

Multifocal Neonatal Osteomyelitis by *Acinetobacter Baumannii*: Case Report and Review of Literature

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ABSTRACT

Acinetobacter baumannii has emerged as a major nosocomial pathogen over the last few years, especially in immune compromised patients and in ICU settings. However reports of multifocal osteomyelitis due to haematogenous spread of 'Extremely Drug Resistant' (XDR) *Acinetobacter baumannii* in neonates is rare and that too involving the clavicle is the first of its kind. In spite of the rarity of the condition early diagnosis is mandatory as *Acinetobacter* is resistant to most empirically used antibiotics and delay in treatment may lead to life threatening consequences. Moreover with the increasing case load of *Acinetobacter*, it is just a matter of time when physicians will encounter *Acinetobacterial* osteomyelitis more frequently which has urged us to report this case.

Introduction

Acinetobacter baumannii has emerged as a major nosocomial pathogen over the last few years, especially in immune compromised patients and in ICU settings [1]. Osteomyelitis due to *Acinetobacter baumannii* occurs less frequently and has been noted mainly among soldiers as a result of local spread from wounds acquired in war [2,3]. Here we report a case of multifocal neonatal osteomyelitis of right humerus and left clavicle caused by haematogenous spread of 'Extremely Drug Resistant' (XDR) [4]. *Acinetobacter baumannii* treated successfully with colistin. After extensive literature review we found that neonatal clavicular osteomyelitis is rare and that too caused by haematogenous spread of XDR *Acinetobacter* is the first of its kind. Moreover successful treatment with intravenous colistin further adds uniqueness to the case report as there is very little literature on the use of colistin in neonatal osteomyelitis.

Case Report

A 32 days old baby presented with a 10 days history of intermittent high grade fever, inability to move the right arm, irritability, poor feeding and a 4 day history of acute onset swelling with actively discharging sinus on his right arm and left upper chest (Figure 1). He was born at 38 weeks by caesarean section. There was no history of maternal infection during the pregnancy. Ante-

partum and intra-partum periods were otherwise uneventful. On 4th post-partum day he had a history of severe diarrhea and dehydration for which he was admitted in the Neonatal Intensive Care Unit (NICU) for 1 week.



Figure 1: Clinical picture of actively discharging sinus on right upper arm and left upper chest.

Radiograph revealed lytic lesions in right humerus and left clavicle with periosteal reaction and osteopenia suggestive of osteomyelitis (Figure 2 and ,Figure 4).

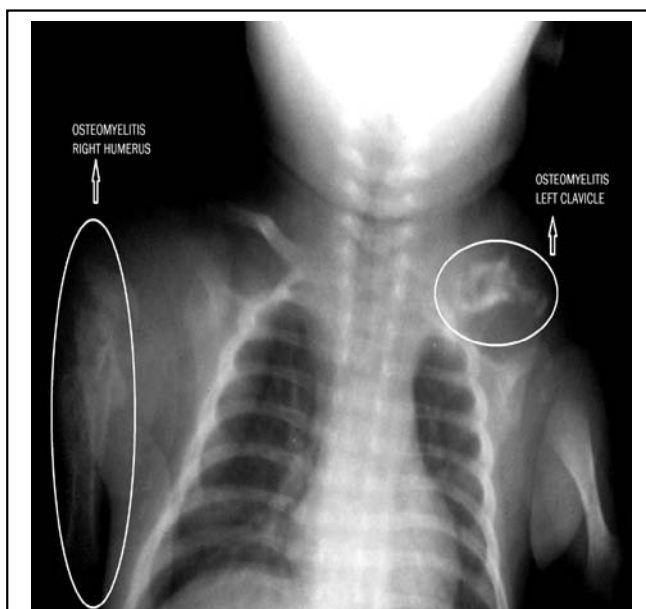


Figure 2: Radiograph showing osteomyelitis of left clavicle and right humerus at presentation.

Microbiological assay of seropurulent discharge from the sinus revealed the presence of gram negative coccobacilli (Figure 3) which were aerobic, catalase positive, oxidase negative, nonmotile, showing positive

Simmons citrate test and negative acid production from mannitol and sucrose suggestive of *Acinetobacter baumannii*. Blood culture also revealed bacteremia of *Acinetobacter baumannii*. Drug sensitivity test revealed resistance to fluroquinolone, aminoglycoside, penicillin, cephalosporin and carbapenem group of antibiotics and sensitivity to colistin. CD 4 count of the child and the parents was found to be normal. The diagnosis was confirmed to be osteomyelitis of right humerus and left clavicle with Extremely Drug Resistant (XDR) *Acinetobacter baumannii*.

