetracyclines, clindamycin, and fluoroquinolones. This organism does not respond to treatment with penicillins, cephalosporins, macrolides, aminoglycosides, or sulfonamides[5]. The optimal duration for antibiotic use is not presently known. After initial clinical response with parenteral antibiotics, oral therapy is often continued for four or more weeks[7]. Monthly IVIG therapy is indicated for life.

Tetracyclines or fluoroquinolones are typically started once *M. hominis* infection is suspected or confirmed on laboratory testing. Clindamycin is preferred for breastfeeding patients. IVIG therapy is indicated and advised during pregnancy and lactation.

Appropriate testing and antibiotic selection for a postpartum patient presenting with episodic fever and joint pain will avoid delay in treatment for *M. hominis* septic arthritis. Immunologic testing should also be considered in order to identify and treat a concomitant primary immunodeficiency disorder.

Conflict of interest statement

We declare that we have no conflict of interest.

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