

Chronic Bacterial Prostatitis and the Problem of Antibiotic Diffusion

Chronic bacterial prostatitis, caused by sensitive Gram-negative organisms, is a major source of relapsing urinary tract infection in men. Although appropriate antibiotics readily sterilize the urine, the bacteria persist in the prostatic fluid because most antibiotics do not diffuse from plasma into the fluid. After drug therapy is discontinued, these persistent prostatic bacteria eventually reinfect the bladder urine.

Studies in dogs have shown that even with exceedingly high plasma levels of various antibiotics, there was little or none in the prostatic fluid. Only the basic macrolides (erythromycin and oleandomycin) were concentrated in prostatic fluid (2 to 3 times the plasma level). The basic macrolides, unfortunately, are generally ineffective agents against Gram-negative organisms that cause bacterial prostatitis.

The diffusion of any drug across biological membranes depends upon (1) the lipid solubility of the drug, (2) the dissociation constant (pKa) of the drug, and (3) the degree of plasma protein-binding of the drug. Only lipid-soluble drugs with minimal binding to plasma proteins and with favorable pKa values diffuse from plasma into prostatic fluid. Since most antibiotics that are effective against Gram-negative bacteria do not favorably meet these criteria, the cure of chronic bacterial prostatitis is rarely achieved. The ideal drug, theoretically, would be a base with a pKa value of at least 7.4, with a high degree of lipid solubility, and with minimal binding to plasma proteins.

EDWIN M. MEARES, JR., M.D.

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Dependability of Renin in the Diagnosis of Renal Hypertension

Assay of plasma renin activity is gaining wide acceptance because there is generally a good correlation between plasma renin activity assay of the individual renal venous effluent and the diagnosis and prognosis of renal hypertension. While renin assay is an imperfect laboratory method at present and will undoubtedly be supplanted by radio-immunoassay of angiotensin in the future, it is sufficiently reliable to warrant use in all patients suspected of having renal hypertension. We do not believe that assay of peripheral venous blood for renin activity is dependable as a screening test but when blood from each renal vein is analyzed and a ratio of 1.5 to 1 or greater between the ischemic and contralateral kidney is found, considerable reliance can be placed on the method. Correlation has been found between renin assay ratios and the results of reconstructive or ablative operation in approximately 90 percent of cases. Assay of divided renal vein activity has gained better acceptance as a predictive test than have divided kidney function tests. In equivocal cases, divided kidney function tests may provide additional useful information.

JOSEPH J. KAUFMAN, M.D.

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Treatment of Undescended Testes

Treatment of an undescended testis before age of six is recommended. Three to five percent of children under one year of age have undescended testes. This may be associated with other urological anomalies. Most testes which remain undescended after age six undergo progressive functional loss which is irreversible after pu-