NOTES ON THE TREATMENT OF TONSILLITIS

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Whilst preparing a pilot survey in the North Midlands (Sheffield) Faculty to study the position in regard to the treatment of acute tonsillitis, I had occasion to write to some of the ear, nose, throat and paediatric consultants in the faculty to ask for their views.

In many instances their replies were extremely helpful, though somewhat conflicting, and this has led me to a further study of the literature on this subject. Broadly speaking, one can leave tonsillitis untreated in order to allow the child to develop immunity to further attacks, or one can use aspirin, sulphonamides, penicillin, other antibiotics, or bismuth, with apparently differing results.

Some notes on the current opinions of the value of sulphonamides, antibiotics and bismuth follow:—

Sulphonamides

Spencer Harrison (1954) in a personal communication, states that a notable number of authorities have failed to find evidence that sulphonamides accelerate recovery from a sore throat, though the value of these in preventing complications does not appear in the literature until more recently. He states: " It is really more important to protect from the consequences than accelerate recovery from a naturally brief illness." Amongst others he refers to Rhoads and Afremow (1940), and MacDonald and Watson (1951). Gray (1954) states that sulphonamides are better not used, as the tonsils become walled off from attack by the natural body defences, and from the sulphonamide itself.

Sulphadiazine, in contradistinction to its relative ineffectiveness in the treatment of streptococcal infections, is often effective in preventing their occurrence; but the sulphonamides in general are ineffective in the prophylaxis of rheumatic fever.

Cases occasionally occur, especially in children, in which the sulphonamide has masked a complication such as otitis media. Another unpleasant result of the use of sulphonamides which is sometimes seen, is what may be called " hang-fire tonsillitis," in which the condition improves up to a point and then remains stationary for a matter of days or weeks with a chronic sore throat and red swollen tonsils.

The toxic and unpleasant side effects such as headache, malaise, nausea, vomiting, cyanosis, skin rashes, drug fever, haemolytic anaemia, agranulocytosis and renal disorders should be sufficient to discourage their routine use.

Penicillin

We should remember that patients usually recovered from acute tonsillitis before penicillin was available !

As early as 1951 David Wheatley, a general practitioner, showed that the average time for subsidence was 3.7 days with oral penicillin compared with 4.2 days with a similar group of sulphonamide treated cases.

Even earlier, in 1945, Major Plummer wrote that " since the introduction of penicillin the superiority of this new drug over the sulphonamides in serious haemolytic streptococcal infections has been demonstrated." He found that penicillin if given over a sufficient period of time, would shorten and alleviate the acute symtoms of haemolytic streptococcal ' pharyngitis-tonsillitis.' In those days the dose used was 15,000 units four-hourly for 6 days. Penicillin was found to exert a profound effect on the number of haemolytic streptococci in the naso-pharynx. The culture made 24 hours after the administration of penicillin was nearly always negative. When penicillin was discontinued haemolytic streptococci tended to return gradually to the naso-pharynx. The frequency of their reappearance was inversely proportional to the length of time the drug was administered.

From Copenhagen, Bennike *et al.* (1950) wrote that penicillin appeared to prevent the pyogenic complications of tonsillitis, and possibly also rheumatic fever. He and his fellow workers investigated the effect of penicillin in acute sporadic tonsillitis, which they stated differed essentially from the epidemic form in which it was possible in the great majority of cases to demonstrate haemolytic streptococci of group A as the cause of the disease. In their streptococcus positive patients a definite rise in the anti-streptolysin titre was observed in only 18% of penicillin treated patients, as against 44% of the untreated. In the streptococcus negative patients the frequency of a rise in the anti-streptolysin titre was equally low in both groups independent of treatment.

A difference in the therapeutic effect of penicillin treatment was also seen on comparing the findings in children and adults, as the effect of this treatment in children under 10 years was dubious; In these tonsillitis runs a more spontaneous course and streptococci are of less frequent occurrence.

They stated that pyogenic complications were practically never observed in the penicillin treated cases during the acute course of the disease. On the other hand there was no difference in the occurrence of the non-pyogenic complications including arthralgia, slight albuminuria, haematuria and glycosuria, which appeared only seldom, and were invariably mild or transient in character.

