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CLINICAL CASE REPORT

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Drug Fever Induced by Piperacillin/Tazobactam in a Scoliosis Patient

A Case Report

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Abstract: Drug fever is frequently underrecognized by clinicians despite its common occurrence. Fever induced by piperacillin/tazobactam has not been reported in scoliosis correction surgery.

Drug fever caused by piperacillin/tazobactam in a scoliosis patient was described.

A 36-year-old woman with adult scoliosis undergoing correction surgery was reported. She developed a fever after an intake of piperacillin/tazobactam for 3 days. Eosinophil count, erythrocyte sedimentation rate, and C-reactive proteins were increased in her blood examination. Thorough history, chest radiography, blood cultures, physical examination, and urinalysis revealed no evidences of fever. A drug fever is therefore considered. The fever lasted for 2 weeks and her body temperature come back to normal 4 days after piperacillin/tazobactam cessation.

Fever could be caused by piperacillin/tazobactam. The drug fever's diagnosis is easily confounded by a co-occurring infection. Therefore, it is crucial for clinicians to doubt drugs as a reason when no other origin of fever could be identified in a patient.

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Abbreviations: CRP = C-reactive protein, ESR = erythrocyte sedimentation rate.

INTRODUCTION

It is estimated that drugs cause approximately 15% of untoward effect in the hospitalized patients.[1,2] Among these, drug fever often occurs in approximately 5% of these patients.[3,4] Drug fever is diagnosed by revealing the temporality between fever onset and the initiation of drug treatment together with its disappearance after cessation of the drug.[5] Drug fever is a general condition that manifests with an often unclear presentation.[6] Therefore, it is crucial to doubt drugs as a reason of unknown origin fever for clinicians.[7] Fever induced by piperacillin/tazobactam has not been described in scoliosis correction surgery. Here, we showed a case of drug fever associated with piperacillin/tazobactam in a scoliosis patient.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the editor of this journal.

Case Report

A 36-year-old adult scoliosis woman underwent scoliosis correction surgery in November 2011. Her preoperative spine plain radiographs showed a thoracic scoliosis with a Cobb angle of 48°, a lumbar scoliosis with a Cobb angle of 55°, and a lumbar kyphosis with a Cobb Angle of 65° (Fig. 1). No spinal cord or canal abnormality was found by magnetic resonance imaging. Computed tomography revealed that the vertebra of lumbar 2 and 3 was wedge shaped (Fig. 2). Results from renal and abdominal ultrasound were unremarkable. A cardiological examination also revealed no evidence of cardiac disorders. Smith-Petersen osteotomy at L2 and L3 levels and a posterior correction and fusion at T7-L5 levels was performed using the Moss-SI spinal system (Johnson & Johnson, NJ). The total surgery time was approximately 5 hours with an estimated perioperative blood loss of 800 mL.Intraoperative spinal cord monitoring did not detect any injury to the spinal cord. Cobb angles of thoracic correction from 48° to 30° (correction rate 37.5%), lumbar correction from 55° to 31° (correction rate 43.6%) and lumbar kyphosis from 65° to 30° (correction rate 53.8%) were demonstrated by the postoperative plain x-ray film (Fig. 3).

Six days after the surgery, the incision was slightly red with leakage and swelling. Three days later, the amount of leakage reached approximately 100 mL. The wound was debrided and then covered with viable tissue. In addition, intravenous vancomycin was administered. Intravenous piperacillin/tazobactam was added after 4 days. The patient, however, began to develop a fever 3 days later (Fig. 4). Eosinophil count, erythrocyte sedimentation rate, and C-reactive protein level were increased (Figs. 5 and 6). Thorough history, chest radiography, blood cultures, physical examination, and urinalysis, however, revealed no evidences of fever. Finally, the diagnosis of drug fever was confirmed and all systemic antibiotics were stopped. The fever lasts for a total of 2 weeks while body temperature comes back to normal 4 days after piperacillin/tazobactam cessation.

