Evaluation of a DNA-hybridization method for detection of African and Asian strains of Neisseria gonorrhoeae in men with urethritis

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Abstract:

The 2.6-megadalton (MDa) cryptic plasmid and the 4.4-MDa beta-lactamase plasmid of Neisseria gonorrhoeae were radiolabeled with [32P] nucleotides and used as probes for direct detection of gonococci and beta-lactamase plasmids in urethral exudates from men with urethritis. The sensitivity and specificity of the DNA probes were compared with culture isolation of N. gonorrhoeae and biochemical tests of gonococcal isolates for beta-lactamase production. Of 216 urethral specimens, 180 were positive for N. gonorrhoeae by DNA probe and culture, 27 were negative by both tests, and 9 gave discordant results. Compared with culture and with the chromogenic cephalosporin assay, the sensitivity and the specificity of the DNA probe was 99% and 93% and that of the beta-lactamase probe assay was 91% and 96%, respectively. Electrophoresis of plasmids isolated from 90 gonococcal cultures showed that all contained the 2.6-MDa plasmid, 29 possessed a 3.2-MDa plasmid, 18 a 4.4-MDa beta-lactamase plasmid, and 11 had a 24.5-MDa conjugal plasmid. We conclude that the sensitivity of our DNA probes was comparable to that of culture for diagnosis of gonorrhea and to conventional tests for detection of beta-lactamase.