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اصول تنظیم قراردادها

آموزش مهارت‌های کاربردی در تدوین و چاپ مقاله
Muscle Abscess due to Salmonella Enterica

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Non typhoidal Salmonellae spp. causes clinical symptoms especially in neonates, infants, aged and immunocompromised patients. Hematogenous dissemination may occur in complicated cases whereas the formation of abscess is rare. A 61-year old woman presented to our hospital with pain and a mass in her left arm, without fever and leukocytosis. She was using methotrexate, corticosteroids and quinine for rheumatoid arthritis. She had a history of cervix cancer and was given radiotherapy and chemotherapy 3 years ago. Upon physical examination and magnetic resonance imaging, the mass was considered as an abscess and was surgically drained. Salmonella enterica spp. enterica was yielded in the culture of the drainage material. Ceftriaxon 2g/day was started intramuscularly and continued for 4 weeks. Salmonellosis is usually a self-limited disease, generally restricted to gastrointestinal tract and acquired following food poisoning. Management of Salmonella abscess requires a combination of antibiotherapy, surgical drainage and eradication of primary foci. 

Keywords: Salmonellosis Infections; Abscess; Arthritis, Rheumatoid

1. Introduction

Non-typhoidal Salmonellae spp. generally causes a self-limiting enterocolitis in immunocompetent individuals. Up to 5% of these patients develop secondary bacteremia. This microorganism can persist in the gastrointestinal tract after diarrheal illness 1. So-called primary non-typhoidal Salmonellae bacteremia, without associated diarrheea, occurs mainly in at risk groups such as neonates, infants, aged and immunocompromised patients due to malignancy, steroid use, HIV infection, chronic renal and liver diseases, diabetes or inherited immunodeficiencies. Hematogenous dissemination may occur in complicated cases whereas the formation of abscess is rare (1, 2).

2. Case Presentation

A 61-year old woman presented to our hospital with pain and a mass in her left arm. The patient’s medical history revealed that the mass appeared an additional 6 months ago, and reached the size of a grapefruit in the past two months. She had a history of cervix cancer and was given radiotherapy and chemotherapy 3 years ago, and she was using methotrexate 10 mg/week, prednisilon 5 mg/day and hydroxychloroquine 200 mg/day for rheumatoid arthritis for the past 8 years. She had no history of trauma, fever or gastrointestinal infection. Her physical examination was normal except for the mass about 10x12 cm in the middle left arm. Upon admission, the patient did not have fever, and her axillary body temperature was 36.8 °C. Laboratory analyses revealed white blood cell count of 7,000/mm³ (82% polymorphonuclear leukocytes), hemoglobin level of 10.8 g/dl, erythrocyte sedimentation rate (ESR) of 37 mm/hour, and C-reactive protein (CRP) level of 4.2 mg/dl. Her ESR was 28 mm/h and CRP level was 1.3 mg/dl during control visit for rheumatoid arthritis approximately three months before. Since the patient had a positive malignancy history, magnetic resonance imaging of the left arm was performed and the mass was considered as an abscess that was then surgically drained (Figure 1).

Salmonella enterica spp. enterica was yielded in the culture of the abscess drainage material. Automated system VITEK2 (bioMerieux, Marcy l’Etoile, France) - GN-N91 card was used for the identification of the microorganism and antibiogram testing. Isolates were found to be susceptible to ampicillin, ceftriaxone, and trimethoprim-sulfamethoxazole; and resistant to cefuroxime and ciprofloxacin. Gruber Widal test was positive at 1/20 titer for Salmonella parathypi BO. According to antibiotic susceptibility test results, parenteral (intramuscular) ceftriaxone at a dose of 2 g/day was initiated. At the end of 2 weeks, it was switched to oral cefixime treatment that lasted an additional 2 weeks completing a total of

Implication for health policy/practice/research/medical education: Salmonella infections can be seen in a variety of clinical symptoms. Muscle abscess is a rare form of these clinics which must be remembered in endemic regions.

