Abstracts

These selected abstracts and titles from the world literature are arranged in the following sections:

Syphilis and other treponematoses (Clinical and therapy; serology and biological false-positive phenomenon; pathology and experimental)

Gonorrhoea (Clinical; microbiology; therapy)

Non-specific genital infection

Reiter’s disease

Syphilis and other treponematoses (Clinical and therapy)

Treatment of early latent syphilis of less than a year’s duration: an evaluation of 275 cases


Syphilis (Serology and biological false-positive phenomenon)

Comparison of a haemagglutination treponemal test for syphilis (HATTS) with other serologic methods for the diagnosis of syphilis


Three laboratories participated in studies of a haemagglutination treponemal test for syphilis (HATTS), using as antigen sonicated Treponema pallidum coupled to glutaraldehyde-stabilised turkey erythrocytes by the bis-diazotized benzidine procedure. A total of 1056 cases of syphilis (373 untreated and 683 treated) was studied, with 93.7% overall agreement between the HATTS and the fluorescent treponemal antibody absorption (FTA-ABS) test. In addition, 1805 non-syphilitic sera, including 1048 from presumably healthy subjects, 502 sera that were biological false-positives, and 255 sera from patients with diseases other than syphilis, were studied. The HATTS was non-reactive for 99.4% of sera from presumably healthy subjects, 86.9% of biological false-positive sera, and 84.7% of sera from patients with diseases other than syphilis compared with FTA-ABS non-reactivity for 99.2% of presumably normal sera, 76.9% of false-positive sera, and 77.3% of sera from patients with other diseases. One laboratory also compared the HATTS with the microhaemagglutination—Treponema pallidum (MHA-TP) test. There was no statistically significant (P < 0.01) difference in reactivities among the HATTS, MHA-TP, and FTA-ABS procedures for either 617 syphilitic or 966 non-syphilitic sera. Studies of reproducibility showed no significant difference in performances of the HATTS by three laboratories, and the HATTS was significantly more reproducible than the MHA-TP test. It is concluded that the HATTS would be a suitable substitute for the MHA-TP or FTA-ABS test as a confirmatory test for the diagnosis of syphilis.

Authors' summary

Sierologia della sifilide: ELISA, un test di terza generazione (Serology of syphilis: ELISA, a third generation test)


A purified protein extracted from the cultivable Reiter treponeme was used as antigen and reactivity of sera with this detected by the addition of anti-human IgG conjugated with peroxidase; o-phenylenediamine was used as the substrate. Methods for preparation and standardisation of the reagents are described. At the end of the test the optical density (OD) of the test sample at 490 nm was divided by the mean plus standard error of the OD of 10 negative control sera and values greater than one taken as positive.

The ELISA technique was compared with the WR, RPCFT, VDRL, FTA-ABS, TPI, and TPHA tests on 295 sera from patients with untreated or treated early syphilis, 120 sera from blood donors who had no history, signs, or serological evidence of syphilis, and on 20 sera which had given false-positive (BFP) reactions with tests for reagin or the RPCFT. The ELISA test gave positive results in 98.47% of the untreated primary, 100% of the untreated secondary, and 95% of the treated early cases and was more sensitive than any of the other tests performed. It gave negative results with all of the BFP reactors and with the sera from normal donors (although this is not very clear from the text).

Because of its high sensitivity and specificity, ease of execution and the objective method of reading, the test is thought to be of potential value for the serodiagnosis of syphilis.

A. E. Wilkinson

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Statistical aspects of the treponemal counts in the TPI test

Evaluation of the quantitative Rappaport rapid plate test in the diagnosis and treatment of syphilis

Syphilis (Pathology and experimental)

Transplacental transmission of spirochaetes in congenital syphilis: a new perspective (leading article)
W. D. HAGER (1978). Sexually Transmitted Diseases, 5, 122-123

Influence of oxygen tension, sulphhydril compounds and serum on the motility and virulence of Treponema pallidum (Nichols strain) in a cell-free system

Genetics of Treponema: characterisation of Treponema hydysenteriae and its relationship to Treponema pallidum

Gonorrhoea (Clinical)

Gonorrhoea in pregnancy

Retrospective examination was made of the records of 6464 women delivered of their fetuses over an eight-year period to define the effects of antepartum and intrapartum gonococcal infection on the course and outcome of pregnancy. Each patient with gonorrhoea was matched with between two and four control patients for age, race, parity, socioeconomic status, and time of delivery.