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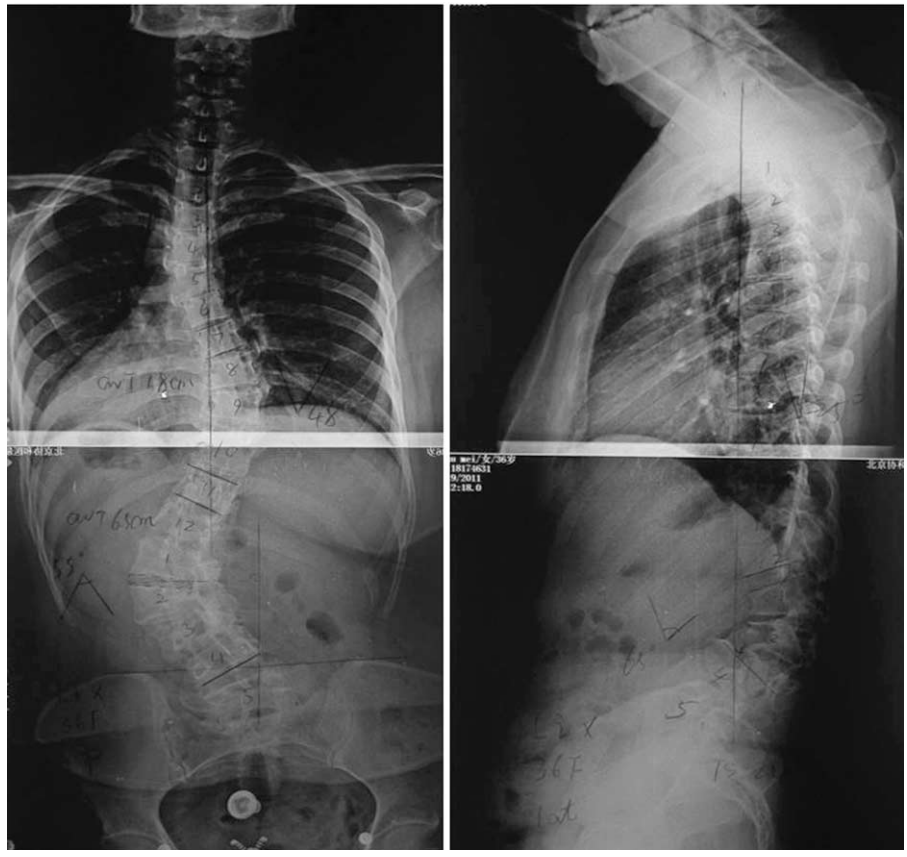

FIGURE 1. Preoperative standing anteroposterior and lateral radiographs.

