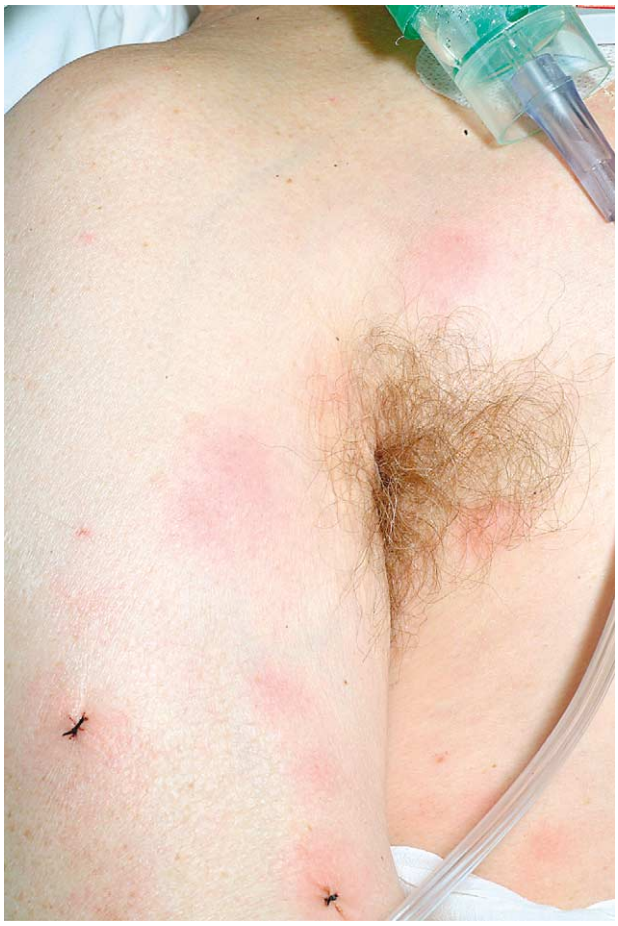

Figure 1 Erythematous nodular rash in patient with HIV who presents with a severe respiratory illness.

can be an important diagnostic clue. The use of an anti-pseudomonal agent at an early stage may avoid significant morbidity and mortality.

We suggest that patients who present with sepsis, subcutaneous nodules and apparently minor risk factors should have skin aspirates and biopsies, in addition to blood cultures, performed to increase diagnostic yield. This would appear to be most useful with blood culture-negative *Pseudomonas* sepsis.

Sincerely

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High dose of intrathecal netilmicin in the treatment of nosocomial *Acinetobacter baumannii* meningitis

Sir,

Meningitis caused by *Acinetobacter* spp. is rare and are mostly hospital acquired after neurosurgical procedures.[1,2]

The penetration of aminoglycosides to cerebrospinal fluid (CSF) is poor. There are several reports about intrathecal (IT) administration of

gentamicin but to the best of our knowledge there is only one report about IT netilmicin treatment.[3] The highest reported IT aminoglycoside dose is 100 mg amikacin.[4]

A 75-year-old, female patient was admitted to our hospital with complaints of difficulty in speaking and weakness on right side. She had a history of hypertension for 25 years. Cranial computed tomography (CT) revealed intracerebral haematoma and shift. Decompression and duraplasty was performed. She was normal during the 28 days after the operation, but at the end of this period respiratory distress developed and she was intubated. Clinical sepsis was diagnosed and empirical teicoplanin and imipenem/cilastatin were initiated by intravenous route (IV). Culture of blood, CSF and urine samples did not reveal any pathogen. Control cranial CT performed after 3 weeks of anti-biotherapy revealed hydrocephalus and ventriculo-peritoneal shunt was inserted.

Two days after operation her general status deteriorated, she developed fever (38.5 °C) and had vomiting. CSF protein was 52 mg/dl, glucose was 39 mg/dl (blood glucose: 97 mg/dl). Microscopic examination of CSF revealed 500 leukocytes/mm^3 (80% PNL) but no specific organism was seen in Gram-stain. Her WBC count was 10.300/mm^3 (87% PNL), creatinin level was 0.43 mg/dl. Since, she did not receive any antibiotic at that time, imipenem/ cilastatin 500 mg qid was reinitiated empirically. Two days later her shunt was removed and extra ventricular drainage was performed. CSF and shunt pump cultures yielded *Acinetobacter baumannii* which was sensitive to cefoperazon/sulbactam, intermediately resistant to netilmicin and cefepime, and resistant to piperacillin/tazobactam, aztreonam, ampicillin/sulbactam, ceftazidime, imipenem, meropenem, ciprofloxacin, gentamicin, amikacin by disc diffusion method. Imipenem/cilastatin was stopped and cefoperazone/sulbactam 3 g twice daily IV was initiated. On the 6th day of this therapy fever resolved. On the 10th day, CSF analysis revealed $>1000/mm^3$ leukocytes and culture still yielded *A. baumannii* but the strain was intermediate to netilmicin and resistant to all above mentioned agents. IV 400 mg$\times$2 netilmicin was added. The aim of the combination therapy with cefoperazone/sulbactam and netilmicin was to maintain a possible synergistic effect.[5] Since, the strain was intermediately resistant only to netilmicin and despite 6 days of IV cefoperazone/sulbactam+netilmicin treatment, microbiologic and clinical success was not achieved, IV netilmicin was stopped and high dose IT netilmicin (150 mg$\times$2) was initiated. One week after IT netilmicin treatment no growth was detected in CSF culture and no leukocytes were seen on microscopy. On the 10th day of the IT therapy patient's status deteriorated and she developed fever. *Enterococcus faecium* was grown from blood culture. Vancomycin 500 mg IV qid was added but patient was lost 2 days later. CSF sample, obtained on the day she died, was sterile and contained 10 leukocytes/ml.

There is not adequate data about the mechanisms of resistance to carbapenems in *Acinetobacter* spp. in Turkey. Yilmaz et al. reported the presence of CARB-5 in 2002.[6] In addition several class D carbapenemases including oxa 58 may play role in the carbapenem resistance encountered in the infecting strain[7,8] but since the strain was not stocked, the resistance mechanism could not be analysed. Because of the lack of laboratory facilities we could not measure the CSF or serum levels of netilmicin. To our knowledge 300 mg/day is the highest reported dose of IT aminoglycoside administration. The reason of using such a high dose was to use the last treatment option optimally.

In conclusion, intrathecal high dose netilmicin was safe and it can be an alternative in the salvage treatment of nosocomial meningitis with multiresistant *Acinetobacter* spp.

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