A total of 178 (8%) women had at least one positive culture result during their pregnancy though only 19 had positive results at delivery. Disseminated gonococcal infection was found in 0.03% of all pregnant women. Chorioamnionitis and intrapartum growth retardation occurred more frequently in a significant (p<0.05) proportion of women with positive culture results at some time during pregnancy. When compared with controls patients with an intrapartum infection had a significant increase in premature rupture of membranes (p<0.05—any duration, p<0.02—less than 24 hours), chorioamnionitis (p<0.05), premature infants (p<0.02) and infants with positive orogastric culture results (p<0.01).

In conclusion, the possibility that intrauterine fetal infection may develop in the absence of prematurely ruptured membranes or clinically evident chorioamnionitis was raised.

R. S. Pattman

ESR in gonococcal arthritis

Gonococcal ophthalmia neonatorum caused by beta-lactamase-producing Neisseria gonorrhoeae

Gonorrhoea (Microbiology)

Enzyme-linked immunosorbent assays for the detection of Neisseria gonorrhoeae specific antibodies

Conditions for the use of enzyme-linked immunosorbent assay (ELISA) in detecting antibody against outer membrane protein complex (OMC) isolated from Neisseria gonorrhoeae were investigated using antigonococcal serum raised in rabbits against formalised whole cells. Optimal binding concentrations of OMC antigen, primary antibody, and alkaline phosphatase conjugated secondary antibody were studied. Antigen solution containing 10 μg/ml protein was found to give maximum coating of the wells of the microtitre plate used in the assay. Incubation for one hour at 37°C or for 18 hours at ambient temperature resulted in similar coating: for convenience the latter conditions were adopted. Optimal binding of the primary antibody and enzyme-conjugated anti-immunoglobulin was achieved after one hour at 37°C. A positive reaction (absorbance value of less than 0.15 at 400 nm) was obtained on testing OMC antigen prepared from five different gonococcal strains against a single antiserum prepared from one of the strains. Pre-incubation of antiserum with homologous OMC antigen inhibited the subsequent immunological reaction: using this technique it was possible to measure levels of antigen as low as 0.5 μg/ml. Gonococcal antiserum showed no significant cross-reaction with OMC antigen prepared from six strains of Neisseria meningitidis and from seven strains of non-pathogenic neisseriae. (Antiserum prepared against other neisseriae were not tested against gonococcal OMC antigen.)

H. Young

Rapid micro-carbohydrate test for confirmation of Neisseria gonorrhoeae

The rapid carbohydrate utilisation procedure described uses both preformed enzymes and enzymes formed by the microorganisms as a result of growth in a small volume of superenriched medium containing the appropriate carbohydrate and a pH indicator. When a loopful of bacteria subcultured once from the primary isolation medium and grown for 18 to 24 hours on chocolate agar was used as inoculum carbohydrate utilisation reactions were completed within four hours of incubation at 36°C. All 383 clinical isolates of neisseriae (377 strains of gonococci and six strains of meningococci) tested gave the expected reaction in the rapid test whereas only 358 of the gonococcal strains and four of the meningococcal strains gave the expected reaction with the conventional cystine-trypsic agar method.

The authors discuss the limitations of existing carbohydrate utilisation techniques and point out that the combined action of two sources of enzyme (preformed and formed by growth during the test) in their method is an advantage since this produces results which are not affected by small variations in either the inoculum size or growth requirements of individual strains. The same principle endows the test with a
disadvantage in that it is unlikely that it could be used to characterise isolates directly from primary isolation cultures because of interference by small numbers of contaminating organisms.

H. Young

Antigen-specific serotyping of Neisseria gonorrhoeae: 1 Use of an enzyme-linked immunosorbent assay to quantitate pilus antigens on gonococci


Purified pili from Neisseria gonorrhoeae were used in an enzyme-linked immunosorbent assay (ELISA) to quantitate human or rabbit antibodies to pili; amounts of pilus antigen on different gonococci were quantitated, and yields of pili during purification were determined in ELISA by the degree of inhibition of optical density. The amount of pilus antigen expressed on the surface of colony type 1 or 2 gonococci of three different strains varied from 450 to 9000 ng/600 μl of a 200-Klett unit suspension. The quantity of pilus antigen was correlated directly with the extent of pilation as determined by electron microscopy. No pilus antigen was found by ELISA in colony type 4 organisms (devoid of pili) of three different strains. No more than 10%-shared antigenicity was observed for antigenically different pili. Present purification procedures for gonococcal pili provide a yield of 15%. ELISA may allow better evaluation and quantitation of the potential roles of antibody to pili in the killing or opsonisation of gonococci or in the inhibition of gonococcal attachment to human cells.

