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[Intervention Review]

Antibiotics for the prophylaxis of bacterial endocarditis in dentistry

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ABSTRACT

Background

Infective endocarditis is a severe infection arising in the lining of the heart with a high mortality rate.

Many dental procedures cause bacteraemia and it was believed that this may lead to bacterial endocarditis (BE) in a few people. Guidelines in many countries have recommended that prior to invasive dental procedures antibiotics are administered to people at high risk of endocarditis. However, recent guidance by the National Institute for Health and Clinical Excellence (NICE) in England and Wales has recommended that antibiotics are not required.

Objectives

To determine whether prophylactic antibiotic administration compared to no such administration or placebo before invasive dental procedures in people at increased risk of BE influences mortality, serious illness or endocarditis incidence.

Search methods

The search strategy from the previous review was expanded and run on MEDLINE (1950 to June 2008) and adapted for use on the Cochrane Oral Health, Heart and Infectious Diseases Groups' Trials Registers, as well as the following databases: CENTRAL (*The Cochrane Library* 2008, Issue 2); EMBASE (1980 to June 2008); and the *metaRegister* of Controlled Trials (to June 2008).

Selection criteria

Due to the low incidence of BE it was anticipated that few if any trials would be located. For this reason, cohort and case-control studies were included where suitably matched control or comparison groups had been studied. The intervention was the administration of antibiotic compared to no such administration before a dental procedure in people with an increased risk of BE. Cohort studies would need to follow those at increased risk and assess outcomes following any invasive dental procedures, grouping by whether prophylaxis was received. Included case-control studies would need to match people who had developed endocarditis (and who were known to be at increased risk before undergoing an invasive dental procedure preceding the onset of endocarditis) with those at similar risk but who had not developed endocarditis. Outcomes of interest were: mortality or serious adverse event requiring hospital admission; development of endocarditis following any dental procedure in a defined time period; development of endocarditis due to other non-dental causes; any recorded adverse events to the antibiotics; and cost implications of the antibiotic provision for the care of those patients who develop endocarditis.

Data collection and analysis

Two review authors independently selected studies for inclusion, then assessed quality and extracted data from the included study.

Main results

No randomised controlled trials (RCTs), controlled clinical trials (CCTs) or cohort studies were included. One case-control study met the inclusion criteria. It collected all the cases of endocarditis in The Netherlands over 2 years, finding a total of 24 people who developed endocarditis within 180 days of an invasive dental procedure, definitely requiring prophylaxis according to current guidelines and who were at increased risk of endocarditis due to a pre-existing cardiac problem. This study included participants who died because of the endocarditis (using proxies). Controls attended local cardiology outpatient clinics for similar cardiac problems, had undergone an invasive dental procedure within the past 180 days and were matched by age with the cases. No significant effect of penicillin prophylaxis on the incidence of endocarditis could be seen. No data were found on other outcomes.

Authors' conclusions

There remains no evidence about whether penicillin prophylaxis is effective or ineffective against bacterial endocarditis in people at risk who are about to undergo an invasive dental procedure. There is a lack of evidence to support previously published guidelines in this area. It is not clear whether the potential harms and costs of antibiotic administration outweigh any beneficial effect. Ethically practitioners need to discuss the potential benefits and harms of antibiotic prophylaxis with their patients before a decision is made about administration.

PLAIN LANGUAGE SUMMARY

Antibiotics for the prophylaxis of bacterial endocarditis in dentistry

There is no evidence about whether antibiotic prophylaxis is effective or ineffective against bacterial endocarditis in people at risk who are about to undergo an invasive dental procedure.

There is a lack of evidence to support previously published guidelines in this area. It is not clear whether the potential harms and costs of antibiotic administration outweigh any beneficial effect. Ethically practitioners need to discuss the potential benefits and harms of antibiotic prophylaxis with their patients before a decision is made about administration.