LETTERS TO THE EDITOR

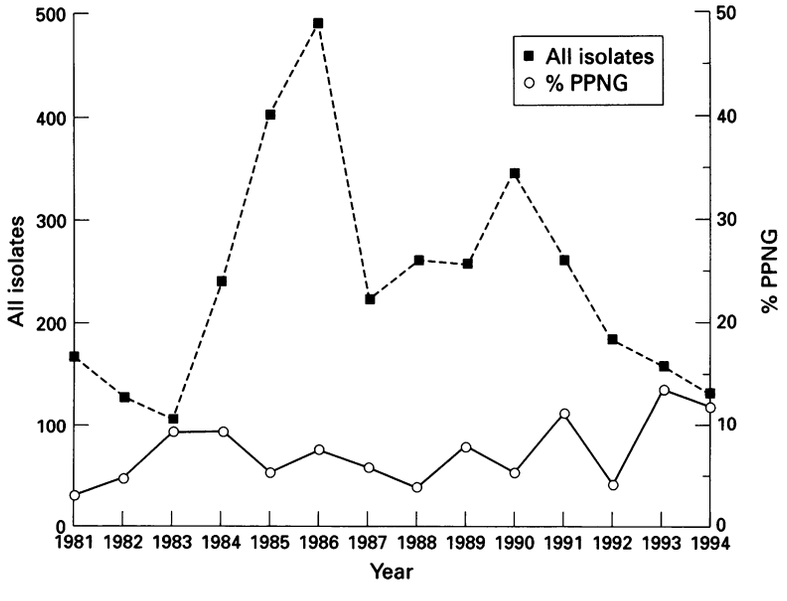
Continuing high prevalence of penicillinase-producing *Neisseria gonorrhoeae* at a central London hospital

Penicillinase-producing *Neisseria gonorrhoeae* (PPNG) in the UK has been declining since 1984[1] and accounts for only 4–6% of gonococcal infections at some centres in London.[2] We reviewed the proportion of PPNG among gonococcal isolates obtained from patients attending our genitourinary medicine clinic since 1981.

Production of β-lactamase in *N gonorrhoeae* isolates was detected by activity on a chromogenic cephalosporin (Nitrocephin, Oxoid). Duplicate isolates from the same patient were excluded.

Although the total number of cases of gonorrhoea has declined from a peak of 486 in 1986 to 128 in 1994, the proportion of PPNG remains elevated. PPNG accounted for over 5% of patient isolates in 10 of the last 12 years and for over 10% in 1993 (21 of 158 isolates) and 1994 (15 of 128 isolates). The notes of all patients from whom PPNG was isolated in 1993 were reviewed. Thirteen patients were probably infected abroad (Africa 7, West Indies 3, Southeast Asia 2, South America 1) and their contacts accounted for a further four cases. No obvious overseas factor was noted in four patients.

At our hospital, PPNG accounts for a higher proportion of gonococcal infections than has been reported elsewhere in London. We believe this is because a large number of patients seen at our clinic have a history of travel to countries with high PPNG rates. This survey illustrates the value of local laboratory and epidemiological surveillance. It also emphasises the importance of eliciting a detailed history of foreign travel in all patients suspected of having gonorrhoea as an unacceptable number of treatment failures will occur if penicillin is used as first line therapy for all cases.



N gonorrhoeae from Guy's Hospital Genitourinary Clinic

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Importation into the UK of a strain of *Neisseria gonorrhoeae* resistant to penicillin, ciprofloxacin and tetracycline

We report here what we believe to be the first isolation of a strain of penicillinase-producing *Neisseria gonorrhoeae* with high-level resistance to ciprofloxacin and tetracycline.

On the 3 February 1995 a 35 year old divorced male travelled to Angeles City in the Philippines on business. Here he had sexual contact with a local prostitute. He subsequently travelled to Australia by which time he had developed a bloody urethral discharge. He was prescribed 500 mg of tetracycline with 500,000 units of nystatin ("Mysteclin") orally twice daily for 14 days. On return to the Philippines his urethral discharge was still present and he was prescribed 300 mg rosoxacin (a 4-quinolone) *stat* orally. The patient returned to the UK at the end of February with the urethral discharge still present. The patient had no UK sexual contacts since January. He was examined at his local genitourinary medicine clinic where intracellular Gram-negative diplococci were seen in a smear of the discharge. Urethral swabs were taken for culture and chlamydia antigen assay. He was prescribed 500 mg of ciprofloxacin *stat* and a 10 day course of ofloxacin (400 mg daily) was started.

