

## Colonial Morphology of *Neisseria gonorrhoeae* Isolated from Males and Females

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Received for publication 25 August 1966

Four colony types of *Neisseria gonorrhoeae* were recently described by D. S. Kellogg, Jr., et al. (J. Bacteriol. 85:1274, 1963). Virulent type 1 was found only in cultures of the exudate of acute gonorrhea in the male, whether naturally or artificially infected. Percentages of less virulent types 2, 3, and 4 increased with unselected passage. Type 4 predominated or was the only type present in old laboratory cultures. Females were not examined.

The present study was undertaken to survey the occurrence of the colony types of *N. gonorrhoeae* in a clinic population of males and females. The patients were examined only at their first visit to the Fulton County Health Department, Atlanta, Ga., through the kindness of J. F. Hackney and T. E. Billings.

All the males presented voluntarily with symptoms of urethritis and had positive smears for *N. gonorrhoeae*. The females included asymptomatic sexual contacts to these males, and others with a known positive culture for *N. gonorrhoeae* or symptoms possibly due to gonorrhea. Cultures were taken with a bacteriological loop from the urethra of the males and endocervix of the females. Culture medium was GC Medium Base (Difco) with 2% defined supplement [cocarboxylase, 0.001 g; glutamine, 0.5 g; and dextrose, 20.0 g in 100 ml of distilled water sterilized by filtration (C. E. Lankford, Bacteriol. Proc., p. 40, 1950)] and 0.005% ferric nitrate. Method and criteria for determining colony types were the same as those used by D. S. Kellogg, Jr., et al. (J. Bacteriol. 85:1274, 1963). Presumptive identification of *N. gonorrhoeae* was made by colonial morphology, positive oxidase test, and Gram stain.

The results are shown in Table 1. Each of these cultures had at least 10 and usually over 100 isolated colonies of *N. gonorrhoeae*. In most cases, over 99% were type 1 or type 2,

TABLE 1. Predominant<sup>a</sup> colony types of *Neisseria gonorrhoeae* found in males and females

Colony type	Males	Females
1	63 (55) <sup>b</sup>	34 (47)
1 and 2	16 (14)	15 (20)
2	23 (20)	21 (30)
4	1 (1)	0 (0)
Unclassified	11 (10)	2 (3)
Totals	114	72

<sup>a</sup> "Predominant" defined as  $\geq 75\%$  colonies of given type.

<sup>b</sup> Numbers in parentheses indicate percentages of total.

or both. Some had an occasional type 3. Type 4 was rare except in one male, who had uncomplicated, untreated gonorrhea of 3-day duration.

The unclassified colonies were small, and rough or granular, and did not conform to any of the four colony types. Most of these occurred in a single day and were probably due to excessive plate moisture. Many variations in the apparent coloration of type 1 and 2 colonies were noted with oblique transmitted light.

Only 20 of 34 females had the same predominant colony type as found in her sexual partner. No correlation was found between duration of symptoms (up to 6 weeks) and colony type in the males. Estimates of the duration of infection of the females were unreliable. No correlation was found between presence of symptoms in the females and colony type.

The results confirm that cultures from patients with gonorrhea are composed almost exclusively of colonies of type 1 or 2, or both, but fail to support an association of colony type with the sex, symptomatology, or duration of infection of the patient.