

## CASE REPORT

# NEUROMUSCULAR PARALYSIS BY A SINGLE INJECTION OF LINCOMYCIN

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A seven years old girl presented with history of sudden onset of generalized body weakness to an extent that she was not able to move any body part. On thorough history it was revealed that she was given intramuscular injection lincomycin at private clinic which lead to neuromuscular paralysis of whole body. This antibiotic is currently not being used in humans and being only used as veterinary medication.

**Keywords:** Neuromuscular paralysis, complication, antibiotic

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## INTRODUCTION

Lincomycin is a lincosamide antibiotic that is derived from the actinomycetes *Streptomyces lincolnensis*. It has been structurally modified by thionyl chloride to its more commonly known 7-chloro-7-deoxy derivative, clindamycin. In Pakistan, it is available with the brand name of Lincobect and Lincocin.<sup>1</sup>

Although similar in structure, antibacterial spectrum, and in mechanism of action to macrolides, they are also effective against other species as well, i.e., actinomycetes, mycoplasma, and some species of *Plasmodium*. It is rarely used today because of its adverse effects and toxicity and reserved for patients allergic to penicillin or where bacteria have developed resistance.

## CASE REPORT

A seven years old girl presented with complains of sudden onset of generalized body paralysis with apparent no risk factor. On taking thorough history the parents informed that that girl was having generalized body rash and itching all over the body. The other family members were also suffering from same condition. She was taken to a private clinic where she was given an intramuscular injection. After few hours of injection she started to have weakness which was progressive and it completely paralyzed the girl apart from that she was only breathing. The physical and systemic examination revealed healthy looking, conscious alert girl having absent deep tendon reflexes and grade-I/VI power in all limbs with intact sensation. As soon as she was received in paediatrics emergency, after history and examination, she was considered a stand by case of mechanical ventilator. The parents were sent to the private clinic to ask about the generic name of drug, it was lincomycin. After getting information that lincomycin was given, literature was searched and it was found to have neuromuscular paralysis as one of the rarest adverse effect treatable by neostigmine and intravenous calcium. The girl was given injection

neostigmine and intravenous calcium under cardiac monitoring.

She fully recovered from the paralysis caused by injection lincomycin and was discharged home.

## DISCUSSION

Lincomycin is an antibiotic classified as a constituent of the lincosamide group, which typically feature a 6, 8-dideoxy-6-aminooctose lincosamine.<sup>1</sup>

After intramuscular or intravenous administration the biological half-life is  $5.4 \pm 1.0$  hours. Bile is an important route of excretion. In the majority of body tissues significant levels have been demonstrated. Although it appears to diffuse in the cerebrospinal fluid (CSF) but levels of lincomycin in the CSF appear inadequate for the treatment of meningitis. The serum half-life of lincomycin may be prolonged in patients with severe impairment of renal function and with abnormal hepatic function; serum half-life may be twofold longer than in patients with normal hepatic function. Haemodialysis and peritoneal dialysis are not effective in removing lincomycin from the serum. Paralytic poliomyelitis may be clinically suspected in individuals experiencing acute onset of flaccid paralysis in one or more limbs with decreased or absent tendon reflexes in the affected limbs that cannot be attributed to another apparent cause and without sensory or cognitive loss.<sup>2</sup> Aminoglycoside, polymyxin, tetracycline and lincosamide antibiotics produce neuromuscular block by a combination of both pre- and post-junctional actions as confirm from study results done by Singh and *et al.*<sup>3</sup> When a muscle relaxant or an aminoglycoside antibiotics is administered to a patient suffering from hypermagnesemia and/or hypocalcemia special care must be taken to prevent a profound neuromuscular blockade due to the drug interaction of each drug as the muscle contractility and neuromuscular blockade of muscle relaxants are influenced by the electrolytes,

especially magnesium ion ( $Mg^{2+}$ ) and calcium ion ( $Ca^{2+}$ ), in the extracellular fluid.<sup>4</sup>

Rutten and *et al*<sup>5</sup> studied the comparison of the results of neuromuscular blocking effect of different drugs among aminoglycosides which showed netilmicin equals sisomicin much greater than neomycin much greater than gentamicin greater than tobramycin. This is in the same sequences the neuromuscular blocking potencies of this drugs.<sup>5</sup>

Study by Singh and *et al*<sup>6</sup> showed that certain antibiotics as aminoglycosides (neomycin, gentamicin, streptomycin, dihydrostreptomycin and kanamycin), tetracycline and oxytetracycline, polymyxins B and E, penicillins G and V, cephradine, cephaloridine, erythromycin, lincomycin, and clindamycin can induce neuromuscular paralysis. Neuromuscular blockade produced by the polymyxins or by lincomycin was only partially reversed by calcium (0–34%).<sup>6</sup>

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