

PENICILLIN RESISTANT GONOCOCCI

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The incidence of gonorrhœa has been reported to be on the rise in a number of countries viz the United States of America, Scandinavia, France, Italy and the West Indies (Wilcox, 1958). According to the report of the Ministry of Health (1958), the rise in the incidence of gonorrhœa also occurs in this country and is shown by the following figure:—

1954	—	2,454
1955	—	2,339
1956	—	2,584
1957	—	2,856
1958	—	2,808

The trend for the rise of gonorrhœal infections is due to various factors and King (1960) stated that the most important factor responsible for the rise in the incidence of gonorrhœa in England is due to the emergence of the relatively resistant strains of gonococci to penicillin.

The object of this short term study was to find out whether there is any existence of the resistant gonococci to penicillin in this country and whether this could be partly responsible for the rising trend in gonococcal infections. This short term study was made among male patients seen in the Middle Road Hospital during the period of February to May, 1962.

METHOD

All the patients with urethral discharge had the smears examined by Gram's stain for the presence of gonococci. Those with negative findings were considered as non-specific urethritis and were excluded from the study. Once the diagnosis of gonococcal urethritis was made, two doses of Penicillin Alum-inium Monostearate (PAM) of 600,000 units each were given intramuscularly. On the third or fourth day the patient was again seen and if the urethral discharge was still present, swab was taken and sent for culture and sensitivity, after which a further dose of 1,200,000 units of PAM, was given intramuscularly. After two days the patient with the persistent discharge

was again examined and by this time the culture report might have been back and an appropriate antibiotic would be administered. He would be seen after two days and followed up for further two weeks. Strict questioning was made about further sexual exposure.

RESULTS

Altogether 267 cases were seen during the period. Only 5 patients were found to have penicillin resistant gonococci.

ILLUSTRATIVE CASE

L.K.H. has had gonococcal infections on several occasions and on all those previous visits, the infections subsided with the usual dose of penicillin. This time when seen on 24th January, 1962, he had similar urethral discharge, the smear of which showed gonococci. He was given the standard treatment, but there was no response. A urethral swab from the discharge was taken and sent for culture and sensitivity. In the meantime, he was given 1,200,000 units of P.A.M. intramuscularly. Two days later, he came back with the persistent discharge. By this time the result of the culture and sensitivity tests had come back, revealing that the organism was insensitive to penicillin, sulphonamide and streptomycin. When the treatment was changed to tetracycline, the discharge cleared up. He strongly denied that he had further exposure while on treatment.

DISCUSSION

From this result it would appear that the incidence of penicillin resistant gonococci is very small. Out of 267 cases seen from February to May, 1962, there were only 5 penicillin resistant gonococci cases which were confirmed bacteriologically. This apparent low incidence could be due to a number of factors. One important point is that the dosage used is more than adequate and as a matter of fact more than that used by other venereolo-

gists. In 1943 when more and more cases of gonorrhœal urethritis were getting resistant to sulphonamides, penicillin was introduced and the response was excellent even with such a small dose of 100,000 — 120,000 units. Since then the failure rates have become more frequent.

Dallas (1958) treated patients with gonorrhœa with the standard dose of 300,000 units and found that there were 20 failures in the first two weeks and 5 after two weeks. All these cases denied further exposure. Gjessing (1959) also found that the relapse rate in Oslo rose from 2.2% — 2.6% in 1952-54, to 7.9% in 1955, in patients treated with 300,000 units of procaine penicillin. Similarly Curtis and Wilkinson (1958) noticed that at the end of 1956 a small proportion of men with uncomplicated gonococcal urethritis failed to respond to 300,000 units of procaine penicillin given intramuscularly. In some cases further treatments with bigger doses were equally unsuccessful. Of 1,116 cases they treated with the standard dosage, 124 continued to have gonococci in the urethral discharge after treatment. After studying the sensitivity of 302 strains of gonococci, they concluded that 600,000 — 1,200,000 units of aqueous procaine penicillin or P.A.M. should be the routine dosage for the treatment of the gonococci.

The W.H.O. expert committee on Venereal Diseases and Treponematoses (1960) recommended that the dose should consist of 1.2 mega units of a preparation unspecified and the second dose 0.6 mega units of P.A.M. or benzathine penicillin. It can therefore be seen that if the dose used were to be smaller, the incidence of penicillin resistant gonorrhœa cases might be higher. The Middle Road Venereal Disease Clinic also has evening session and this is run by a part-time practitioner and some cases were treated forthwith with broad-spectrum antibiotics without cultural study. These cases were included in the number of cases seen in the Middle Road Hospital Venereal Disease Clinic. Another peculiar practice in this country is that patients go from one clinic to another without revealing that they had actually come from another clinic. It is very likely that some of the cases who failed to respond with 1.2 mega units of penicillin given at Middle Road Hospital

might have gone to other clinics or to other private practitioners and were considered in this series as those responded to treatment.

In order to accept the existence of penicillin resistant strains, Carpenter put down the following criteria:—

1. Cultivation and identification of organism in vitro.
2. Elimination of the possibility of reinfection.
3. Confirmation that adequate blood levels of penicillin have been achieved.
4. Exclusion of the possibility of antagonistic effect of penicillinase type of activity by concomitant's organism.
5. Assurance that deterioration of the drug has not occurred.
6. In vitro demonstration of enhanced penicillin resistance of suspected strain.

King (1960), however, felt that these criteria are too strict and are not likely to be fulfilled in practice. Criterion 1 has to be fulfilled in order to avoid misdiagnosis. In fact the earlier reports of so-called penicillin resistant cases were later proved by Hughes and Carpenter (1948) to be non-gonococcal urethritis, and this point was satisfied here. Elimination of the possibility of reinfection is very difficult. There is no way to differentiate between relapse and reinfection. It can be almost completely ruled out only in a closed community where post-treatment supervision can be properly carried out. In fact even in a closed society, there is evidence that failures do occur as shown by Mead et al (1960). With the dose that was used, in these cases, which was larger than that recommended by Curtis and Wilkinson (1958), and the W.H.O. Expert Committee on Venereal Diseases and Trepanomatoses (1960), it is most unlikely that the blood levels of penicillin were inadequate. There is at present no evidence to show that the concomitant organism in the urethra is capable of producing penicillinase in sufficient quantity to inhibit the action of penicillin. As to point 5, there is no reason to believe that there is any deterioration of the drug because all the sensitive gonococcal urethritis responded to the same type of penicillin even at a smaller dose than the ones which failed to respond.

CONCLUSION

There is evidence that in this country there are some strains of gonococci which are resistant to penicillin. The exact incidence could not be assessed and it needs a more careful study. At least 2.4 mega units of P.A.M. should be given before the cases can be considered resistant to penicillin.

SUMMARY

A study of penicillin resistant gonococci seen in the patients attending the Middle Road Hospital between February to May, 1962, was made. Only 5 cases out of 267 were found to be resistant to penicillin. The dosage used was higher than that recommended by other venereologists. A short discussion on the apparently low incidence of gonococcal resistant cases seen in this country and on the criteria that have to be fulfilled before the organism can be considered resistant was made.

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