Author's summary

Studies on gonococcus infection. XVI Purification of Neisseria gonorrhoeae immunoglobulin A protease

M. S. Blake and J. Swanson (1978). Infection and Immunity, 22, 350-358

A protease which cleaves human immunoglobulin A1 (IgA1) has been purified from broth cultures of Neisseria gonorrhoeae. This IgA1 protease is produced by pilated and non-pilated gonococci throughout their growth cycles. A combination of ammonium sulphate precipitation, column chromatography, and either isoelectric focusing or affinity chromatography was used to obtain an enzyme preparation that showed approximately 3800-fold purification and exhibited two bands (65 000 and 70 000 daltons) by analytical polyacrylamide electrophoresis in the presence of sodium dodecyl sulphate and reducing conditions. IgA1 protease activity is dependent on divalent cations and is heat labile. Detection and quantitation of IgA protease activity used an assay in which (I125) IgA1 is incubated with protease preparations and the cleavage products are analysed by sodium dodecyl sulphate-polyacrylamide gel electrophoresis.

Authors' summary

Comparison of antigenic heterogeneity of Neisseria gonorrhoeae strains by micro-immunofluorescence and serum bactericidal tests


The antigenic heterogeneity of Neisseria gonorrhoeae strains was assessed by the micro-immunofluorescence (micro-IF) and the serum bactericidal tests. The micro-IF test verified the antigenic heterogeneity of nine strains received from the Centre for Disease Control and placed them into immunotypes A and B. The serum bactericidal system also detected different antigenic determinants among the strains. Although the micro-IF and bactericidal assays did not correspond in each instance, the overall pattern of similarities and differences among these gonococcal strains was similar. The micro-IF pattern obtained with mouse antisera was identical to that obtained with guinea pig antisera. Different colony-type organisms showed similar sensitivity in the bactericidal test. The micro-IF test is a rapid technique for the immunotyping of N. gonorrhoeae and has the additional advantages of reproducibility and simplicity.

Authors' summary

A simple manganous chloride and Congo-red disc method for differentiating Neisseria gonorrhoeae from Neisseria meningitidis


Manganous chloride and Congo-red incorporated into blotting-paper discs have been used to differentiate gonococci from meningococci. The new technique is simple and reliable; the materials for the test are inexpensive. The method will increase the efficiency of distinguishing between the pathogenic Neisseria in any clinical bacteriology laboratory and especially in those in the tropical areas.

Authors' summary

Binding of cholesterol by Neisseria gonorrhoeae


Effects of thiamphenicol and chloramphenicol in inhibiting Neisseria gonorrhoeae isolates


Inhibition of β-lactamase in Neisseria gonorrhoeae by sodium clavulanate

Gonorrhoea (Therapy)

A comparison of the in vitro activity of rosamycin, erythromycin, penicillin, and tetracycline against *Neisseria gonorrhoeae*, including $\beta$-lactamase producing isolates


This paper examines the in-vitro activity of rosamycin, erythromycin, spiramycin, penicillin, and tetracycline against 517 non-penicillinase-producing strains, and 13 penicillinase-producing strains of *N. gonorrhoeae*. Susceptibility testing was carried out using a standard agar plate dilution method. At a level of 0.1 $\mu$g/ml rosamycin inhibited 90.9%-99% of the non-penicillinase-producing strains while a range of 25-7% to 56-3% was obtained with the other antibiotics with the exception of spiramycin. Spiramycin was the least active, even at a level of 4 $\mu$g/ml; only 66-3% of these isolates were inhibited. Rosamycin inhibited 46-2% of the penicillinase-producing at 0.1 $\mu$g/ml, compared with 30.8% with erythromycin.

These results indicate that rosamycin may prove useful in the therapy of gonorrhoea due to both non-penicillinase-producing and penicillinase-producing strains of *N. gonorrhoeae*, indicating a need for clinical studies.

G. L. Ridgway

Therapy of gonorrhoea. Comparison of trimethoprim-sulfamethoxazole and ampicillin


Eighty-nine men with gonococcal urethritis were randomly treated with trimethoprim-sulfamethoxazole, four tablets (trimethoprim 320 mg and sulfamethoxazole 1600 mg) twice daily for two days, or ampicillin 3.5 g plus probenecid 1 g in a single dose. Forty-one (95.3%) of 43 patients who received trimethoprim-sulfamethoxazole and 41 (97.6%) of 42 given ampicillin were cured. Neither drug caused serious side effects. All isolates of *Neisseria gonorrhoeae* were susceptible in vitro to trimethoprim-sulfamethoxazole and all but one were inhibited by ampicillin. The ampicillin-resistant strain (MIC = 4 $\mu$g/ml) produced penicillinase and was recovered from a patient who responded to treatment with trimethoprim-sulfamethoxazole. There was no significant correlation between the MICs of trimethoprim-sulfamethoxazole and ampicillin. It is concluded that trimethoprim-sulfamethoxazole is as efficacious and safe as ampicillin in the therapy of gonococcal urethritis.

