A new method of finding cases of gonorrhea by visual inspection and microscopic examination of urine.

Gonorrhea Detection by Urine Examination

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AN INTENSIVE epidemiological and public educational program directed toward gonorrhea control has been disappointing because it has not been successful in rapidly reducing the number of cases of gonorrhea being reported. If control is to be accelerated, additional case-finding measures must be established.

In hospitals, clinics, and physicians' offices, urine specimens of large numbers of patients are routinely examined for albumin, sugar, and so on. If, at this same time, gonorrhea could be found by examination of these urine specimens, an economical and simple case-finding aid would be available; a rapid screening procedure for detection of gonorrhea suspects would be provided. This paper presents the results obtained in a preliminary study of macroscopic inspection and microscopic examination of the sediment of urine specimens for the detection of gonorrhea in patients from a selected clinic group and from an unselected screening line group.

Methods

Urine specimens were collected in flat-bottomed specimen bottles. One to two cubic centimeters of 10-percent acetic acid was added to the fresh urine specimens, which were then macroscopically inspected. An opinion was recorded as to the presumptive presence of pus or shreds in the urine specimen. If shreds or pus were present, the specimen was considered presumptively positive for gonorrhea.

The urine specimen was then allowed to sit for at least 1 hour. After this period it was decanted and a spread was prepared from the sediment. The spread was air-dried, stained with a Gram's stain, and examined under an oil-immersion lens for the presence of gram-negative intracellular diplococci. Urine specimens which had been allowed to stand for any period before initial visual inspection were swirled before acidifying and then were allowed to stand for at least an hour before microscopic examination of the sediment.

When a microscopically positive sediment was found in a urine specimen and a diagnosis of gonorrhea had not been established in the patient prior to the urine test, the patient was reexamined bacteriologically. The diagnosis of gonorrhea was established or confirmed in all patients with positive sediment findings by urethral or cervical spread or, if indicated, by culture.

Results

The selected population group consisted of male patients who were examined in a venereal disease clinic. Of this group, 68 had a frank urethral discharge in which gonococci could be demonstrated. Using the test technique de-

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scribed in this paper, 52 of these 68 patients, or approximately 75 percent, were found to have gram-negative intracellular cocci in the sediment of their urine specimens; these urine specimens also had been considered positive for gonorrhea by sample inspection, utilizing the technique described for screening. Thirty-two of these venereal disease clinic patients had no urethral discharge and had been considered clinically negative both by history and physical examination. However, in 3 of the patients (approximately 10 percent), positive findings in the sediment were obtained by microscopic examination (2 were positive and 1 was negative by macroscopic inspection). These diagnoses of gonorrhea were confirmed by bacteriological study of urethral scrapings.

In order to determine the effectiveness of this simple macroscopic technique under conditions in which patients were not appearing primarily for venereal disease diagnosis and treatment, it was applied to a different type of patient body. This group consisted of patients of the outpatient service of the District of Columbia General Hospital. Urine specimens from these patients are collected routinely as a part of their initial examination. These patients were being seen for various medical and surgical complaints, and without this examination would have been considered free of gonorrhea. The urine specimens were examined by the test technique under consideration and the discovery rate of gonorrhea in this group was 15.0 percent in the males and 6.8 percent in the females. Demonstration of gonococci by urethral or cervical spread or culture was possible in all of these patients. Because this study was of a preliminary investigative nature, sugar fermentation studies for definitive bacteriological diagnoses were not considered necessary at this time.

The findings obtained in both groups are presented in the accompanying table.

Discussion

The results of this study of the detection of gonorrhea suspects by macroscopic examination of the sediment of urine specimens appear encouraging, and suggest the desirability of further study to determine whether this method might become practicable.

It would appear that a technique of macroscopic inspection followed by microscopic examination of sediment of presumptively positive urine specimens will establish a diagnosis of gonorrhea in approximately three-fourths of an infected group.

Culturing the urinary sediment of all patients would no doubt have raised the percentage

Results of macroscopic and microscopic examination of urine specimens from a selected clinic population group and an unselected screening line group

Type of patient	Total		Macro-positive, micro-positive		Macro-negative, micro-positive		Macro-positive, micro-negative		Macro-negative, micro-negative	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Selected venereal disease clinic group									
Male:										
Urethral discharge positive for gonorrhea	68	100.0	52	76.5	0	0	3	4.4	13	19.1
Urethral discharge absent	32	100.0	[1] 2	6.3	[1] 1	3.1	1	3.1	28	87.5
	Unselected screening line group									
Male	120	100.0	[1] 16	13.3	[1] 2	1.7	6	5.0	96	80.0
Female	177	100.0	[1] 12	6.8	0	0	10	5.6	155	87.6

[1] Diagnosed bacteriologically as having gonorrhea, subsequent to presumptive diagnosis of gonorrhea based on examination of urine specimens.

of infected persons found. However, the technical difficulties and increased cost entailed by this procedure would, in most cases, not be warranted. Of greater significance to the gonorrhea control program is the fact that a simple method of screening large numbers of individuals who are infected with gonorrhea, but who have not been motivated to seek specific medical care, should be of value in the public health control of gonorrhea. From experimental inoculation studies with gonorrhea it is known that not all patients have the profuse outpouring of pus and urethral discomfort that are considered characteristic of the disease. It is this group, not sufficiently disturbed by the infection to seek specific care, which might be discovered, especially if the portion of the population in which the prevalence of gonorrhea might be expected to be high were screened.

The finding of an infection rate of 15 percent among a clinic group consisting of patients who were not destined for a type of examination which could be expected to bring them to treatment for gonorrhea suggests the potential importance of this simple method of urine examination. It would appear that the preliminary studies herein described are sufficiently valuable to suggest the desirability of further investigation. It is known that gonorrhea thus far has been relatively resistant to various control procedures. In spite of simple, sure cure the disease has not responded to our control efforts in the same way as syphilis. One of the stumbling blocks has been the lack of a simple case-finding device. These preliminary results would seem to merit further investigation.

Summary

A simple, routine screening procedure for a presumptive diagnosis of gonorrhea by a macroscopic examination of urine samples has been described. In a high-prevalence population, such a technique should be an aid in case finding in a gonorrhea control program.

World Health Day, April 7, 1955

"Clean Water for Better Health" is the theme of the seventh anniversary celebration of the World Health Organization.

The "clean water" theme emphasizes the basic sanitary engineering services which construct safe water supplies and sewage disposal systems for the people of the world. United States membership in WHO helps to develop such long-term worldwide health programs. Short-term health programs abroad are promoted by United States health personnel assigned by the Foreign Operations Administration to health ministries.

The clean water program in the United States was estimated in the President's Economic Report to the Congress January 28, 1954, as requiring $6 billion for water systems and $9 billion for new sewers and waste facilities by 1960.

Advances in America's clean water program are supported by water pollution control activities of industry and of local, State, and Federal Government agencies. The Water Pollution Control Act of 1948 is the major instrument for coordinating this work. Research on water pollution control is conducted cooperatively by the Public Health Service Robert A. Taft Sanitary Engineering Center at Cincinnati, the National Technical Task Committee on Industrial Wastes (supported by private industry), by universities, and other institutions.