First reported case of cefuroxime resistant *Neisseria gonorrhoeae* in Sri Lanka

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Introduction

Gonorrhea remains one of the most common sexually transmitted diseases worldwide. Effective antibiotic treatment is one essential component of an integrated approach to control gonorrhoea. [1] However, over the past 60 years, development of resistance in *Neisseria gonorrhoeae* to multiple antimicrobial classes challenges this component of gonorrhea control.[2] In Sri Lanka, oral cefuroxime axetil 1g single dose has been the treatment of choice for uncomplicated gonococcal urethritis since 1993. Here, we report the first case of laboratory confirmed cefuroxime resistant *Neisseria gonorrhoeae*, in Sri Lanka.

Case

A 25 year old unmarried homosexual businessman, presented with purulant urethral discharge and dysuria of 2 days duration. There was no fever and no increased frequency in urination. He had unprotected sexual intercourse with his regular partner 10 days back and intercourse with another unknown partner 6 weeks prior to presentation. He had never been abroad and denied any sexual exposures with foreigners.

Examination revealed profuse purulent urethral discharge and Gram stained urethral smear showed Gram negative intra and extra cellular diplococci. He was treated with oral cefuroxime axetil 1g single dose and doxycycline 100 mg twice daily for 7 days. He did not respond to the treatment and returned with persistent urethral discharge and dysuria. Retreatment was given with the extended dose of oral cefuroxime axetil 500mg twice a day for 5 days but he continued to have same symptoms in spite of therapy. Drug adherence was very good and he strongly denied further sexual exposures after commencing the treatment. He was screened for other sexually transmitted infections and all the tests were negative. Urethral culture isolated *Neisseria gonorrhoeae* and subsequent antibiotic sensitivity test showed high degree resistant towards cefuroxime while sensitive for ceftriaxone. Minimum inhibitory concentration (MIC) for cefuroxime was 8ug/ml. Thereafter he was treated with ceftriaxone 250 mg IM (intramuscularly) single dose. He improved well and subsequent culture became negative. His regular partner was asymptomatic and treated with ceftriaxone 250 mg IM single dose even though gonococci were not isolated from him. Other partners could not be traced.

Discussion

The high capacity of *Neisseria gonorrhoeae* to acquire resistance to antibiotics is well established. Hence-various groups of antibiotics are being used for this purpose. Penicillin has been the drug of choice for several decades in the treatment of gonorrhea till the appearance of beta-lactamase producing strains of gonococci. Thereafter various other groups of antibiotics were used including tetracyclines, spectinomycin, fluoroquinolones and cephalosporins but concerns have been raised as the emergence of resistance to some of these were reported in several countries.[3]

In Sri Lanka gonorrhea treatment started with penicillin in 1960s. Even with some resistance, penicillin was the drug of choice till early 1990s when the resistant cases were treated with tetracycline, kanamycin, spectinomycin, erythromycin etc. After the detection of high level resistance to penicillin in 1993, a single dose of 1 g of oral cefuroxime axetil has been the treatment of choice for uncomplicated

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gonococcal urethritis and cervicitis in Sri Lanka. Those patients who did not respond to the single dose were treated with an extended dose of cefuroxime axetil 1g single dose plus 500mg twice a day for five days.[4]

Treatment with an effective antibiotic at the first encounter is important in the management of patients with gonorrhoea. Monitoring the antibiotic sensitivity pattern is essential to select a proper antibiotic. Reference laboratory of the national STD/AIDS control programme of Sri Lanka is carrying out gonococcal antibiotic sensitivity surveillance since 1995 in collaboration with WHO Gonococcal Antimicrobial Surveillance Programme. Gonococcal culture facilities are available only in, 5 out of 28 STD clinics and coverage is not adequate. The existing national gonococcal surveillance system must be strengthened and enhanced by increasing local capacity to monitor antimicrobial susceptibility in order to detect emerging resistance.

High level resistance of gonococci to cefuroxime has not been detected except a few occasional less sensitive isolates in Sri Lnka. Until now, there are no reported cases of clinical failures following treatment with the extended dose of cefuroxime axetil. This isolate showed a very high degree of resistance to cefuroxime with MIC of 8ug/ml. Maximum MIC found in literature was far lower than in this isolate.[5, 6]

Even though the source of the infection could not be traced, sudden appearance of remarkably high degree of cefuroxime resistance is alarming. This highlights the importance of enhancing the coverage of national surveillance system to monitor the antimicrobial resistance for gonorrhoea in Sri Lanka. Furthermore it shows the importance of adhering to national guidelines in managing gonorhoea to prevent emergence of multi drug resistant strains.

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