The Association of Clinical Pathologists: 94th general meeting

The 94th general meeting was held at the University of Exeter from 9 to 11 April 1975. Abstracts of the scientific communications follow.

Intravascular Coagulation in the Nervous System

W. R. TIMPERLEY AND F. E. PRESTON
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A series of cases is described in which there appears to be a causal relationship between an intracerebral lesion and disseminated intravascular coagulation (DIC). In some cases the intracerebral lesion may have induced the DIC, and in others the intracerebral lesion caused by the DIC in the course of another disease process appears seriously to have affected the outcome of that disease. Cases in which DIC may have been initiated by an intracranial lesion include head injury, cerebral tumour, and intracerebral abscess. Cases in which DIC resulted in pathological damage to the brain during the course of some disease process elsewhere include malignant hyperpyrexia, Crohn's disease, leukaemia, mucin-secreting adenocarcinoma of lung, carcinoma of prostate, a probable virus infection, acute pancreatitis, renal failure, septicaemia, perinephric abscess, and a pulmonary abscess complicating pneumoconiosis. In the latter case the cerebral symptoms closely mimicked a subdural haematoma. A series of patients dying in diabetic keto-acidotic coma is also reported in whom there was occlusion of medium-sized and small vessels in the brain and various other organs. Petechial haemorrhages, infarcts, ischaemic areas, and focal demyelination were seen around many of the affected vessels. One case developed signs of acute pituitary failure during an attack of diabetic keto-acidosis and at necropsy several weeks later, infarcts were seen in the pituitary gland and in other areas of the brain.

Three Studies in Environmental Contamination in a Laboratory engaged in Salmonella Isolation

R. W. S. HARVEY AND T. H. PRICE (Public

Health Laboratory, University Hospital of Wales, Heath Park, Cardiff)
Environmental contamination is important in salmonella epidemiology. It seemed worth investigating bacteriological aspects of a laboratory environment. In 1974, we examined well over 900 samples containing salmonellas. Inoculated enrichment and plating media are concentrated in certain areas of the laboratory. These were investigated. Materials examined were water in the 43°C water bath used for salmonella enrichment broths, water of syneresis (Collins, 1974) in petri-dishes containing agars on which salmonellas were growing and, lastly, portions of inspissated salmonella cultures dropped on the bench after flaming the inoculating loop.

In 1968, we became aware of contamination of water baths during a quality control exercise. Test material was salmonella-infected dried egg. Many false positive results were reported in this trial. Cross-contamination of samples was obviously involved, but the exact mechanism was doubtful. Subsequent investigation revealed that water in incubating baths became positive for salmonellas after cultures of egg powder had remained in them for 24 hours. Recently, we extended this study and examined water from baths after incubating enrichment cultures of sewage-polluted water. Of 510 bath samples, 55 contained salmonellas. Serotypes found corresponded to those in the polluted water specimens. The danger of cross-contamination of negative samples from incubation in the bath therefore existed. Ideally, material supporting bacterial growth should not come into contact with water containing micro-organisms (Aberdeen typhoid outbreak).

It is our practice to leave certain plates, after incubation, at room temperature for some days to improve colonial differentiation (Harvey and Price, 1974). In these circumstances, fluid is extruded from the agar. We examined this fluid

qualitatively and quantitatively. Salmonella counts ranged from 12 organisms/ml to 525 000/ml.

Finally, portions of inspissated salmonella colonies dropped on the bench from a flamed loop were cultured. We examined 257 samples. None contained viable salmonellas.

References

- Collins, C. H. (1974). Prevention of laboratory acquired infection *In* Public Health Laboratory Service Monograph Series No. 6, p. 21. HMSO, London.
Harvey, R. W. S. and Price, T. H. (1974). Isolation of salmonellas *In* Public Health Laboratory Service Monograph Series No. 8, p. 12. HMSO, London.

Alcoholic Solutions and other Agents for Disinfection of the Surgeon's Hands

E. J. L. LOWBURY AND G. A. J. AYLIFFE
(MRC Burns Unit and Hospital Infection Research Laboratory, Birmingham Accident Hospital)
Repeated preoperative cleansing of the hands with detergent preparations containing antimicrobial agents (povidone iodine, hexachlorophane, chlorhexidine or Irgasan DP 300) reduced the microbial flora of the skin to a low equilibrium level at about 1% of the pre-treatment level; after a single standard two-minute handwash with a 4% chlorhexidine detergent preparation, skin samplings showed a reduction to about 13% of the pre-treatment level. Much larger reductions (of about 98% after one treatment and 99-99% after a series of treatments) were obtained by vigorous rubbing of 10 ml of 0.5% chlorhexidine in 95% ethanol into the hands, wrists, and forearms, allowing the solution to evaporate to dryness while rubbing. Slightly smaller effects were obtained by the use of 95% alcohol without added chlorhexidine. For repeated use, 1% glycerol was added to the alcoholic solution to prevent excessive drying of the skin. The use of 95% ethanol caused a much greater reduction

than washing with soap and water in the numbers of *Staphylococcus aureus* on the hands of nurses in a skin hospital. Alcohol and alcoholic chlorhexidine were well tolerated and much less expensive than antiseptic detergent preparations. A large residual antimicrobial effect was found on the skin after disinfection with alcoholic chlorhexidine.