The urethral swab taken at this time yielded oxidase-positive Gram-negative diplococci after 48h incubation on New York City medium at 37°C in 5% CO_2. This organism was identified as *N gonorrhoeae* by the carbohydrate utilisation and Phadebact Monoclonal GC tests. The strain was demonstrated to be β-lactamase positive and found by agar dilution antibiotic sensitivity testing to be resistant to penicillin (minimum inhibitory

concentration (MIC) >10 mg/l), ciprofloxacin (MIC 16 mg/l) and tetracycline (MIC 64 mg/l) but sensitive to spectinomycin (MIC 32 mg/l) and cefuroxime (MIC 0·32 mg/l). The strain carried plasmids of 3·0MDa and 25·2MDa and the latter was shown to carry the Dutch type *tet*M tetracycline resistance determinant by polymerase chain reaction. Typing studies revealed that the strain belonged to the prototrophic auxotype and the IB7 serovar. The chlamydia antigen assay was negative.

At the end of the course of ofloxacin the patient re-attended the clinic with a persisting urethral discharge. A Gram-stained smear of the discharge revealed intracellular Gram-negative diplococci. Culture of a urethral swab yielded an organism indistinguishable in all respects to the previous isolate. On this occasion the patient was treated with a 2 g *stat* im dose of spectinomycin. On follow up seven days later only a slight discharge was present and both smear and culture were negative for gonococci although polymorphonuclear lymphocytes were seen in the former. He was therefore treated as a case of post-gonococcal urethritis and given a 10 day course of 250 mg oxytetracycline four times daily.

When first introduced ciprofloxacin had exceptional in-vitro activity against strains of *N gonorrhoeae*[1-3] and consequently has been increasingly used as a first line treatment for gonorrhoea. However, a treatment failure with another quinolone, enoxacin, was reported some time ago.[4] In the UK, strains with decreased sensitivity (MIC $\geqslant$ 0·05 mg/l) to ciprofloxacin have been detected since 1989 and treatment failures with ciprofloxacin have been associated with some of these infections.[5,6] More recently reports from the Philippines and Thailand[7,8] have revealed strains with ciprofloxacin MIC of >1 mg/l and in the case of the Philippines at least 10% of strains had a ciprofloxacin MIC $\geqslant$ 0·25 mg/l. Sentinel studies in the USA have revealed the importation of gonococci with ciprofloxacin MIC of 2 mg/l into Hawaii from SE Asia and also revealed 14% of strains in Ohio to have MICs between 0·13 mg/l and 0·25 mg/l.[9] In 1994 Birley *et al*[10] reported the failure of a 5 day course of twice daily 250 mg doses of ciprofloxacin in a case of gonorrhoea caught in Spain. This infection was also caused by a strain with high-level resistance to ciprofloxacin (MIC 16 mg/l).

Since 1988 216 strains of gonococci with an MIC of ciprofloxacin $\geqslant$ 0·05 mg/l have been referred to the PHLS Gonococcus Reference Unit and 13 have had an MIC >1 mg/l; none of the strains with reduced sensitivity also had high-level resistance to tetracycline, but 61% were penicillinase producers. Local incidence of ciprofloxacin resistance remains low, in 1994 only one of 338 county of Avon isolates was resistant (MIC 1 mg/l), this was not a penicillinase-producer and the infection was contracted in the UK.

This case re-emphasises the importance of culture for cases of gonorrhoea in order to be able to test the antibiotic sensitivities of the organism and thus assist the selection of suitable chemotherapeutic agents. The need for continued vigilance for ciprofloxacin resistance is reinforced, especially where the patient was infected in the Far East.

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Epidemiology and transmission patterns of concomitant genital chlamydial and gonococcal infections

Although *Chlamydia trachomatis* is a major cause of post-gonococcal urethritis,[1,2] little is known about the epidemiology and associated clinical features of concurrent gonococcal and chlamydial infections. From previous studies, the prevalence of concomitant *Chlamydia trachomatis* among patients with uncomplicated gonorrhoea ranges from 14–42%.[1-5]

We reviewed case notes of patients diagnosed with concurrent *N gonorrhoeae* and *C trachomatis* infections in the genitourinary medicine (GUM) clinic at North Staffordshire Hospital in 1993 and 1994. The aim of the study was to describe the frequency, epidemiology and transmission patterns of concurrent gonococcal and chlamydial infections.

Diagnosis of gonorrhoea was based on positive culture (modified New York City medium). Chlamydia was diagnosed on the basis of two non-culture tests, Enzyme Immunoassay (EIA) (Syva Microtrak, UK) and Direct Immunofluorescence (DFA) (Syva