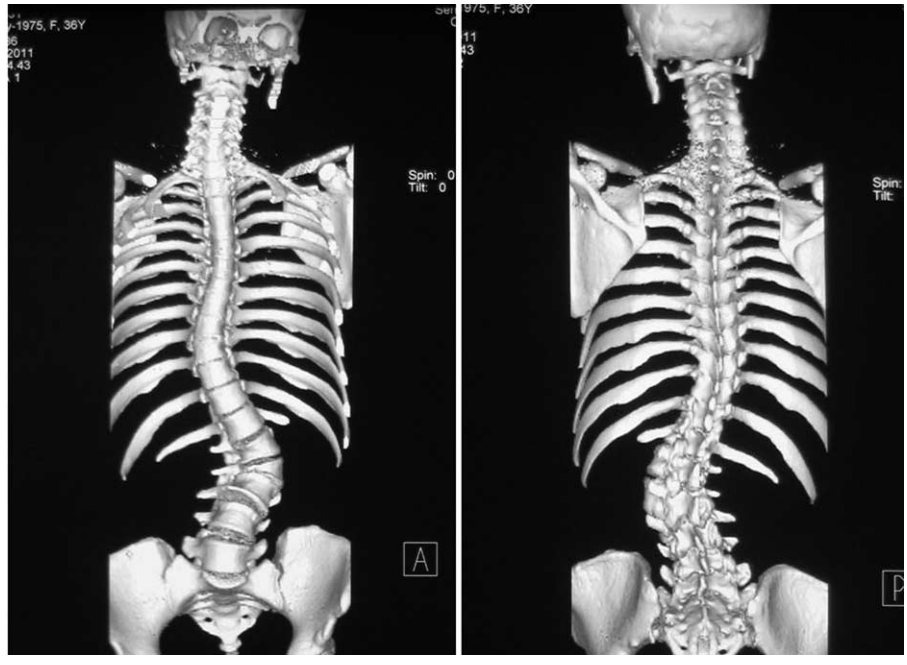

FIGURE 2. Computed tomography revealed a wedge-shaped vertebra of lumbar 2 and 3.

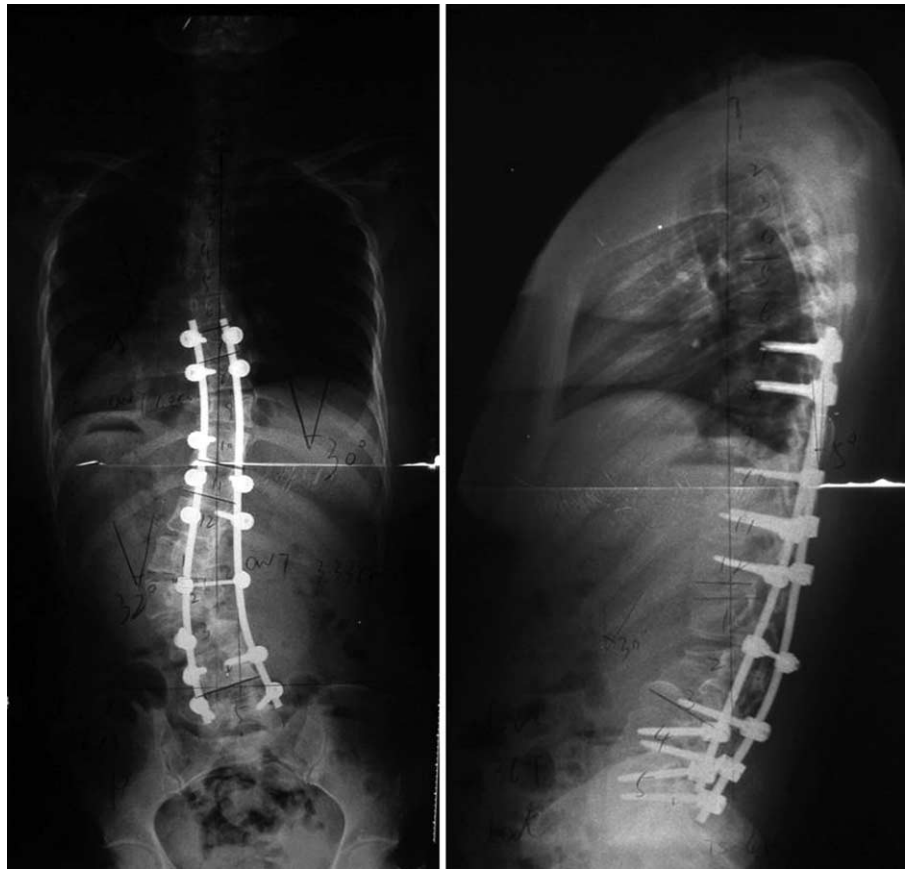

FIGURE 3. Standing anteroposterior and lateral radiographs of 4 days after operation.

She was asymptomatic and well balanced in both the sagittal and coronal planes with solid fusion in the 24th postoperative month. Both the patient and her family were satisfied with the results of the surgery.