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4 weeks of antibiotic therapy. At the end of the therapy, no clinical, laboratory and radiological pathology was detected.

Figure 1. The Images of Left Arm Abcess in Coronal (a) and Axial Planes (b)

3. Conclusions

Pyomyositis is the pyogenic infection of the skeletal muscles usually involving the lower, enteric fever, bacte-
remia, and chronic carriers (3, 4). In addition, Salmonel-
losis frequently causes infection limited to the gastroin-
testinal system after extremities, and rapidly progresses
to develop an abscess. It usually presents with high fever
and muscle pain (5). The most common cause of pyomyo-
sitis is Staphylococcus aureus (66-90 %), and Salmonella
spp. is among the pathogens for reported only in cases
series (6). Salmonellosis remains a major health problem,
especially in developing countries. Salmonella consists
of approximately 1700 serotypes, and each serotype may
cause gastroenteritis food poisonings, and generally is
a self-limiting disease. Bacteremia occurs in 5-45% of the
patients (7). It was reported that spread of microorgan-
isms with bacteremia may lead to complications such as
meningitis, brain abscess, septic arthritis, liver abscess,
parotid abscess and muscle abscess (3, 4, 7). Focal or met-
astatic salmonellosis represents 6% of non-typhi Salmo-
nella infections and occurs in risk groups and patients
with structural abnormalities, such as valvular disease,
aeurnysms or atherosclerosis, biliary or urinary tract ab-
normalities, bone abnormalities or prostheses (1, 6).

Soft tissue infections are rarely seen and consists 6-12
% of focal Salmonella infections. Management of Salmo-
nella abscess requires a combination of antiobotherapy,
surgical drainage and eradication of the primary foci (6).
Suppression of the immune system is a risk factor for ex-
traintestinal Salmonellosis. Sickle cell anemia, diabetes
mellitus, atherosclerosis, human immunodeficiency vi-
rus (HIV) infection, malignancy, chemotherapy, systemic
lupus erythematous and long term high dose steroid
use are reported risk factors for invasive salmonellosis
and bone-joint involvement (8-10). Salmonella is a well-
known cause of endovascular infections such as mycotic
aortic aneurysm in different anatomical regions. Athero-
sclerotic plaques containing a variety of phagocytic cells
are assumed to be preferable for Salmonella, having abil-
ity to live and reproduce in macrophages (10). It is consid-
ered in our patient that this muscle abscess occurred as
a result of infection in the atherosclerotic plaque during
transient bacteremia.

In our patient, because of the underlying diseases, the
antibiotic treatment was completed to 4 weeks with con-
secutive 3rd generation cephalosporins in order to
prevent recurrence despite surgical drainage of the
abscess. Reports of Salmonella isolates resistant to 3rd
generation cephalosporins directed to new treatment
options and quinolones were started to be preferred (8).
However, as seen in our patient, the occurrence of cipro-
floxacins resistance, suggests alternative antibiotics such
as carbapenems might come into prominence in the
next years. Increasing antimicrobial resistance to fluoro-
quinoionolones and extended spectrum cephalosporins
among clinical Salmonella isolates is becoming a serious
problem, especially in Asia. The majority of antibiotics
that demonstrate in vitro antimicrobial activity cannot
cure Salmonella infections due to their limited intracel-
lular penetration. Novel drugs with good both intracel-
ular and extracellular bacterial activity are urgently
needed (10). Tigecycline has been shown to achieve high
intracellular concentrations and exhibits a promising
survival outcome compared with traditional ceftriaxone
therapy in an animal model (11). In another animal study,
ertrapenem also was shown to be at least as effective as
ceftixivone (10). In the presence of conditions which sup-
press the immune system, low titers of positive serologi-
cal tests may be seen and efforts should be made to the
isolation of the agent. Salmonella infections should be
considered in the differential diagnosis in endemic areas
due to delayed or inappropriate treatments leading to se-
rious complications.

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Authors’ Contribution

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