PREVENTION OF BACTERIAL ENDOCARDITIS

Perhaps the least controversial area of chemoprophylaxis involves the use of antibiotics to prevent subacute bacterial endocarditis. Accordingly, we will begin this chapter with a discussion of the employment of prophylactic antibiotics for this infection.

Development of bacterial endocarditis remains one of the most serious complications of cardiac disease with significant morbidity and mortality despite advances in antimicrobial therapy and cardiovascular surgery. This infection occurs most often in patients with structural abnormalities of the heart or great vessels who undergo transient bacteremias.

Patients at risk of the development of bacterial endocarditis are those with valvular heart disease, congenital heart disease, a previous episode of infective endocarditis, and particularly those with prosthetic heart valves. The presence of an uncomplicated atrial septal defect of the secundum type probably does not indicate an increased risk, and there is probably no need for endocarditis prophylaxis following six months of healing after surgical closure of an atrial septal defect or patent ductus.

What procedures regularly result in transient bacteremia? Many workers have investigated the rate of transient bacteremia following various procedures and manipulations including those involving the genitourinary tract [26]. Unfortunately, the results of these studies have often been confusing because of diversity in blood culture timing, technique, and bacteriologic methods. Bacteremia may be caused by surgery or instrumentation of the genitourinary tract, especially urethral manipulations including urethral catheterization whether the urine is infected or not. Bacteremia has been associated with septic abortion, hysterectomy, and other major gynecologic surgery. Documented cases of bacterial endocarditis have been recorded following these procedures and antibiotic prophylaxis to prevent this infection should be employed. Endocarditis following uncomplicated dilatation and curettage of the uterus is extremely rare and has not been considered an indication for endocarditis prophylaxis by the American Heart Association. This author has seen endocarditis following uncomplicated D&C in predisposed patients, and at this institution we continue to utilize endocarditis
prophylaxis for patients undergoing D & C who have underlying cardio-
vascular lesions. Although endocarditis has been attributed to infected intra-
uterine contraceptive devices by Cobbs [20] and De Swiet [23], Everett found
no bacteremia at 1 to 3, 15 or 30 min following their insertion in 84 and their
removal in 16 women [27]. Since none of these women had pelvic infection or
endometritis, the incidence of bacteremia following removal of infected de-
vices is unknown. Regatz reported 40 patients undergoing biopsies from two
to seven areas of the cervix [76]. Blood cultures were obtained from 1–5 min
following the procedure. All cultures were negative, although aerobic and
anaerobic bacteria grew from most of the cervical swabs taken before the
procedure. A Schiller’s test using Lugol’s iodine solution done just before the
biopsy may have killed the cervical flora, however. Harris performed endo-
cervical and endometrial biopsies in 101 women [104]. A blood culture was
obtained immediately prior to and 5 min after the biopsy in each patient. No
growth occurred in any of the 202 blood cultures, again suggesting that
bacteremia is rare following these procedures.

It should be mentioned that since the patient with a prosthetic valve
appears to be at such high risk of the development of endocarditis, it may
be wise to administer antibiotic prophylaxis with any genitourinary proce-
dure in such a patient. This recommendation is not based upon definitive
data. Enterococci (Streptococcus faecalis) are one of the most frequent causes
of endocarditis after genitourinary procedures. Gram negative organisms are
a frequent cause of bacteremia and even of sepsis, but are a rare cause of
endocarditis. Thus, prophylaxis after these procedures must be directed
mainly against enterococci. The most recent recommendations by the Ameri-
can Heart Association for the prevention of bacterial endocarditis following
genitourinary tract surgery are as follows [49, 63, 95]: Aqueous crystalline
penicillin G 2 million units intramuscularly or intravenously or ampicillin 1 g
intramuscularly or intravenously plus gentamicin 1.5 mg/kg (not to exceed
80 mg) intramuscularly or intravenously or streptomycin 1 g intramuscularly,
giving initial doses 30 min to one hour prior to procedure. If gentamicin is
used then give a similar dose of streptomycin and penicillin or ampicillin every
12 h for two additional doses. For patients who are allergic to penicillin,
vancomycin 1 g intravenously given over 30 min to 1 h plus streptomycin 1 g
intramuscularly. A single dose of these antibiotics begun 30 min to 1 h prior
to the procedure is probably sufficient, but the same dose may be repeated in
12 h. During prolonged procedures, or in the case of delayed healing, it may
be necessary to provide additional doses of antibiotics.

Several points in regard to endocarditis prophylaxis should be stressed:
First, the above recommendations apply only to patients with the underlying,
predisposing cardiovascular lesions described. They are designed to prevent
infective endocarditis in these patients and their use is not concerned with nor