

Neisseria Gonorrhoeae Infections of the Premenarcheal Female

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OBJECTIVE: To determine the frequency of recovery of Neisseria gonorrhoeae from Thai premenarcheal females seen at Bangkok, Thailand.

BACKGROUND: Traditionally, Neisseria gonorrhoeae has been predominantly associated with vulvovaginitis in premenarcheal females. In the United States, however, reports from Lang in 1955, and Heller, et al, in 1966, have indicated that gonorrhea in such patients was not as frequent as had been expected. Heller, Joseph, and Davis in 1969, reported no findings of N. gonorrhoeae in 50 patients with vulvovaginitis ranging in age from 12 days to 13.5 years. These findings and such rarity could be attributed to the rapid and efficient treatment of gonorrhea in the adult population.

With an increase in the frequency of N. gonorrhoeae infections in Thailand reported by the Ministry of Health in Dec 1971, and the frequent recovery of strains of the gonococci that display "decreased sensitivity" to penicillin (see elsewhere in this report), this laboratory proceeded to conduct a survey of young Thai patients with vulvovaginitis. An extensive search of the literature revealed that there was no report dealing with vulvovaginitis in premenarcheal children in Thailand. The purpose of this study was to determine the frequency of recovery of N. gonorrhoeae from patients presenting with vulvovaginitis to the Children's Hospital in Bangkok, Thailand. A case report is presented.

DESCRIPTION: All girls between birth and 14 years of age presenting to the out-patient clinic at Children's Hospital in Bangkok, Thailand, with vulvovaginitis during the study period were examined by the principal investigator. Cotton swabs were obtained from the vagina and urethra of these female patients and immediately inoculated onto fresh sheep blood agar plates and onto haemoglobin-free Thayer-Martin media. The plates were incubated at 37°C in CO₂ jars overnight and then suspected colonies were picked for further identification by Gram stain, oxidase test, and biochemical fermentation tests. Attempts were made to recover and identify other bacteria from both the sheep blood agar plates and the Thayer-Martin plates. Forty seven girls with vulvovaginitis, whose ages ranged from 2 months to 9 years, were examined. Subjects with vulvovaginitis were characterized by inflammation of the vulvovaginal area with purulent discharge. Few of them complained of vulval pain, frequent urination, dysuria, or itching. The child's general health was not affected. Ten girls with ages ranging from 6 months to 13 years were examined and cultured as controls. None of the control subjects presented with urogenital complaints, and all of them were normal on examination of the vulva and vagina.

RESULTS: The results of bacteriological cultures of the 47 patients with vulvovaginitis are presented in Table 1. Findings from the 10 controls are presented in Table 2.

Shigella flexneri 3 was isolated from the vaginal discharge of a one year old girl who presented with vulvovaginitis after having symptoms of dysentery for a few days. There was no complaint of dysentery at the time of examination.

Of the 20 patients with proven N. gonorrhoeae infections, three had no admitted history of any family member with gonorrhea. Histories obtained from the parents of the other 17 revealed that either the father or mother had recent symptoms of acute gonorrhea. All of the patients with gonorrhea infections slept

Table 1.
Bacteriological Findings from 47 Children with Vulvovaginitis

Organisms Isolated	No. Isolated	% Isolated
<u>Neisseria gonorrhoeae</u>	20	42.5
<u>Staphylococcus aureus</u>	6	12.5
<u>S. epidermidis</u>	24	51.0
alpha haemolytic streptococcus	11	23.4
non-haemolytic streptococcus	2	4.2
<u>Diplococcus pneumoniae</u>	1	2.1
<u>Micrococcus spp.</u>	6	12.7
diphtheroids	14	29.8
<u>Bacillus spp.</u>	1	2.1
<u>Escherichia coli</u>	16	34.0
<u>E. aerogenes</u>	2	4.2
<u>E. cloaca</u>	2	4.2
<u>Proteus mirabilis</u>	2	4.2
<u>P. morganii</u>	4	8.5
<u>Haemophilus spp.</u>	1	2.1
<u>Shigella flexneri</u> 3	1	2.1

