Isolation of β-lactamase-producing *Neisseria gonorrhoeae* in Panama

Gonococcal infections produced by strains of *Neisseria gonorrhoeae* producing β-lactamase (penicillinase) were reported for the first time in the United States and England in early 1976. Since then these strains have been isolated in a number of countries, but their presence was unknown in Latin America. The World Health Organization recommends that epidemiological surveillance of sexually-transmitted diseases be intensified in all countries in order to discover the existence of these strains. In Panama this surveillance is carried out by the Epidemiological Division of the Ministry of Health, the Department of Bacteriology of the Gorgas Memorial Laboratory, and the Metropolitan Health Region, through its Health Centers (Drs. M. A. Vásquez, M. Kourany, and E. Quiroz). Since Panama is at the cross-roads of innumerable international flights and sea routes and has a substantial inflow of tourists and seafarers, it was deemed advisable to begin the surveillance with prostitutes, which is the group most exposed to infections due to β-lactamase producing gonococci.

A total of 991 cases of prostitutes coming from different countries in the Americas were studied. Every Friday 50 patients attending the social hygiene clinic of one of the seven health centers in Panama City were randomly selected, and each week the cases were studied in a different center. Epidemiological data were obtained from each patient and an endocervical specimen was collected with a sterile cotton swab. Each specimen was inoculated in Thayer-Martin medium, and a Z mark traced; these plates were placed in a flask with 10 per cent CO2 and transported to a laboratory where they were streaked with a platinum loop. They were incubated for 48 hours, after which a smear was made on the suspected colonies and stained by the Gram method; the oxidase test was also carried out. When the two tests proved positive, degradation of the sugars (dextrose, maltose, and sucrose) was determined to confirm the diagnosis. To determine whether the *N. gonorrhoeae* strains isolated were producers of β-lactamase, their sensitivity or resistance to penicillin was tested by placing a disk of 10 units of penicillin G on a plate of chocolate agar inoculated with the strain. The absence of an inhibition area or the presence of an area less than 22 mm in diameter demonstrated that the strain was resistant to that antibiotic. The chromogenic cephalosporin substrate test was used to determine the production of β-lactamase in the penicillin resistant strain.

By October 1979 a total of 1,730 patients had been examined and 137 isolations of *N. gonorrhoeae* had been obtained. The specimens were from 991 different women, 127 of whom were found positive for *N. gonorrhoeae*. Only one of all the strains isolated proved to be resistant to penicillin and a producer of β-lactamase. This strain was isolated on 10 October 1979 from a patient aged 21 years, white, who had been engaged in prostitution for only nine months. The patient said that she did not use any contraceptive method and that in the two weeks prior to the examination no antibiotic of any kind had been administered. In addition, she stated that she did not suffer from lower abdominal pain or dysuria although she presented a thick crystalline secretion from the cervix uteri and slight erosion of it. No visible lesion was observed in the genital region. Two cultures had been made previously on this patient on 27 July and 31 August 1979, and on both occasions no *N. gonorrhoeae* was isolated. Once the isolation of the penicillinase-producing strain was confirmed, the patient was located at her work place and stated that, since the previous week and subsequent to the examination, she had had around 52 sexual contacts, none of whom could be located. She also stated that on 15 October she had received 4,800,000 units of procaine penicillin IM and 2 grams of oral probenecid. On 17 October a further culture was made and again β-lactamase-producing *N. gonorrhoeae* was isolated; on 19 October she was given 4 grams of spectinomycin IM and on 23 October, another culture was made with negative results for *N. gonorrhoeae*.

Epidemiological surveillance of gonorrhoea and the search for gonococcal strains producing β-lactamase was continued, but as of July 1980 no other case of β-lactamase-producing *N. gonorrhoeae* had been detected.

(Source: Gorgas Memorial Laboratory, Panama, Panama.)

