Deafness after Topical Neomycin

The aminoglycoside antibiotics could be much more freely used but for their peculiar capacity to damage the eighth nerve, streptomycin and gentamicin attacking mainly the vestibular branch and neomycin and kanamycin the auditory. It is fairly well recognized that any of them should be used with caution, particularly in patients with poor renal function, though vestibular damage in such patients from streptomycin, sometimes given for inadequate reasons, has unfortunately been far from uncommon. The risk from administering neomycin is much greater, both because deafness is a more severe handicap than vestibular dysfunction and because a smaller total dose may produce it. Since kanamycin, with very similar therapeutic effects, is less ototoxic, the parenteral administration of neomycin has been almost entirely abandoned. It is nevertheless extensively used in the form of a local application, as a cream applied to the skin or nose, as a solution to be inhaled, and in tablets swallowed for their effect on the bowel flora. The antibiotic has also been introduced into the peritoneal cavity for the treatment of peritonitis and into the bladder to prevent infection after instrumentation.

It is generally assumed that absorption from these sites of application will be negligible and hence that toxic effects are not to be expected, but this is not always true. From the alimentary tract absorption is certainly slight—though enhanced by ulceration—but when large doses are given for long periods for the prevention of hepatic coma, and if the patient also has diminished renal function, the amounts absorbed can accumulate in the blood to a toxic level. The same effect has been produced by colonic irrigation. Inhalation, highly commended for the treatment of bronchiectasis, is also not without risk. It was shown by V. Lorian that aminoglycosides are particularly well absorbed after intra-bronchial administration, and the inhalation of an aerosol of neomycin several times a day has been known to cause hearing loss in children.

A further and novel example of ototoxicity from topical neomycin is reported by D. R. Kelly and his colleagues from Columbus, Ohio. A bedsores in a 24-year-old paraplegic man led to osteomyelitis involving the ischium and femoral head, and after radical operation and closure the wound was irrigated at four-hour intervals through two plastic tubes with 80 ml of a solution containing 0.5% neomycin and 0.1% polymyxin, what remained after each instillation (neither volume nor antibiotic content is stated) being withdrawn by suction two hours later. This treatment was continued for two weeks, when the volume of solution introduced was halved. Thus 2.4 g. neomycin daily was reduced to 1.2 g. Both hearing and renal function were originally normal. Tinnitus developed on the 24th day of treatment, with some increase in the blood urea and creatinine. The latter returned to normal when treatment was stopped, but auditory loss, at first undetectable and involving only high frequencies six weeks later, progressed inexorably until after 10 months it amounted to 89% in one ear and 100% in the other, "rendering
hearing acuity nonfunctional for purposes of communication.” The late onset and progressive nature of this form of deafness are truly forbidding. There is no possibility of averting hearing loss by stopping treatment at the first sign of damage.

It must be assumed that the greater part of the antibiotic in each instillation was absorbed, as indeed might be expected, since there is little difference in principle between the irrigation of a well-sealed cavity and simple parenteral injection. Hence, if local treatment is adopted, the daily amount should be limited to that considered safe by injection—certainly not more than 1 g.—and it would be wise to continue the treatment for not more than seven days. The same considerations should apply to all forms of local application, including the treatment of skin infections and burns and instillations into serous and other cavities.

Disputes over Children

Judges’ criticisms of psychiatrists have on occasions been made in strong terms and have elicited equally trenchant replies. In general the courts have been apt to receive psychiatric evidence with some scepticism, partly because a psychiatrist’s opinion often depends in some measure on his assessment of the truth of what he has been told by a person interested in the outcome of litigation. Lawyers and judges feel that they are better able to make that assessment after a trial than a psychiatrist before it. By impugning some of the psychiatrist’s basic premises, the courts can rationalize their common human suspicion of psychiatrists.

An analysis of adoption and custody cases of recent years by a Nottingham law lecturer¹ shows the courts’ efforts to get to grips with psychiatric evidence, which has been increasingly tendered in such cases in the past decade. The traditional legal view was that the effects on young children of being moved from one family to another were “mercifully transient.” Psychiatrist evidence to the contrary has not always been presented in the most attractive way, and psychiatrists have been judicially castigated for having damned the mantle of the advocate on behalf of the party paying their fees. As a protection from such criticism it has been suggested that medical evidence should be obtained from a panel of court experts. But such a system might be found to have an inbuilt bias in favour of the more conservative medical experts.

Mr. Justice Cross² has made some helpful observations on the manner in which medical evidence might be presented when the custody of a child is in issue. The Court of Appeal also has made similar observations,³ suggesting it is desirable that the parties in dispute should co-operate to the extent of giving joint instructions to a medical expert, so that he has the advantage of knowing what facts are in dispute and of being able to interview all the relevant parties before making his assessment. Mr. Justice Cross suggested that when the parties cannot bring themselves to co-operate to this extent the Official Solicitor should be appointed guardian ad litem of the child, so that he can consider whether to instruct an expert and so that he can give impartial instructions to the expert of his choice.

These judicial suggestions remain mere observations without the backing of legal compulsion. But it would be in the public interest as well as in the interest of medical witnesses if they refused to accept instructions as expert witnesses except on terms granting them facilities to interview all the opposing parties and to receive instructions which were either agreed or at any rate showed the opposing views. Meanwhile the

⁵ Fuller, A., Lancet, 1960, 1, 1026.