Finally, they emphasised that penicillin therapy appeared to have no influence on the frequency of relapses or complications during convalescence after an attack of acute tonsillitis.

Nothing was found to contraindicate pencillin.

Probably, in severe infections, intramuscular penicillin should be used for no longer than 5 to 7 days.

Local Penicillin. The value of local penicillin in the form of lozenges is, to say the least of it, doubtful, and there seems to be no real reason why the superficial application of a weak penicillin solution should exert any beneficial effect on an infection which is largely confined to the tonsillar crypts. It is not denied, however, that some cases do benefit from it, and the psychological effect is often gratifying. Occasionally, local penicillin produces an unpleasant reaction, usually showing itself as a very red sore mouth and tongue, which may progress to a severe oedema.

Oral Penicillin. It is now an established practice to give oral penicillin for some two years after an attack of acute rheumatism in order to try to prevent further sore throats and rheumatic relapses. Gordon (1954) observes that one might observe the effects of oral penicillin versus tonsillectomy in preventing sore throats in non-rheumatic children.

Penicillin is not a toxic agent, but it can be a potent sensitiser, and in some sensitive patients an exfoliative dermatitis has been produced. As with any antibiotic, superinfection, drug fastness, and cross infection are becoming more of a problem. Morton (1954) quotes Beickert and Noetzel (1952) as having reported a case of death due to encephalitis in an apparently allergic patient with traumatic meningitis.

Other Antibiotics

Denny *et al.* (1953b) made a clinical evaluation of the relative merits of penicillin, aureomycin and terramycin for the treatment of group A streptococcal tonsillitis and pharyngitis amongst men at the Warren Air Force Base, U.S.A. Under therapy, in a controlled study with these agents, most of the symtoms and signs subsided somewhat more rapidly than in the control patients. Leucocytosis was reduced, and antibody formation was diminished. But, in the dosage used, no one drug was constantly more beneficial. Penicillin was the most effective in eradicating streptococci from the throat. Nausea and vomiting occurred more frequently in patients receiving aureomycin, and diarrhoea was common in both the aureomycin and the terramycin groups. All three drugs are highly effective in preventing suppurative complications.

The modern opinion is that full therapeutic doses should always be used over at least 7, and if possible 10 days. Shorter periods of treatment are inadequate and lead to a high percentage of recurrences. In another article Denny (1953a) states that there is no reason to believe that penicillin would be ineffective when given in adequate dosage orally, but again expresses a plea for using it for 10 days if possible.

Aureomycin and Terramycin. Aureomycin is effective in preventing rheumatic fever. No figures are available in respect of the prevention of rheumatic fever by terramycin.

Chloromycetin. Chloromycetin is better tolerated by children than aureomycin, but the possibility of causing blood dyscrasia especially after prolonged administration must be remembered.

Erythromycin. Erythromycin is a promising weapon in acute infections owing to its low toxicity, and its potency against gram positive organisms, for example staph. aureus, which is often resistant to other antibiotics. The dosage is similar to aureomycin.

Combined Therapy

In many cases of respiratory infection a combination of antibiotics is found to be useful, e.g. penicillin with streptomycin. A second antibiotic may prevent the development of drug opposition of the first antibiotic. However, it must be emphasized that antibiotics must not be used in a shot-gun fashion with the view that, if one fails, another will take hold, but should always be given following sensitivity tests.

Super-infection may be caused by yeast (e.g. candida albicans) especially in the mouth and throat. For want of a better term it has been called the " antibiotic throat," and is characterised by acute painful pharyngitis with ulceration of the pharyngeal wall, tonsils, palate, tongue, etc. This is due to the destruction of the normal bacterial flora allowing the yeast to take hold, and the illness is thereby greatly prolonged.

There is a real risk in the indiscriminate use of antibiotics causing resistant strains of bacteria to develop, and they are better withheld as far as possible—" Why take a sledge hammer to swot a fly !"

Bismuth

Marinho and Monteiro in 1923, in Brazil, were the first advocates of bismuth therapy in throat infections caused by Vincent's organisms, and their successful results encouraged them to extend its use to the more serious forms, such as quinsy.