The child was admitted and treated with intravenous colistin 5 mg/kg total daily dose divided equally in three doses given 8 hourly along with rest to the right arm in a 'U' slab and adequate hydration for the next 3 weeks. Repeat pus culture sensitivity and blood culture on 4th day, 7th day after starting treatment were also positive for XDR *Acinetobacter baumannii*. The child's general condition started improving from the 5th day of starting colistin. The discharging sinus healed completely by 2 weeks (Figure 5) and repeat blood culture at 2 weeks revealed no bacteraemia. Subsequent radiographs at the end of three weeks showed disappearance of lytic lesions, re-appearance of bony trabeculae and normal mineralization pattern (Figure 6). Renal function was closely monitored with input output charting and blood levels of urea, creatinine and no drug related toxicity was noted. The child was kept under 1 year follow up which was uneventful.

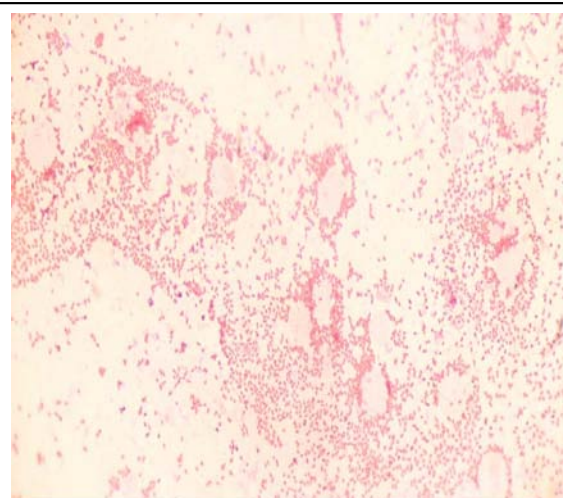


Figure 3: Microscopic picture of gram negative coccobacillary rods.

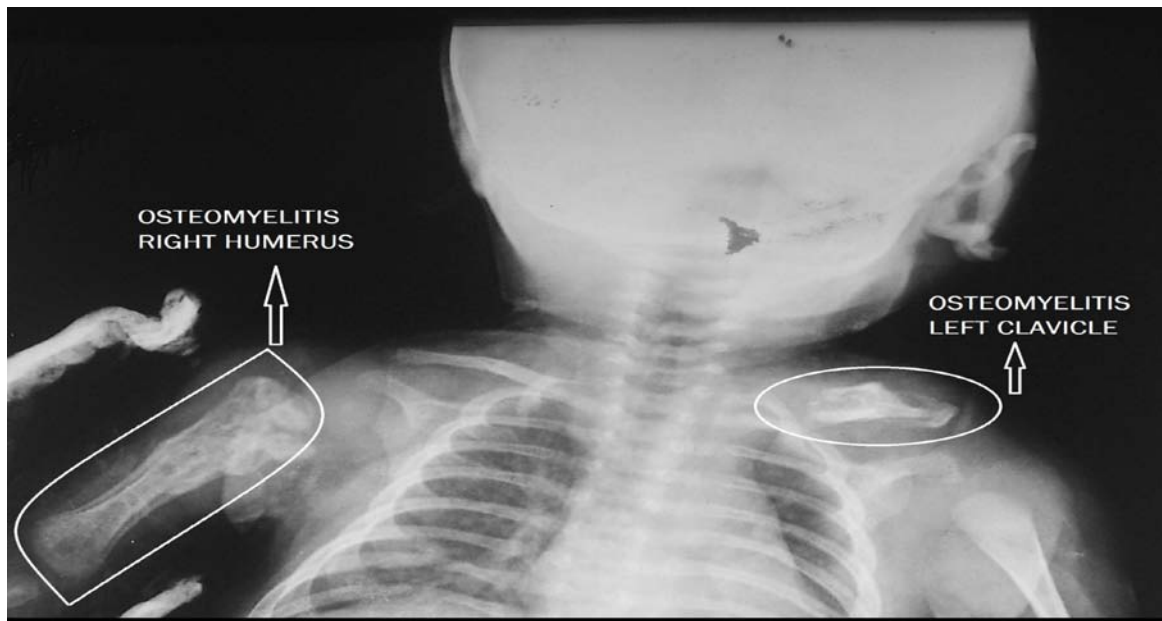


Figure 4: Radiograph showing osteomyelitis of left clavicle and right humerus on day 7 after starting treatment.