Editorial Comment

So far four countries in the Americas (Argentina, Canada, Panama, and the United States) have confirmed the

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presence of penicillinase (β-lactamase) producing *N. gonorrhoeae* in their population.

Since the strain was discovered in 1976, 1,372 isolations have been reported in the United States, 66 in Canada, 1 in Argentina, and 1 in Panama. Despite the fact that its incidence is low in this Region (less than 1 per cent in the Panama study), its capacity to spread in some high-risk groups of the population is well documented.

The Center for Disease Control (CDC) recommends that, whenever possible, all patients treated for gonococcal infections be given a cure test (examination and culture) three or five days after treatment. Those patients whose examinations or cultures are positive should be considered *N. gonorrhoeae* suspects and their isolations should be examined for the production of β-lactamase. If the prevalence of the infection is higher than 5 per cent of all the isolations, all the isolations should be investigated before treatment in order to reduce the time required for identifying infected patients and their sexual contacts. Prompt treatment with streptomycin of patients and their contacts whose cure test (examination or culture) is positive can prevent the spread of β-lactamase producing *N. gonorrhoeae* in the community. If it is not possible to conduct routine studies of isolations before treatment or cure tests, consideration should be given to the periodic selective study of high-risk groups in order to determine the prevalence of the infection and the need for possible changes in the national treatment strategy.

The Bacteriology Division of CDC is equipped to confirm the production of β-lactamase, to conduct antibiotic sensitivity tests, and to collaborate in the analysis of the plasmids of specific strains for epidemiological purposes. Laboratories or programs wishing to submit questions or to send samples for analysis should get in touch with Dr. Clyde Thornsberry, Building 4, Room 239, Center for Disease Control, Atlanta, Georgia 30333, U.S.A.

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### Reports on Meetings and Seminars

**Second Meeting of the Working Group on Immunological Differences between Street Virus Strains and Production of Rabies Vaccines**

The Second Meeting of this Working Group was held on 18 and 19 November at the Pan American Zoonoses Center (CEPANZO), Argentina, and was attended by 10 scientists from several American countries.

These efforts made it possible to study more than 50 rabies virus strains in only four months of work. The research is aimed at finding differences between the antigenic determinants of the street virus strains prevalent in the Region and those of the viruses used in the production of rabies vaccines.

The results obtained in studies made with monoclonal antibodies against rabies virus antigens using strains isolated from various species in different countries, as well as with the cross protection test, were presented.

In Venezuela six strains were used, including four from human cases. Although two strains of human origin overcame the immunity of the vaccinated mice, both with suckling mice brain vaccine and human diploid cell vaccine.

CEPANZO studies with strains of animal origin found that the vampire bats strains could be considered atypical, although protection lower than 80 per cent in the controls with seed virus strains could annul the results.

In Argentina, studies with strains of human origin demonstrated that one of the strains overcame the immunity of the vaccinated mice, both with suckling mice brain vaccine and human diploid cell vaccine.

In Brazil, of the 24 strains used, at least two, one from a human case and the other from a bovine case, satisfied the conditions established for strains considered atypical.

In Argentina, studies with strains of human origin demonstrated that one of the strains overcame the immunity of the vaccinated mice, both with suckling mice brain vaccine and human diploid cell vaccine.

CEPANZO studies with strains of animal origin found that the vampire bats strains could be considered atypical, although protection lower than 80 per cent in the controls with seed virus strains could annul the results.

In Chile a strain of canine origin from Arica that could be considered atypical was found.

In the United States, of the three strains studied, that isolated from a bat met the requirements established for atypical strains.

To sum up, it was concluded that the data presented pointed to the existence of atypical strains of rabies virus in the countries of the Region.

The recommendations of the Working Group include: repetition of the test with the same protocol, using a more concentrated vaccine and using the seed virus strains in all the cross-protection tests with the street virus; preparation of suckling mice brain vaccines; determination of immune response in mice four weeks after beginning the vaccinations; and study of typical and atypical strains against most of the types of vaccine for animals used in the Americas.