In 1934, Monteiro working in Rio de Janeiro, published a paper showing the brilliant results obtained in the treatment of 1,029 cases of acute lacunar tonsillitis by a few injections of 10 mgms. of oil or water soluble bismuth. Pain and dysphagia were relieved within 8—10 hours and the temperature also became normal in 24 hours. Within this time the follicular exudate had often disappeared. In 1941, Monteiro found that no fewer than 46 papers confirmed his original work in all respects. Later he tried the effect of bismuth suppositories and found them equally useful. He gave less than one grain of metallic bismuth in each suppository.

In this country the need for intramuscular injection appears

to have been the main objection to its use in the treatment of these infections, but with the introduction by J. S. Stovin in 1944 of the rectally absorbed compound bismuth heptadiene-carbolcylic acid this disadvantage disappeared. Stirk-Adams (1947) in Birmingham used bismuth sodium tartrate B.P. gr. i. in a gr. xv. cocoa butter suppository with good results.

There is no widely employed English supplied suppository containing bismuth for the treatment of tonsillitis. Those doctors who employ this form of treatment have the suppository prepared by their pharmacist. Suitable prescriptions are:—

CHILDREN R. Bismuth sodium tartrate gr. ¼. Cocoa Butter gr. xv.
Sig: insert 1 suppository each night until symptoms subside. (Usually not more than 3 or 4 are required).

ADULTS: R. Bismuth sodium tartrate gr. i. Cocoa Butter gr. xv.
Sig: as above.

The mode of action of bismuth is not clear. It would appear to be the bismuth ion which is of importance, and therefore one would expect suppositories such as Anusol (Warner) to be effective. de Rosa (1952) in Italy states that the molecule must come in contact with a particular substance, 'bismogen' to liberate the nascent bismuth. This happens in the short, but not very short, time that precedes the beginning of the therapeutic action of bismuth in reducing pyrexia and oedema. The existence of this latent period probably gave rise to the idea of associating bismuth with an antibiotic, having a different and quicker action. Chloramphenicol has been used to this end by several Italian workers, who use it with bismuth in a suppository form. Their enthusiastic reports claim 92% of quick and efficacious action in catarrhal pharyngitis and tonsillitis, but not in quinsy. They note that the local symptoms are relieved rapidly, and the general symptoms within 2 or 3 days. No toxic results have been reported. They think there is a synergistic action between the metal and the antibiotics.

There is evidence that the accumulation of bismuth in the tonsils and other lymphoid tissue is selective (Pescetti, 1939).

Bismuth is contraindicated in cases of uncompensated heart disease and nephritis. Under normal conditions toxic reactions are rare.

At the time of writing, I have not had the opportunity to use bismuth in more than a few cases. It seems unlikely that it will shorten the duration of the disease below 3 days, but the pilot survey may eventually answer this and many other questions. The treatment is not cheap. The cost of a single suppository works out at about 1s. 9d., and so far I have found that two or even three are required. My overall impression at the moment, is that penicillin is probably the treatment of choice. My own practice is to administer it parentally in severe cases and orally in the milder and moderate case.

Summary

A review on some of the literature on the treatment of tonsillitis is given. A pilot survey on this subject is to be attempted by the North Midlands (Sheffield) Faculty of the College of General Practitioners.

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APPENDIX

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AN UNUSUAL EPIDEMIC

BY A. L. WALLIS, M.B., (EDIN.) : *Lancet* 1955, **2**, 290

This paper is a preliminary report on an epidemic of an acute upper respiratory tract disorder in a rural practice about five miles from Carlisle, Cumberland. The main features were conjunctivitis which might be unilateral, pyrexia up to 104°F, malaise, sore throat, dry cough and enlarged cervical glands. Convalescence was marked by severe listlessness which persisted for several weeks. Laboratory investigations were uniformally negative. The clinical picture of the cases in this outbreak resembled those ascribed in the U.S.A. to the A.P.C. group of viruses and those cases reported by the Director of the Epidemic Observation Unit in Newsletter No. 8, p. 120. Virus investigations are being carried out at the Virus Reference Laboratory, Collingdale, and we look forward to further reports. To date, the first few specimens examined have been found to be negative for antibodies against anoidal-pharageal-conjunctival group viruses.