

Case Report

Lumbar Osteomyelitis with Pseudomonas

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Abstract

Osteomyelitis is the inflammation of bone secondary to infection with pyogenic organisms. *Pseudomonas aeruginosa* is usually associated with nosocomial infections and due to its ability to acquire resistance to almost all antibiotics, infections with *Pseudomonas* pose a great challenge to the physicians. A number of new synergistic combinations have been used in order to treat these organisms and one of the methods is to combine chemicals with systemic antibiotics. In this case we represent a successful eradication of multidrug resistant *Pseudomonas* using a combination of acetic acid and systemic antibiotics.

Introduction

Osteomyelitis is an acute or chronic inflammatory process of the bone and its structures secondary to infection with pyogenic organisms.¹ There are two known categories, haematogenous and locally contagious. A number immune suppressive conditions including diabetes mellitus make a patient more prone to development of osteomyelitis.^{1,2} In addition, the presence of a prosthetic orthopaedic device is an established independent risk factor.² *Pseudomonas aeruginosa* has been associated with skin and soft tissues infections particularly seen in cases diabetic foot and post surgical cases associated with prosthetic implants.³

Pseudomonas have been reported to acquire resistance by a number of mechanisms and to almost all currently available drugs, and these pan resistant organisms have been considered as the most difficult to eradicate.^{4,5} Recently a few strategies have been adopted by applying new combination of chemicals like acetic acid, polyamines and polymixin as adjuvant to systemic antibiotic which have shown favourable results.⁶⁻⁸

In this report a case of suspected osteomyelitis with pan resistant *pseudomonas* has been reported where a successful eradication was obtained by a combination of local 1% acetic acid as an adjuvant to systemic antibiotic therapy.

Case Report

A 55 years old diabetic female was admitted at Ziauddin University Hospital, Clifton,

Karachi, with complains of fever and pussy discharge from the surgical wound at the surgery lumbar region operated one year back at our hospital. This patient had a long history of spinal symptoms and had been operated 10 years ago at some other centre for spinal stenosis. No records were available for this surgery.

Her operation at our centre last year was after finding dural compression on MRI scan at the level of L 3-4 vertebrae. A posterior decompression and spinal instrumentation was performed under antibiotic cover and patient was discharged from the hospital after two weeks. As her blood culture revealed E-Coli (Table) she was given 1/V Inj Imipenem and Amikacin for two weeks. Oral

Table. Microbiology Culture Results.

Date	Type	Organisms	Sensitivity
Sample 1	blood C/S	E-coli (ESBL)	Ak, Cn, ofx, Ipm, tzp, cpo, cpro
Blood			S to all R to Ampicillin only
Ist Sample	pus C/S	Enterobacter	R to all antibiotics
Pus		<i>P. aeruginosa</i>	S to Cloxacillin & others
		<i>Staph. aureus</i>	
2nd sample	pus C/S	<i>P. aeruginosa</i>	S to Tzp I to Cn
			R to all other antibiotics
3rd sample	pus C/S	<i>P. aeruginosa</i>	R to all S to Pb only
		<i>A. lowfii</i>	R to all S to Pb only

R= resistant, S= Sensitive, I= intermediately sensitive
Ak= Amikacin, Cn= Gentamicin, Ofx= Ofloxacin, Ipm= Imepenam, Tzp= Pipracillin tazobactam, Cpo= Cefpirome, Pb= Polymixin B.

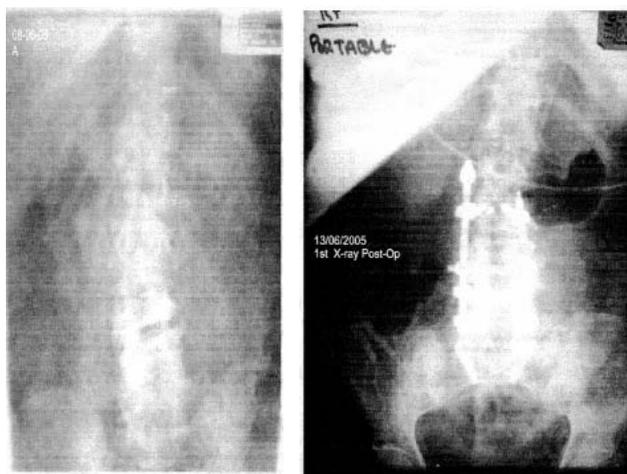


Figure. A: Initial X-ray

B: X-ray with appliance

ciprofloxacin was advised for six weeks on her discharge from the hospital.

On her current visit she had low-grade intermittent fever, greenish and foul smelling wound discharge. X-rays and MRI revealed an abscess around the surgical implant. Pus cultures confirmed infection with Enterobacter species, *Pseudomonas aeruginosa* and *Staph aureus* (Table). Therefore I/V Injection Piperacillin Tazobactam (Tzp) was started after wound debridement for two weeks.

As the wound did not show any improvement it was further explored, implant was taken out, pus was drained and again sent for culture. This time culture revealed pure growth of *Pseudomonas aeruginosa* sensitive to Piperacillin tazobactam (Tzp) and Gentamicin. A combination of both drugs was started; in addition, Oral Ciprofloxacin and Rifampicin were also added.

Despite antibiotics and daily wound cleaning following standard protocol, the pus continued to ooze out of the wound as well as from the screw tracks in the vertebral bodies. Suspecting osteomyelitis, pus culture were sent again, and this time it revealed multi drug resistant *Pseudomonas aeruginosa* sensitive to Polimixin B (Pb) and *Acinobacter lowfii* sensitive to Polymixin B and cephoperazone / sulbactam (Sulzone) only.

As published data does not show much evidence in support of the use of Polymixin B as well as citing the toxicity of the drug, a combination of I/V Inj. Sulzone and dressing the wound with gauze pieces soaked in 1% acetic acid was started and continued for three weeks.

Soakage gradually appeared to diminish and wound started showing good healing. Treatment was continued for total of five weeks and wound was finally closed in two stages. Final cultures yielded no growth. No untoward local or systemic side effects were observed. The patient was finally discharged, and followed up after every three weeks with blood CBC, ESR and CRP reports for the first three months and then followed three monthly. I/V Inj. Sulzone was continued for six weeks after discharge and oral Cefixime was given for the next twelve weeks as we did not want a recurrence of infection. The patient is still on follow up but has not shown any signs of infection.

Discussion

Pseudomonas aeruginosa has been associated with orthopaedic infections and particularly in those involving implants^{1,2}, and due to its ability to form biofilms it has been one of the most difficult organisms to treat.^{3,7} The other clinical problem with *Pseudomonas* infections is the ability of the organism to acquire resistance to almost all the available drugs, whenever confronted with these. A similar situation was faced by the health professionals in this case also as the treatment options were very few, though we didn't have a clear cut diagnosis, but the surgeons were all in favour of Osteomyelitis due to pus oozing out of the screw tracks in the vertebral bodies. On the contrary a good bone healing suggested soft tissue infection rather than osteomyelitis.

Use of acetic acid as adjuvant to systemic antibiotics has been reported in literature mainly in cases of bed sores, deep seated abscesses and diabetic foot ulcers.⁹ A clear evidence of its use in cases of osteomyelitis could not be found, so it has been tried in osteomyelitis of lumbar vertebrae and resulted in an eradication of the organisms. The role of cephoperazone /sulbactam (Sulzone) could not be established in this case as *Pseudomonas* was found resistant to the drug, but may be the combination proved synergistic in eradicating the organism.

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