India Ink Immune Method for the Study of Antibody-Coated Urinary Bacteria

GY. JÓJÁRT

Department of Paediatry, Municipal Hospital, Cegléd, Hungary

(Received February 5, 1981)

The sediments of 373 urines were studied for antibody-coated bacteria by the India ink immune method. Positive results were obtained in 14.7 per cent of upper urinary tract infections, 18.9 per cent of lower urinary tract infections, 29 per cent of bacteriuria, and 15.2 per cent in healthy girls. Since antibody-coated bacteria could find their way into negative urines only by contamination, 296 vulvar secretions were also examined. Positive results were obtained in 15.5 per cent of girls with urinary tract infections, 63.9 per cent of those with vulvitis and 24.1 per cent in girls with no infection. It is concluded from the results that the presence or absence of antibody-coated bacteria in the urine is unrelated to the site of urinary infection.

In the management and care of urinary infections it is of decisive importance whether the infection has involved the renal parenchyma or whether it is confined to the lower urinary tract. In acute syndromes differentiation relies on the clinical features [1]. In case of a poor symptomatology clinical evidence is, however, unreliable. This has prompted us to examine whether the presence or absence of antibody-coated bacteria in the urine bears any relationship to the site of urinary infection.

Material and method

From a total of 373 urines of 185 children, 307 were studied during urinary tract infections; 66 non-infected urines served as controls. Some of the children had manifest urinary infection, others were symptomfree and had been either picked out as a result of screening or had reinfections in the course of follow-up [9]. The urinary tract infections were divided into three groups according to their sites.

*Upper urinary tract infections*, characterized — in addition to pyuria and bacteriuria — by a high erythrocyte sedimentation rate, leukocytosis, low-back or abdominal pain. In case of vesicoureteral reflux the infection was presumed to involve the upper urinary tract even in the absence of any typical sign or symptom.

*Lower urinary tract infections*, marked by pyuria and bacteriuria in the absence of the signs or symptoms of pyelonephritis referred to above.
Bacteriuria. Pyuria is absent, the only abnormal finding being a significant bacteriuria, that is, a positive nitrite reaction in a freshly voided urine with a bacterial count over $10^5$/ml, or a bacterial count over $10^5$/ml twice in succession, with the same strain.

As judged by the above criteria of the 307 urinary infections, 34 involved the upper, 122 the lower urinary tract, and bacteriuria was found in 151 cases.

Vulvar discharges of 170 girls were examined on 296 occasions: 181 discharges were taken during urinary infections, 61 were obtained from girls with vulvitis, and 54 from healthy girls.

From the urinary sediments and the vulvar discharges smears were prepared. These were numbered, collected and studied at some later time in a random succession. (Antibody-coated bacteria remain demonstrable in an unaltered state for months.)

For the demonstration of antibody-coated bacteria the following method was used. The smears were covered with India ink ("Holló", made by Politur, Budapest), and left to stand in a moist chamber for 5 min. Then the India ink was washed off with a mixture of tap water and physiological saline (1:1), and the slide was mopped with filter paper. The smear was examined under the microscope with an immersion lens. The antibody-coated bacteria are contoured by India ink. (Fig. 1).

In order to locate the site of infection to the lower or to the upper urinary tract, the bladder elution test was carried out in 5 cases according to the method of Fairley et al. [2], with the difference that no Elase was used.