Orpharyngeal Gonorrhea during Pregnancy

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OBJECTIVE: To determine the incidence of asymptomatic *Neisseria gonorrhoeae* infections in a prenatal population of military dependents.

BACKGROUND: The frequency with which *Neisseria gonorrhea* can be cultured from pregnant patients has been reported to vary from 1–7.3%, (1) dependent upon the population studied. These reports have been based primarily upon cultures obtained form the urogenital tract. The finding of *N. gonorrhoeae* in the oropharynx is not new; however, due to the pandemic of the disease caused by this organism more attention has been focused on this site. The purpose of this investigation is to determine the frequency of isolation of *N. gonorrhoeae* from the oropharynx as well as the urogenital tract in a pregnant population.

DESCRIPTION: The study sample consisted of all patients reporting for their first prenatal visit of their current pregnancy to the Obstetrics Outpatient Clinic of the U.S. Army Hospital in Bangkok, Thailand, between 30 August 1973 and 31 December 1973. During this time period 154 patients, all of whom were dependents of U.S. Government personnel stationed or retired in Southeast Asia, came for their first visit. One–hundred and fifty patients constitute the study population, as complete data on four patients were not available due to Bacillus overgrowth of their cultures.

A throat culture on all patients was obtained at the time of the initial physical examination by swabbing the patient's oropharynx with a sterile cotton–tipped applicator and streaking it directly on freshly prepared Thayer–Martin (VCN) media. The culture specimens from the cervix and the rectum were obtained in a manner identical to that previously described (1). Culture plates were incubated at 37°C under increased CO_2 atmosphere in candle jars.

Cultures were inspected at 24 and 48 hour intervals and those colonies with gross morphology resembling *Neisseria* species were subjected to gram staining and testing with oxidase reagent. All colonies of gram–negative diplococci that gave positive tests with oxidase reagent were transferred to fresh Thayer – Martin (VCN) media and taken to the SEATO Medical Research Laboratory (SMRL) for confirmation by sugar fermentation. When the presence of *N. gonorrhoeae* was confirmed, the patients were recalled and those not allergic to penicillin were treated with aqueous procaine penicillin 4.8 million units intramuscularly 45 minutes after they had received two grams of probenecid orally. The patients were instructed to have their sexual contacts report for treatment. In the event that a patient was allergic to penicillin, she was treated with erythromycin, 500 mg orally, four times a day for one week. The patients were instructed to return one week after treatment for repeat culture. Serological tests (VDRL) for syphilis were performed on all patients upon their return and at one and three month intervals following the initial isolation.

PROGRESS: Patients that constituted the sample were composed of 61% Thai, 31% Caucasian, and 9% of other ethnic origins. The last group consisted of patients of Negro, and Asian descent other than Thai.

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The patients ages ranged from 16 to 39 years with an average of 25.5 years. Primigravidas constituted 31% of the population, 32% were secundigravidas and 37% of the patients were gravida three or greater. The average gravidity was 2.4. The patients' gestational age at time of first visit varied from six to thirty–nine weeks with the average patient presenting at 17.2 weeks gestation. A diagnosis of *N. gonorrhoeae* was made in 24 of the 150 patients studied, giving a frequency of 16% in this population.

The most frequent site for a positive culture was the oropharynx from which 23 of the 24 positive cultures (96%) were obtained. A cervical culture accounted for the one remaining positive culture, and none of the rectal cultures were positive. There were no patients that had positive cultures from more than one site. Average age of those patients with positive cultures was 24.2 years (range 19--30 years). Ethnic origins were 54% Thai, 33% Caucasian and 12% other races. The average gravidity was 2.1 with 29% primigravidas, 42% secundigravidas and 29% gravida 3 or greater. The percentage of secundigravidas in the infected group was significantly higher than in the study sample but the average ages of these patients (25.1 yrs. for the infected secundigravidas and 24.8 years for all secundigravidas) was found to be not significantly different. Patients who had positive cultures presented for their first clinic visit between 6 and 30 weeks gestation with the average being 14.9 weeks. This was not significantly earlier than for the study population as a whole. Follow–up evaluation of the patients with *N. gonorrhoeae* revealed that none of these patients developed a positive serological reaction for syphilis. There was no case in which the patient, after antibiotic therapy, was found to have a subsequent positive culture for *N. gonorrhoeae*. The gestational and postpartum courses of all patients with positive cultures were completely uneventful and their resultant infants manifested no evidence of disease.

DISCUSSION: The finding that 16% of the patients studied were harboring *N. gonorrhoeae* was greater than what was expected, whereas 1 positive cervical culture out of 150 patients agrees with previous studies of military dependent populations (1). The major difference between this study and previous studies was the incorporation of the oropharynx as a culture site and this site accounted for the majority (96%) of the positive cultures. The high frequency of positive throat cultures may be partially explained by the fact that the gonococcus is an organism that has an apparent predilection for glandular tissue as demonstrated by the presence of the organism in Skene's and Bartholin's glands and the glands of the endocervical canal. The means by which the oropharynx become infected is not presently known, however, direct inoculation through fellatio is a distinct possibility. The question of the practice of fellatio was confirmed by some, but not all, of the patients with positive oropharyngeal cultures. A large percentage of our patients who had positive cultures from the oropharynx were of Thai origin which is predominantly of the Buddhist faith and, although the practice of fellatio is not condemned in Buddhist teachings, it is generally not condoned. Oral to genital transmission of *N. gonorrhoeae* has been shown to occur (2). Oral to oral transmission of this organism has not been demonstrated at the time of this report.

The possibility that the organism gains access to the glandular oropharyngeal tissues by lymphatic spread is questionable, but possible. This would entail the organism traveling via the lymphatic channels to these areas, and although one might propose that the organism would become trapped and phagocytized in the numerous lymph nodes between the urogenital tract and the oropharynx, systemic manifestations of gonococcal infections such as arthritis and pericarditis have been report in patients with venereally acquired gonococcal infections. The greater number of infected patients being secundigravidas compared to the entire group is an interesting finding for which we have no explanation. One might propose that these patients would fall into an age range where venereal disease was most common; however, the ages of the infected secundigravidas did not differ significantly from the non–infected secundigravidas nor from the study population as a whole.

We conclude that:

1. The oropharynx may be a major asymptomatic reservoir for the gonococcus and significantly contribute to the pandemic of the disease caused by this organism.

2. The oropharynx should be routinely cultured for *N. gonorrhoeae* in sexually active persons to more effectively determine its prevalence.

SUMMARY: A prenatal population of military dependents was surveyed to determine the incidence of asymptomatic gonorrhea. A total of 150 patients were sampled over a 4 month period and 24 patients had cultures positive for *N. ganorrhoeae*. Of the 24 positives, 23 were obtained from the oropharynx and one from the cervix. No positive cultures were obtained from the rectum and no patients had more than one positive site.

REFERENCES:

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