Authors' summary

A single large dose of trimethoprim-sulfamethoxazole fails to cure gonococcal urethritis in men


In a single-blind study, 50 men who had acute gonococcal urethritis were treated with a single oral dose of either 720 mg trimethoprim (TMP) plus 3600 mg sulfamethoxazole (SMZ) or 3.5 g ampicillin plus 1 g probenecid. Isolates of *Neisseria gonorrhoeae* were tested for in-vitro susceptibility to the chemotherapeutic agents administered by agar-dilution and disc-diffusion methods, and results were correlated with cure or failure to cure as determined bacteriologically. Among patients returning for follow up, the cure rate after TMP/SMZ was 69%. Cure was predictable when the isolates of *N. gonorrhoeae* were inhibited by <0.63/11.87 $\mu$g/ml of TMP/SMZ (fixed ratio, 1:19) or when the zones of inhibition were $>23$ mm; failure was predictable when $>1.25/23.75$ $\mu$g/ml of TMP/SMZ was necessary for inhibition and when zones of inhibition were $<21$ mm (p<0.02). The cure rate after therapy with ampicillin was 100%, a rate significantly higher than that found after TMP/SMZ (p<0.02); all isolates were inhibited by <0.16 $\mu$g/ml of ampicillin. Adverse reactions were not seen with either TMP/SMZ or ampicillin.

Authors' summary

Epidemiologic treatment of gonorrhea

leading article

P. J. WIESNER (1978). Sexually Transmitted Diseases, 5, 120-121

Tracing and treating contacts of gonorrhea patients in a clinic for sexually transmitted diseases

F. N. JUDSON AND F. C. WOLF (1978). Public Health Reports, 93, 460-463

Patient variables associated with penicillin resistance in *Neisseria gonorrhoeae*


Non-specific genital infection

Examination of men with nongonococcal urethritis and their sexual partners for *Chlamydia trachomatis* and *Ureaplasma urealyticum*


*Chlamydia trachomatis* was recovered from 39 (52%) of 75 men who had non-
gonococcal urethritis and from 28 (37%) of their sexual partners. Of the partners of men with chlamydial-positive non-gonococcal urethritis, 64% excreted chlamydiae compared with 8% of the partners of men with chlamydial-negative nongonococcal urethritis. In contrast, an apparently sexual mode of transmission was not observed with Ureaplasma urealyticum. Rates of recovery of U. urealyticum from men with nongonococcal urethritis whose cultures were chlamydial-positive and those whose cultures were chlamydial-negative were the same. Significant seroconversion was detected by the single-antigen immunofluorescence test in about 50% of patients who had chlamydial-positive cultures.

Authors' summary

Fifteen-month follow-up study of women infected with Chlamydia trachomatis


An unselected group of women attending the gynaecologist in a university health service was studied for evidence of chlamydial infection. C. trachomatis was isolated from the cervix from 20 (4.6%) of 439 women examined during 1974-75. Local antibody was detected by an indirect immunofluorescence method in 60 (13%) of 463 women, including all but two of those whose cultures yielded C. trachomatis. During 1976, follow-up examinations were performed on 25 women whose genital secretions had contained C. trachomatis, chlamydial antibody, or both during 1974-75. Eleven women had taken antimicrobial agents active against chlamydiae in the interim and none of these were found to be infected in 1976. Seven of the remaining 14 women were found to be infected 16-17 months after their initial examination. This group included four of seven women from whom C. trachomatis was isolated during the initial examination and three of those whose genital secretions had contained chlamydial antibody but not C. trachomatis. The contact histories obtained from these women did not indicate that reinfection was a likely cause of their prolonged chlamydial infection.

J. D. Oriel

Serological typing of Ureaplasma urealyticum isolates from urethritis patients by an agar growth inhibition method


A method of dividing Ureaplasma urealyticum into eight serological types by an agar-growth inhibition is described in detail, and the results of serotyping 338 isolates given.

Of 122 isolates from military personnel with NGU the predominating serotype was type 4 (52%). This serotype was also the commonest isolate from patients (both men and women) with other disorders of the genitourinary tract. Among asymptomatic carriers the commonest serotype was type 8 (30%) but the next most frequently isolated was type 4 (24%).

