

13711 P

Relationship of Pleuropneumonia-like (L) Organisms to Infections of Human Genital Tract.*

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In a consecutive series of cultures from the genital tract of 129 unselected patients, pleuropneumonia-like (L) organisms were recovered from 23 of 77 cervical cultures, from 1 of 8 vaginal cultures, from 3 of 36 prostatic cultures, and from 1 of 8 cultures of urethral discharges from males.¹

The 4 male patients who yielded an abundant growth of these organisms all had chronic prostatitis. Gonococci were not demonstrable. One patient had rheumatoid arthritis, one had polyarthrititis clinically resembling gonococcal arthritis, one complained of soreness of feet and knees and swelling of fingers. Joint effusions were obtained from the first 2 of these patients, but no organisms could be found in them by smear or culture.

Among the females, considering only those cases in which pleuropneumonia-like organisms were the predominating flora and, excluding cases in which only a few colonies were observed, we find that 5 had chronic cervicitis, 7 had gonorrhea, while in 4 the cervix appeared clean. Among the 9 from whom gonococci were *not* recovered, 1 had rheumatoid arthritis and 3 complained of various skeletal aches and pains. One of these 3 was the wife of the male patient who complained of prostatitis, soreness of feet and knees and swelling of fingers, a finding which suggests the possibility of transfer of the organisms by sexual intercourse.

This mode of transmission is further indicated by another finding, not included in the above series. In this case, a man was admitted to the hospital because of acute tenosynovitis of the left wrist and chronic prostatitis. Pleuropneumonia-like organisms were cultivated from his prostatic secretion. The tenosynovitis cleared up within a few days, and no fluid for culture could be obtained from it. Three

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¹ Smith, W. E., paper presented at meeting of Society of American Bacteriologists, Baltimore, Dec. 30, 1941.

days later, this man's wife entered the hospital because of swelling of both knees of 6 weeks' duration, the onset of her arthritis having occurred 2 weeks after their marriage. The knees were not red or hot and were only moderately painful despite the presence of large effusions. Pleuropneumonia-like organisms were recovered from this patient's cervix, which showed a slight discharge. The right knee yielded 100 cc of synovial fluid which contained 90 mg % sugar and 5,050 white blood cells per cumm, 9% polymorphonuclears, 73% lymphocytes. We were unable to demonstrate any organisms in Giemsa or Gram stained smears of this fluid, and we could not cultivate any organisms from it. This patient was discharged unimproved after one week's hospitalization. Both these patients ran an afebrile course. We are indebted to Dr. O. S. Staples and Dr. H. I. Suby for material from these 2 patients.

In addition to the above patients, we have obtained pleuropneumonia-like organisms from one other case of prostatitis and from more than 100 routine cervical cultures. We are especially indebted to Dr. J. V. Meigs and Dr. C. L. Parsons, who sent us many cervical swabs and specimens from purulent complications. Several of their cases presented the clinical picture of acute gonococcal cervicitis. Cultures and smears were repeatedly negative for gonococci, but pleuropneumonia-like organisms were present in large numbers and in almost pure culture. One patient, an 18-year-old girl, developed an acute vaginitis with purulent discharge 4 days after intercourse. An abundant growth of pleuropneumonia-like organisms were recovered from this discharge. In another case these organisms were recovered in pure culture from a Bartholin gland abscess. In a case of salpingitis, pleuropneumonia-like organisms and a few colonies of diphtheroids were cultivated from the pus expressed from the tubes. In a case of peritonitis secondary to salpingitis, an anerobic bacillus (Genus *Bacteroides*) was obtained in pure culture from the peritoneal pus, and pleuropneumonia-like organisms were subsequently separated from the cultures of this bacillus as a variant growth form. This patient made a prompt and uneventful recovery from her peritonitis. Gonococci could not be demonstrated in any of these cases.

From these findings, it is apparent that pleuropneumonia-like organisms, like many other bacteria, may live in the female genital tract without causing any obvious pathology; but the evidence strongly suggests that they are capable of acting as pathogenic agents, either alone or in combination with other bacteria, and that they may produce a clinical picture that is similar to gonococcal in-

fection in that a purulent discharge develops and such complications as Bartholin gland abscess, salpingitis and peritonitis may ensue. In males, these organisms have been found thus far only in cases of chronic prostatitis, chiefly in patients with history of previous gonococcal infection. The infection appears to be transmissible by sexual intercourse. Although the strains which we have recovered have bred true through many subcultures, one must bear in mind the possibility that these strains may represent variant forms of bacteria, perhaps of gonococci.^{2, 3, 4}

The incidence of arthritis in these patients is of particular interest because arthritis is a common complication of both the natural and the experimental diseases produced in animals by organisms of this group. We have not been able, however, to recover pleuropneumonia-like organisms from diseased joints, although we have examined a considerable number of specimens of synovial fluids, synovial tissues and subcutaneous nodules from arthritic patients.

The methods used for the cultivation and examination of pleuropneumonia-like organisms have been previously described.⁵

13712 P

Effect of Biotin on Reproduction in the Domestic Fowl.

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Numerous studies have shown the importance of biotin in chick nutrition. Hegsted, Oleson, Mills, Elvehjem and Hart¹ described a scaly dermatitis of chicks fed purified diets, which was not cured by pantothenic acid. In further experiments Hegsted, *et al.*,² found

² Dienes, L., *PROC. SOC. EXP. BIOL. AND MED.*, 1940, **44**, 470.

³ Brown, T. M., *J. Bact.*, 1942, **43**, 82.

⁴ Dienes, L., *J. Bact.*, in press.

⁵ Dienes, L., *J. Infect. Dis.*, 1939, **65**, 24.

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¹ Hegsted, D. M., Oleson, J. J., Mills, R. C., Elvehjem, C. A., and Hart, E. B. *J. Nutrition*, 1940, **20**, 599.

² Hegsted, D. N., Mills, R. C., Briggs, G. M., Elvehjem, C. A., and Hart, E. B., *J. Nutrition*, 1942, **23**, 175.