DISCUSSION

In our case, fever developed 3 days after intravenous piperacillin/tazobactam administration and there is a strong temporal relationship between the cessation of piperacillin/tazobactam and the subsidence of fever. To the best of our knowledge, there have been only 2 detailed reports in the literature on an acute drug-induced central fever because of piperacillin/tazobactam.[8,9] Here, we present a case of drug fever associated with piperacillin/tazobactam in a scoliosis patient.

Despite its common occurrence, drug fever is frequently underrecognized, underreported, and misdiagnosed.[7] The diagnosis of drug fever is often made by exclusion, when no other cause of fever can be identified. In particular, its diagnosis could be difficult when it overlays with the course of an infection[10] and should only be made after scrutinizing clinical presentation, medication history, and laboratory results of the patient.[11] Our patient developed a fever 3 days after intravenous administration of piperacillin/tazobactam and gradually returned to normal within 4 days of cessation of the drug. Increases in eosinophil count, erythrocyte sedimentation rate,

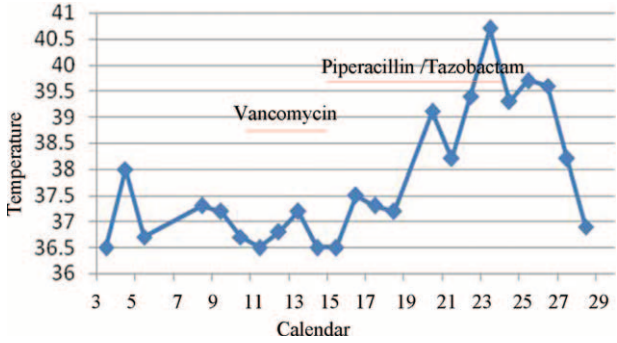

FIGURE 4. The development of fever.

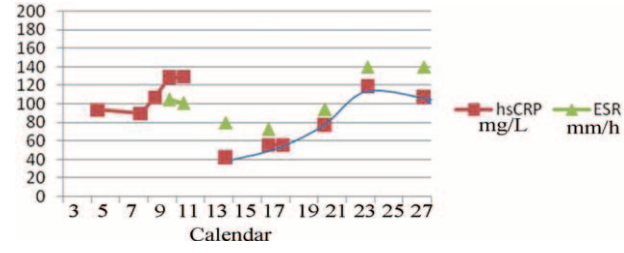

FIGURE 5. The development of erythrocyte sedimentation rate and C-reactive protein level.

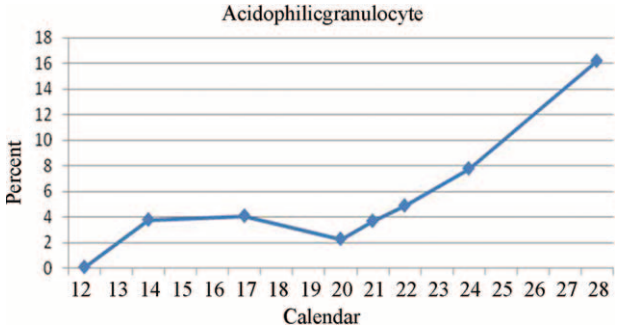

FIGURE 6. The development of eosinophil count.

and C-reactive protein levels were demonstrated. Other causes of fever were excluded through history, physical examination, and radiologic and laboratory investigations in the current case.

The mechanisms underlying drug fever include the formation of circulating immune complexes or cell-mediated immune responses.[1,8] Other mechanisms of drug fever have also been identified, including the drug's effects on thermoregulation, administration-related reactions, the drug's pharmacological action, idiosyncratic response, and hypersensitivity reactions; the latter is the most common mechanism of drug fever.[3,12]

In conclusion, the current case suggests that piperacillin/tazobactam could induce drug fever. The diagnosis of drug fever could be easily missed. When it overlaps with the course of an infection, drug fever may deceive the clinician into believing that the antimicrobial therapy is unsuccessful. Therefore, clinicians should suspect drugs as a cause when a fever of unknown origin develops.

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