Correspondence

Letters should not exceed 400 words and should be typed double spaced (including the references) and be signed by all authors

TO THE EDITOR, Genitourinary Medicine

Penicillinase producing Neisseria gonorrhoeae in a hospital in Barcelona, Spain

Sir,

In 1976 the first strains of Neisseria gonorrhoeae containing plasmids that encode for TEM-1 type enzymes (β-lactamases) similar to those found in Escherichia coli and Haemophilus influenzae were isolated in west Africa and South East Asia. In a few years these penicillinase producing strains of N gonorrhoeae (PPNG) spread from their original locations to Europe and America. They are fully resistant in vivo to benzylpenicillin, ampicillin, and some cephalosporins. Infections caused by PPNG strains usually appear in poor social environments. Our municipal hospital serves the population around Barcelona’s sea port, where prostitution is widespread. It is a charity hospital with 450 beds, and has a drug addiction treatment service.

A retrospective review of N gonorrhoeae isolates, with particular attention to β-lactamase production, shows a large increase in PPNG strains in our hospital during the past two years. In 1984 the first two PPNG strains, which accounted for 5% of all isolates, were found. In 1985 the prevalence of PPNG was already 20% of all isolates. Culture of the organism and strain identification were performed using standard methods; β-lactamase production was detected by the chromogenic cephalosporin (Nitrocephin, Oxoid) and acidimetry (Betatest, Rosco) methods.

Table I shows gonococcus isolation in 1985 according to sex and β-lactamase production. Our risk group was made up of young women aged 16 to 38 (mean 25) years, parental drug abusers, and prostitutes.

Table II shows clinical presentations in the 24 women patients. Of seven with PPNG infection, four had positive results in serological tests for syphilis (rapid plasma reagin (RPR), fluorescent treponemal antibody (FTA), or both) and one had four concurrent sexually transmitted diseases: syphilis, gonorrhoea, anogenital warts, and pubic pediculosis. All the men had acute urethritis. A neonate born to a drug addict mother had ophthalmia neonatorum caused by N gonorrhoeae susceptible to penicillin. As clinical and microbiological follow up is very difficult in these patients, it has been necessary to change treatment regimens for this risk group.

Yours faithfully,

T Baró, J García, C Alia, A García

TABLE I Characteristics of 89 patients with gonorrhoea

<table>
<thead>
<tr>
<th>Total patients with gonorrhoea</th>
<th>Patients with PPNG strains</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of patients</td>
<td>89</td>
</tr>
<tr>
<td>No of strains</td>
<td>94</td>
</tr>
<tr>
<td>Age range (mean)</td>
<td>5.67 (27.6)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>65</td>
</tr>
<tr>
<td>White</td>
<td>23</td>
</tr>
<tr>
<td>Arabic</td>
<td>1</td>
</tr>
<tr>
<td>Sex (ratio of men:women)</td>
<td>78:11</td>
</tr>
</tbody>
</table>

REFERENCES

Correspondence

evaluated clinically, and samples of exudate were obtained for bacteriological examination. Isolation and identification of *N gonorrhoeae* were performed by standard methods; β-lactamase activity was detected using the chromogenic cephalosporin (Cefinase, BBL) and acidimetric (β-lactamase Detection Papers, Oxoid) methods. The total number of patients with PPNG infection was 25 (27 cases of gonorrhoea, 26 PPNG strains), which represented 26.7% of the total number of gonococcal strains in this study. Table I shows some characteristics of these patients, most of whom were immigrant African workers of low socio-economic status. None of the patients with PPNG infection had acquired it abroad, and none had had sexual intercourse with travellers from outside Spain. The source of infection was prostitutes in 26 instances, but contacts were largely dispersed in Barcelona and neighbouring villages. A high percentage of patients infected with PPNG strains had had previous or concomitant sexually transmitted diseases, but this incidence was similar to that observed in other patients infected with *N gonorrhoeae*. Characterisation of plasmids was undertaken by Dr Palomares, University of Seville on three strains: two strains showed the "Asia" 4.5 megadalton plasmid with the 24-5 megadalton transfer plasmid, and one strain showed the "Africa" 3-2 megadalton β-lactamase plasmid without the transfer plasmid.

Treatment with spectinomycin (2 g as a single intramuscular injection), cefmetazole (1 g as a single intramuscular injection), or rosoxacin (300 mg as a single oral dose) was successful in 17 patients (13, three, and one patient respectively). The remaining 10 patients, who had been treated with either spectinomycin or cefmetazole, did not attend for follow up. Postgonococcal urethritis was found in three patients.

As shown in table II, the increasing incidence of infection with PPNG strains in the past year has necessitated substantial modifications in the treatment of patients with gonorrhoea in the north east of Spain. These data, however, should not be considered as representative of the situation in Catalonia, but may indicate an emerging incidence of PPNG strains among prostitutes.

Yours faithfully,
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Roser Savall
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References


TO THE EDITOR. Genitourinary Medicine

Treatment of gonorrhoea with ceftriaxone

Sir,

Dixon et al (*Genitourin Med* 1986;62:78-81) compared ceftriaxone and penicillin for treating uncomplicated gonorrhoea, and commented that ceftriaxone might be a suitable alternative to penicillin where the incidence of infection with penicillinase producing *Neisseria gonorrhoeae* (PPNG) strains is rising. In their study, however, they reported only one case of infection due to a PPNG strain treated with ceftriaxone. We would like to report our experience of treating with ceftriaxone gonococcal infection caused by PPNG.

We compared intramuscular ceftriaxone 250 mg with intramuscular spectinomycin 2 g in treating uncomplicated gonorrhoea in an open, parallel group, randomised study. Of 291 men and 146 women patients who were fully evaluable, 220 were treated with ceftriaxone and 217 with spectinomycin.

After excluding patients who had presumably been reinfected by continued sexual exposure, there were eight treatment failures in patients treated with spectinomycin (cure rate for spectinomycin = 96.3%) and one treatment failure with ceftriaxone (cure rate for ceftriaxone = 99.5%).

Postgonococcal urethritis, defined as finding five or more pus cells/high power field, was detected in 23-2% of patients treated with spectinomycin and 23-9% treated with ceftriaxone.

The incidence of PPNG strains in the study was 6.5% (41 of 629 gonococcal isolates), and the minimum inhibitory concentrations (MICs) of ceftriaxone, cefotaxime, and spectinomycin were available for 29 of these isolates. The table shows the range of MICs for the PPNG isolates using two inocula, 10\(^2\) and 10\(^3\) colony forming units (cfu).

<table>
<thead>
<tr>
<th>MIC (mg/l) with gonococcal inocula of:</th>
<th>10(^2) cfu</th>
<th>10(^3) cfu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>0.002-0.015</td>
<td>0.002-0.015</td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>0.004-0.03</td>
<td>0.008-0.06</td>
</tr>
<tr>
<td>Spectinomycin</td>
<td>16</td>
<td>16-32</td>
</tr>
</tbody>
</table>

PPNG = penicillinase producing *Neisseria gonorrhoeae*.

A single treatment failure, in a patient with a PPNG infection, occurred after treatment with spectinomycin.

The results confirm the efficacy of ceftriaxone in treating gonorrhoea due to both PPNG and non-PPNG strains.

Yours faithfully,
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Infection with penicillinase producing Neisseria gonorrhoeae in Catalonia.

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