M. C. Kelsey

A comparison of genital infections caused by Chlamydia trachomatis and by Neisseria gonorrhoeae


The potential for vaccine against infection of the genital tract with Chlamydia trachomatis (review article)


Genital mycoplasma infections


Cell fractions and enzymatic activities of Ureaplasma urealyticum


Reiter's disease

Frequent association of Chlamydia infection with Reiter's syndrome

M. Kousa, P. Saikku, S. Richmond, and A. Lassus (1978). Sexually Transmitted Diseases, 5, 57-61

The incidence of infection with Chlamydia trachomatis in 113 men with Reiter's syndrome was investigated. Chlamydiae were isolated from urethral specimens from 40 (39%) of 103 patients and from 36 (69%) of 52 of these men who had signs of urogenital inflammation at the time of examination. Chlamydial antibodies (titres, >8) were detected in sera from 66 (63%) of 104 patients by the complement-fixation test and in sera from 79 (87%) of 91 by a single-antigen indirect immunofluorescence test. Fluorescent chlamydial antibodies were found with equal frequencies in sera from patients whose cultures were negative and sera from patients whose cultures were positive, but the geometric mean titre was higher for the latter group. The results suggest that Reiter's syndrome is frequently associated with cultural or serological evidence of genital infection with C. trachomatis or both.

Authors' summary

Trichomoniasis

Evaluation of the indirect hemagglutination technique for study of Trichomonas vaginalis infections, particularly in men

T. Kuberski (1978). Sexually Transmitted Diseases, 5, 97-102

The indirect haemagglutination (IHA) technique was evaluated for use in the serological study of infection with Trichomonas vaginalis. The IHA test showed that sera from 88% of women attending a venereal disease clinic had antibody to T. vaginalis. The antibody frequency and titres were highest in women who had documented infections due to T. vaginalis. Serological and cultural evidence of recent or active trichomonal infection was found in 11% of 85 men who had nongonococcal urethritis but was absent in a control group of 27 men. Clinical findings in 10 men with symptomatic genitourinary trichomoniysis were described; all but one had relatively high (≥1/80) IHA antibody titres. Antibody to T. vaginalis was found significantly (p<0.005) more often in sera from women than in sera from men in an apparently healthy group of individuals between the ages of 1 and 20 years. The IHA test appears potentially useful for the diagnosis of trichomoniysis in men and in the sero-epidemiology of infections due to T. vaginalis.

Author's summary
Single-dose metronidazole for trichomonal vaginitis—patient and consort

Trichomoniasis treated with a single dose of benzylationozole

Candidosis

In vitro studies of amphotericin B in combination with the imidazole antifungal compounds clotrimazole and miconazole

The clinically important polyene antibiotic amphotericin B in combination with two antifungal imidazole compounds, clotrimazole and miconazole, was studied in vitro. With use of results of cytoplasmic leakage, metabolic heat output, and minimal inhibitory concentration studies a definite antagonistic response was demonstrated. It is suggested that, if combined antifungal drug therapy is clinically indicated, the drug combination should be tested against the isolate by the simple technique of measuring cytoplasmic leakage or by the more elaborate method of flow microcalorimetry.

Authors' summary

Cell-mediated immune deficiency and heightened humoral immune response in chronic vaginal candidiasis

Genital herpes

Comparison of various macrophage-inhibitory agents on vaginal and systemic herpes simplex virus type 2 infections

Suppression of in vitro growth of virulent and avirulent herpes simplex viruses by cell-mediated immune mechanisms, antibody, and interferon

Protection of guinea pigs against primary and recurrent genital herpes infections by immunization with live heterologous or homologous herpes simplex virus: implications for a herpes virus vaccine
M. Scriba (1978). Medical Microbiology and Immunology, 166, 63-70

Authors' summary

Other sexually transmitted diseases

5-fluorouracil urethral suppositories for the eradication of condyloma acuminata

German Journal of Venereal Diseases

Miscellaneous

Use of enteric vaccines in protection against chlamydial infections of the genital tract and the eye of guinea pigs

Guinea pigs in a test group were fed living guinea pig inclusion conjunctivitis (GPIC) organisms classified as Chlamydia psittaci in 60% yolk-sac suspensions as enteric vaccines while animals in a control group received uninfected yolk sac. Seven test animals and 14 control animals were challenged 11 or 22 days later with 1000 50% infectious doses of GPIC organisms in either the conjunctiva or the vagina. Evidence of protection from mucosal infection in both sites was noted in test animals. Clinically, the disease was less severe and, microbiologically, lower percentages of mucosal cells were infected. The results suggest that enteric vaccination against mucosal infections of the eye and the genital tract with chlamydial agents is possible.

Authors' summary

Pigmented penile papules with carcinoma in-situ changes

A family study of Behcet's syndrome