Table 2.
Bacteriological Findings from 10 Patients with no Vulvovaginal Complaints

Organism Isolated	No. Isolated	% Isolated
<u>Staphylococcus aureus</u>	1	10
<u>S. epidermidis</u>	9	90
beta streptococcus (not group A)	1	10
alpha streptococcus	4	40
gamma streptococcus	5	50
<u>Streptococcus fecalis</u>	2	20
<u>Micrococcus tetragenous</u>	2	20
diphtheroids	7	70
<u>Candida spp. (not C. albicans)</u>	1	10
<u>Escherichia coli</u>	4	40
<u>Paracolonobacterium aerogenes</u>	1	10
<u>Herellea spp.</u>	1	10

with their parents. Only 5 of the girls had a history of using the same towels after bathing that their parents had used. One four year old with a positive vaginal culture for N. gonorrhoeae admitted to "sex-play" with an eight year old boy who had a urethral discharge. We were unable to obtain a culture from this boy.

CASE REPORT: A three year old girl was seen at the out-patient clinic of Children's Hospital on 1 July 1971 complaining of a purulent discharge from the vagina for the past three days. Her general condition was within the normal limits. The girl's father, a 29 year old traveling salesman, had a history of gonorrheal urethritis in 1969. The patient's mother stated that he was free from any symptoms at the time of the daughter's examination. The 29-year old mother had a history of chronic leukorrhea of one year duration. She had not taken any medication for this condition. The infant slept with her mother and usually shared the same towel with the mother after bathing.

Vaginal cultures from the patient and her mother on the initial visit yielded a heavy growth of N. gonorrhoeae. The patient and her mother responded well after a single intramuscular injection of 1 million units of clemizole penicillin (megacillin).

The same patient again developed a purulent vaginal discharge on 12 October 1971, 3.5 months later. The cultures of the urethra and vulvovaginal sites failed to reveal N. gonorrhoeae. The mother positively denied any symptoms of leukorrhea or the common use of towels or any other articles. The vulvovaginal discharge of the patient disappeared rapidly after a single injection of megacillin.

On 3 February 1972, this same girl had another attack of vulvovaginitis. The vaginal culture revealed a heavy growth of N. gonorrhoeae. The mother and father denied any symptoms in either of them of acute gonorrhea. A vaginal culture of the mother failed to reveal any N. gonorrhoeae. We could not obtain cultures of the father. The symptoms of vulvovaginitis of this girl again rapidly disappeared after treatment with megacillin.

DISCUSSION: Lang in 1955, indicates that towels and linens may serve as transmitting agents of gonococcal vulvovaginitis, a "highly contagious" disease. He reports that gonococcal vulvovaginitis usually results from contact with an infected adult. Cohn, et al, in 1940, report that intermediate objects are of little importance in the transmission and that sexual contact is the usual mode of infection. Nelson, in 1964, states that gonococcal disease is moderately contagious and can be introduced to the vulva by personal objects contaminated with N. gonorrhoeae organisms. He advises that upon diagnosis of N. gonorrhoeae vulvovaginitis, personal clothing and towels should be separated from the remainder of the family until the patient is cured of the infection and the commonly used articles are thoroughly cleaned. It may be reasonably assumed that the mode of transmission of N. gonorrhoeae in the premenarcheal children examined in our study was via person-to-person contact, but without sexual contact (except in the one instance where "sexual-play" was admitted).

In Thailand, personal cleanliness is an important social habit that is stressed to children. This desirable habit often means that children will bathe several times a day. In the lower classes, the towels are commonly used by other family members and may seldom become dry. While we have not been able to obtain cultures from these damp towels, the thesis that the diplococcus could remain viable in the damp folds and thus be transmitted to the female children cannot be ignored.

These findings indicate that N. gonorrhoeae infections in vulvovaginitis is common in Thailand. The causative diplococcus must be cultured for, and specific, directed antibiotic therapy administered against this increasingly "resistant" organism.