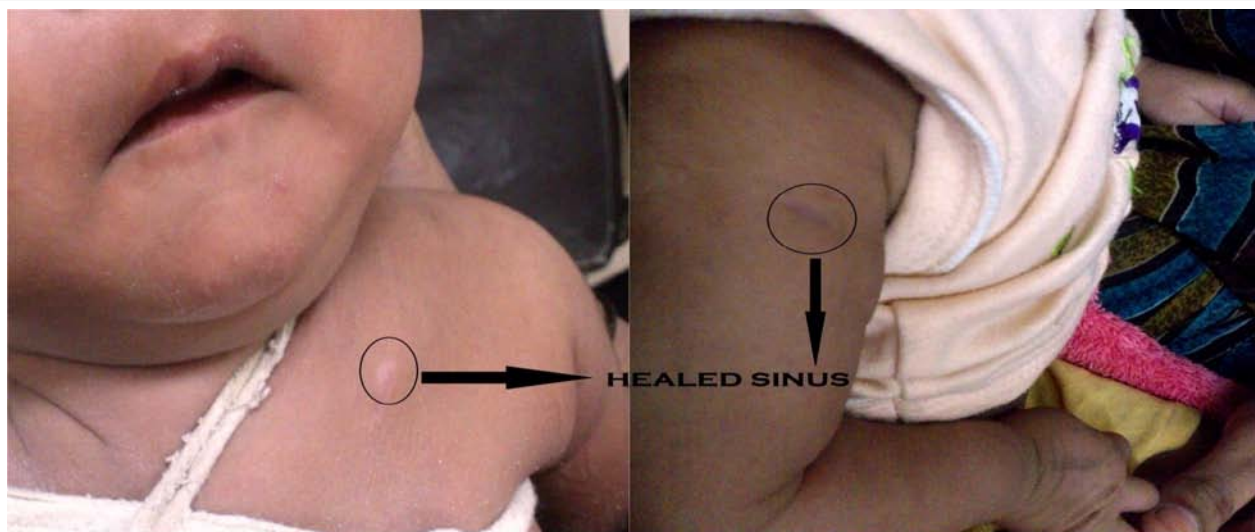


Figure 5: Clinical picture of healed sinus on right upper arm and left upper chest on 14th day after starting treatment.

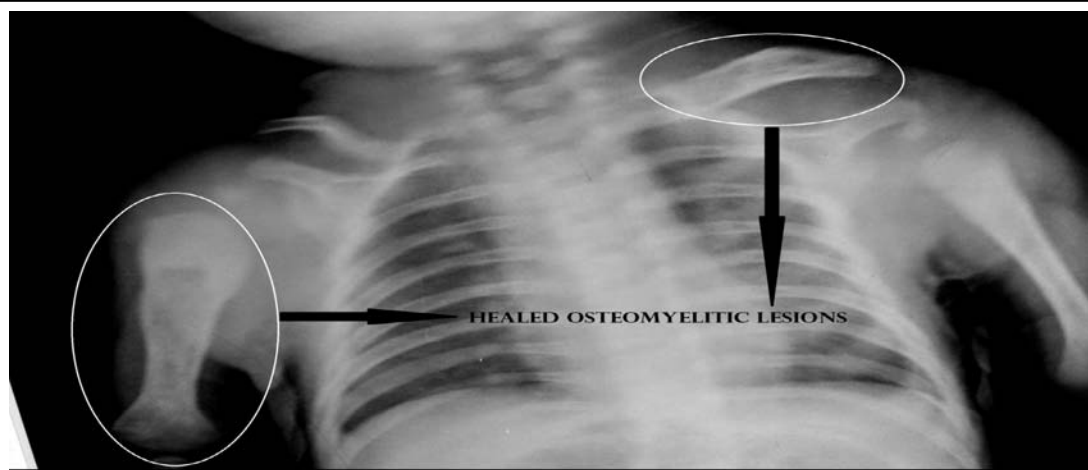


Figure 6: Radiograph showing healed osteomyelitis of left clavicle and right humerus on day 21 after starting treatment.

Discussion

Retrospective analysis of the case led to identification of its probable cause. The child was admitted in NICU for 1 week where he received intravenous fluids for the treatment of severe dehydration. *Acinetobacter* is a common nosocomial pathogen in NICU and bacteraemia probably resulted from the indwelling intravenous catheter. Severe dehydration and poor feeding might have lowered the general immunological status in the child which favored the haematogenous spread of *Acinetobacter* to the humerus and clavicle thus resulting in osteomyelitis. Early diagnosis in cases of osteomyelitis due to *Acinetobacter* is absolutely essential because of the following reasons: firstly neonatal osteomyelitis due to *Acinetobacter* is rare and needs a thorough history, microbiological assay, and a high degree of clinical suspicion for diagnosis. Previous history of admission in NICU may hint towards this diagnosis. Secondly empirical treatment is often ineffective in *Acinetobacter* as it is resistant to most of the commonly used drugs [4]. Hence drug sensitivity testing is absolutely essential. Thirdly inability to diagnose and treat a case of *Acinetobacter* osteomyelitis early may lead to septicemia and systemic spread to cause pneumonia, endocarditis and meningitis which have a high mortality rate especially in neonates [5]. Even after clinching an early diagnosis of *Acinetobacter* osteomyelitis, the treatment remains controversial. XDR *Acinetobacter* is sensitive to colistin but there is inadequate literature on the use of intravenous colistin in neonates due to the possibility of nephrotoxicity and neurotoxicity [5]. The report of successful use of colistin in this case may help physicians in tackling XDR *Acinetobacter* osteomyelitis when they are not left with any other choice of antibiotic.

Conclusion

Although *Acinetobacter* osteomyelitis is rare, physicians must consider it as a possibility when the patient gives a history of admission in ICU in recent past, has immune suppression due to any cause or when the osteomyelitis is not responding to commonly used empirical antibiotics for osteomyelitis.

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