Among other agents tested 2% Irgasan DP 300 (2, 4, 4'-trichloro 2' hydroxydiphenyl ether) in a detergent base had a negligible immediate effect but a cumulative effect on repeated use almost as great as that of a 4% chlorhexidine detergent preparation.

When rubber gloves were worn for three hours after disinfection of the hands with various antimicrobial preparations (including 95% ethyl and isopropyl alcohols), the numbers of bacteria on the skin, expressed as a percentage of the pre-disinfection counts, were lower than the skin bacterial counts obtained immediately after disinfection.

Laboratory Autoclaves—Dangers and Safety

E. H. GILLESPIE AND S. A. GIBBONS (*Public Health Laboratory, Northern General Hospital, Sheffield*) Using a laboratory downward displacement vertical autoclave, the risk of failure to sterilize discard buckets has been demonstrated. The use of proper temperature and time controls can prevent this risk.

Wire baskets or containers with perforated sides are better than solid containers.

For sterilizing media in bottles it is safer to use cotton wool plugs or very loose caps.

When using sealed bottles one should not use a simple downward displacement autoclave but, if used, strict monitoring of temperatures and times is essential both in the heating up stage and, especially, in the cooling stage.

The temperatures in bottles are slow to rise. Cooling is very slow so that there could be a danger of attempting to remove bottles when the fluid temperature is well in excess of 80°C as the bottles could explode by thermal shock due to the high internal pressure.

It is suggested that all laboratory autoclaves should have a load temperature simulator or similar device to control automatically the temperature of the loading during the cycle. For fluid media sterilization, it is suggested that, in

addition to a simulator, one should consider the use of accelerated cooling to reduce damage to the media and to bring the temperature down rapidly and thus return the internal pressure in the bottles to a safe level. The opening of the sterilizer door or lid should be automatically controlled by the load temperature simulator.

In the meantime bacteriologists should monitor the times and temperatures in different loads by the use of thermocouples and thereby draw up a schedule for each type of cycle.

Hepatitis B Antigen Subtypes in North-West England and North Wales

HELEN T. GREEN AND G. C. TURNER (*Public Health Laboratory, Fazakerley Hospital, Liverpool*) Serum samples collected between 1969 and 1974 from 361 HBsAg-positive patients and blood donors in North-West England and North Wales were tested for subtyping reactions by an immunodiffusion method using anti-*ad* and anti-*ay* sera; 318 sera were subtypable by this method including two of the uncommon subtype *a*.

Among symptomless carriers of HBsAg, subtype *ad* was predominant and accounted for 76%; 23% were of subtype *ay*. In patients with chronic liver disease the subtypes were more evenly distributed with *ad* 55% and *ay* 45%. Among patients with acute hepatitis the distribution of subtypes in post-transfusion cases was *ad* 50%, *ay* 47%, and patients without a history of parenteral exposure *ad* 46%, *ay* 54%. On the other hand, *ay* predominated among patients with hepatitis who admitted an association with drugs (*ad* 5%, *ay* 95%) and those with a history of injections or tattoos (*ad* 15%, *ay* 85%). All cases of hepatitis among the staff of a haemodialysis unit were *ay*.

These findings are similar to those reported from other parts of North-West Europe and North America. When both *ad* and *ay* subtypes are present in the community they evidently differ in that *ay* causes acute hepatitis more readily than *ad*, and this difference is most pronounced when transmission is by parenteral routes associated with small amounts of blood.

Hepatitis B Infection in Families of Hepatitis B Antigen Carriers

D. M. JONES, JUDITH M. HELLAWELL, AND

I. W. DYMCK (*Department of Bacteriology, Withington Hospital, Manchester*) To investigate the degree of transmission of infection from healthy asymptomatic carriers of hepatitis B antigen (HBsAg) the family contacts of 41 such carriers have been studied. In 23 of the 41 families there were no other individuals who were either HBsAg positive or had antibody to the antigen. Comparing the 18 families where members other than the index carrier were either antigen or antibody positive, this could not be related to the titre of the antigen in the index carrier to the sub-type of the antigen, or to the presence of cryptic liver disease. The index carriers showed the usual male predominance that is found amongst HBsAg carriers (32 male, 9 female) and this distribution itself reduces the chance of observing the effects of maternal transmission of virus to children in this group of carriers. Altogether 93 blood relatives (parents, siblings, and offspring) were tested, and nine of these were HBsAg positive and 15 were antibody positive (*ie*, 26% had evidence of infection at some time). The sexual partners (5 male, 24 female) of 29 index carriers were tested; none of these was HBsAg positive but seven (24%) had antibody (25% female spouses, 20% male spouses). There was therefore no indication that the infection was spread any more by sexual contact than by other household contact, and no indication that the sex of the carrier was particularly relevant in the transmission of infection to the spouse. The family contacts who were found to be HBsAg positive and presumably also carriers were all blood relatives. This finding is in agreement with the suggestion that there may be a genetic susceptibility to becoming a carrier of HBsAg. There were 45 children of the index carriers, and of these 11 were female and 34 male. This remarkable male preponderance ($P = 0.003$) may be another manifestation of a genetic trait and was not found in a parallel group of families where there were no carriers but where one parent was HBsAg antibody positive.

SYMPOSIUM ON SOME MEDICAL HAZARDS OF COUNTRY LIFE

Farmer's Lung

D. W. R. MACKENZIE (*Mycological Reference Laboratory, School of Hygiene and Tropical Medicine, London*) Farmer's