SHORT REPORTS

High-dose oral amoxycillin for preventing endocarditis

The use of oral instead of parenteral antibiotics for preventing endocarditis and the possible advantages of amoxycillin over phenoxymethylpenicillin (penicillin V) were recently discussed.[1] We have reported that a single 2-g oral dose of amoxycillin gave higher and more sustained serum concentrations than an equivalent dose of phenoxymethylpenicillin and that the minimum bactericidal concentrations of amoxycillin for viridans streptococci were equal to or less than 0·12 mg/l.[2] A single 2-g oral dose of amoxycillin given one hour before a dental procedure, however, still fails to achieve adequate serum bactericidal concentrations for the nine-hour critical period after dental bacteraemia. We have now measured the serum amoxycillin concentrations after single oral doses of 3 g and 4 g of the drug in 13 healthy men volunteers and noted any side effects.

Methods and results

Amoxycillin was administered as a lemon-flavoured syrup, supplied by Bencard, dispensed as a powder and reconstituted by adding 50-65 ml water immediately before administration. Each volunteer ate a standard light breakfast one hour before taking amoxycillin and a light diet during the study. Either 3-g or 4-g doses were randomly allocated to each volunteer, and at least one week later the alternative dose was administered. Serum samples were collected from 30 minutes to 12 hours after each dose and the serum amoxycillin concentrations measured with a *Sarcina lutea* NCTC 8340 plate diffusion method.

The table shows the amoxycillin concentrations observed after each dose. Peak concentrations occurred 1½-2 hours after administration, and the mean peak serum concentration for the 3-g and 4-g doses were 27·8 and 34·1 mg/l amoxycillin respectively. The mean serum half life for both doses was 1½ hours. The mean area under the curve for the 4-g dose was 100·9 mg hour/l (SD 25·74), and that for the 3-g dose was 76·7 mg hour/l (SD 12·24). The difference between the areas under the curve was statistically significant ($p < 0·01$, paired student's t test). Although the 4-g dose had a higher total bioavailability than the 3-g dose, as indicated by the area under the curve, our results suggest that it was less well tolerated than the 3-g dose. After the 4-g dose four volunteers had diarrhoea, one developed "fruity burps," and another suffered from heartburn two hours after the dose. After the 3-g dose only two volunteers had diarrhoea and one developed nausea. In all volunteers, however, the diarrhoea was mild and resolved within 36 hours.

Mean serum amoxycillin concentrations after oral administration of 3-g and 4-g doses to 13 healthy volunteers. Results are given as mean ± 1 SD

Time after administration of dose (h)	Mean serum amoxycillin concentrations (mg/l)	
	3-g dose	4-g dose
0·5	8·6 ± 3·6	11·1 ± 3·6
1	16·3 ± 4·0	20·7 ± 6·7
1·5	24·4 ± 5·4	28·9 ± 8·7
2	24·2 ± 3·8	30·3 ± 4·3
2·5	17·0 ± 4·3	21·6 ± 7·3
3	11·8 ± 3·3	15·5 ± 5·4
4	7·8 ± 2·5	11·6 ± 4·8
6	3·6 ± 1·5	5·2 ± 2·5
8	1·4 ± 0·5	2·0 ± 1·2
10	0·4 ± 0·2	0·6 ± 0·3
12	0·2 ± 0·1	0·3 ± 0·2

Comment

The serum amoxycillin concentrations after the 3-g oral dose were well above the minimum bactericidal concentrations of amoxycillin for viridans streptococci for at least 10 hours. Bactericidal antibiotics can effectively prevent experimental streptococcal endocarditis provided that high peak serum concentrations and sustained bactericidal serum concentrations are achieved during a six-to-nine-hour critical period after bacteraemia.[3 4] These objectives were apparently achieved by giving a single 3-g oral dose of amoxycillin. The 4-g dose gave slightly higher serum concentrations than the 3-g dose but in our study was associated with more side effects.

There is a great need for a practical and effective oral prophylactic regimen. The 3-g "twin pack" of amoxycillin, recently introduced for treating urinary infections, provides a highly satisfactory oral prophylaxis for endocarditis. The first 3-g dose should be given under supervision one hour before the dental procedure to provide effective cover for the critical period afterwards. Our results show that a second dose may be unnecessary; if the patient defaults on a further dose, failure of prophylaxis would seem unlikely. For the present, however, it is probably wise to suggest a safer approach and recommend that a second 3-g dose should be taken eight to nine hours after the procedure. We suggest that this oral regimen should normally be given only outside hospital, and that it is contraindicated in patients receiving general anaesthesia; patients with prosthetic heart valves require parenteral prophylaxis as recommended by the American Heart Association.[5]

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Abuse of the mushroom Panaeolus foenisecii

The mushroom commonly used for hallucinogenic purposes in the United Kingdom is *Psilocybe semilanceata* (the Liberty cap).[1] The pharmacological effect of these mushrooms is said to be caused by 4-hydroxy-tryptamine derivatives (psilocybin and psilocin). I describe here the ingestion, for its hallucinogenic properties, of a common mushroom—*Panaeolus foenisecii*—found in lawns and parkland, often around blocks of flats in Aberdeen.

Case reports

Three young men (aged 16, 18, and 18 years) arrived in the casualty department, each having eaten 20 to 30 of these fresh mushrooms; they were brought by their parents after one of them had confessed to eating mushrooms after direct questioning by his mother about his excited state. In addition to euphoria the patients had experienced hallucinations of colour and speed of movement such that lawns developed patches of brilliant colours and cars and pedestrians moved frighteningly fast. Gastric lavage was performed, and the euphoria and hallucinations subsided within 12 hours without additional treatment or residual ill effects. The eldest had eaten "magic mushrooms" before. None admitted to the use of other drugs except ethanol. No anticholinergic effects were observed.

Comment

Reports on the presence of psilocybin and psilocin in *Panaeolus foenesecii* are confused, since both have been detected in some samples of this mushroom but not in all. It is usually considered a "latent psilocybin" mushroom, because psilocybin and psilocin may not necessarily be present in a particular specimen.[2]