Clinical Memoranda

Modifications in the Technique and Choice of Site for Vaccination

Most people who have been vaccinated bear disfiguring scars for the rest of their lives. The commonness of these scars in others is the only consolation of those afflicted; but the frequency of these mutilations cannot be made a justification for their continued infliction.

For many years the classical site for vaccination has been the upper and outer aspect of the arm, but more recently the buttock, thigh, or peroneal region has often been preferred. Each of these sites has, however, disadvantages which are equivalent to if not greater than the original one. Scars in the buttock and thigh have the advantage of being concealed more than those on the arm or leg, but in infants (and most vaccinations are performed in infancy) the difficulty of keeping the pustule dry in these sites is almost insuperable. There is also the temptation for the anxious parent to inspect the wound each time the napkin is changed; and, last but not least, there is the danger of secondary infection from soiling, which should of itself be enough to condemn the use of these sites. The peroneal region is as easily dressed as the arm, but from personal experience I am of the opinion that scars here tend to be larger and more keloid in type, and have nowadays to a large extent lost their advantage of being less conspicuous than those on the outer aspect of the arm.

In the last hundred cases undertaken I have chosen an area situated in the middle of the medial aspect of the arm at the junction of the upper and middle thirds, with results which have proved most gratifying to the patients, to the parents (where concerned), and to myself. Adults thereby undoubtedly suffer less discomfort from the pressure of clothing upon the involved area, the wound is easy to dress and to keep dry, and the scars are well concealed. In children the site is adequately protected, except perhaps in lifting, when special care should be exercised.

At the time of vaccination particular attention should be paid to the selection of the correct site, so that the point chosen may be exactly in the middle of the medial aspect of the arm; otherwise the scar will eventually prove to be situated more anterior or posterior than is desirable. One other modification that I have found well worth the extra trouble entailed is the intradermal method of vaccination. By this method a small amount of the vaccine lymph is drawn into a fine hypodermic needle attached to a syringe, the needle is inserted just intradermally, and the lymph forced into the skin. This ensures a smaller scar and a less severe local reaction than the older method of scarification, and it has been found to yield equally satisfactory immunological results.

During the course of my duties as a public vaccinator I have been impressed by the number of parents whose chief objection to the vaccination of their children is based on their dislike of the scars. When the site described above is indicated to them the majority consent willingly, and eventually express satisfaction.

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Tearing of the Medulla Oblongata due to a Jerk

The following case of tearing of the medulla oblongata, without fracture of the cervical vertebrae, is perhaps worthy of record because of its medico-legal interest. It appears that no such case has previously been reported in the literature.

CASE HISTORY

A stout man of about 50 years of age was killed in a motor-car accident. The man, a shepherd, was driving sheep over a bridge when a car came from behind. The sheep were startled and ran in all directions; three ran in front of the car. The shepherd ran after them and was struck by the car. The bumpers of the car caught his legs just about the level of the knees, as the result of which the rest of his body was thrown backwards with a jerk and his back met the point of the radiator of the car. The car did not run over the victim. Death was instantaneous.

Post-mortem Examination

A post-mortem examination was performed about six hours after death. Rigor mortis was complete. There were bruises on the right knee, back, and forehead, and a large haematoma on the back. The following fractures were found: simple fracture of the left femur at the lower third; simple fracture of both tibia and fibula of the right leg at the upper third; fracture-dislocation of the spine at the tenth thoracic vertebra; and fractures of the ninth, tenth, and eleventh ribs at their posterior aspects. There was no fracture of the skull or the cervical vertebrae. There was haemothorax in both sides of the chest; and a considerable accumulation of blood in the regions of the pons and the medulla. The brain was found to be severed from the spinal cord by a complete tear at the level of the medulla. Very thorough and careful examination of the skull and the cervical vertebrae failed to show any fracture or dislocation.

CONCLUSION

In the absence of any fracture or dislocation of the cervical vertebrae the conclusion was reached that the tear in the medulla was due to the jerk associated with the sudden changes of momentum during the course of the accident.

I am indebted to the Director, Sudan Medical Service, for permission to publish this case, to Dr. E. S. Horgan, assistant director of research, Stack Medical Research Laboratories, for guidance and encouragement, and to Dr. R. Kirk, bacteriologist, for much help in the post-mortem examination and preparation of this case.

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Haemolytic Streptococcal Meningitis: Recovery after Chemotherapy

The following case seems to be interesting enough to warrant publication.

CASE REPORT

A male child aged 5 was sent into hospital on October 4, 1939, with a diagnosis of tuberculous meningitis. About seven days before admission he had become drowsy; two days later he complained of abdominal pain, which had been more or less continuous ever since. He was very constipated, vomited once on the fourth day of the illness, but developed no anorexia until the day of admission. An uncertain history of earache at the beginning of the illness was elicited.

On examination the child looked ill and was very irritable. The temperature was 101.2° F., pulse 132, and respirations 22. His skin was dry and inelastic. Head retraction and a positive Kernig's sign were present, but examination of the nervous

system revealed no other lesion. There was doubtful mastoid tenderness, most marked on the left. This was difficult to assess on account of the child's irritability. The right tympanic membrane was rather pink, the left was dark red and bulging.

A lumbar puncture and an incision of the left drum were performed under ethyl chloride anaesthesia. The paracentesis revealed a tough tympanic membrane; and a very little blood-stained muco-pus was obtained by aspiration. The lumbar puncture yielded opalescent fluid under considerable pressure. The pathologist's report was: cells, 430 per c.mm., and a few red blood cells; total protein, 0.06 per cent.; globulin in slight excess; chlorides, 0.69 per cent.; deposit, streptococci and pus cells; cultures, streptococci. Ten c.cm. of 5 per cent. prontosil soluble was given intramuscularly. Before the pathologist's report was received it was thought that the infection was due to the pneumococcus, so sulphapyridine was given by mouth in doses of 1 gramme six-hourly. The following day the cerebrospinal fluid was more turbid, and the ear was discharging very little. It was therefore decided to open the mastoid.

At the operation the mastoid process was found to be almost acellular, but there was pus in what cells there were. The disease had eroded the roof of the antrum and exposed the dura of the middle fossa. The dura showed no evidence of an inflammatory reaction. The wall of the lateral sinus looked unhealthy and the sinus itself appeared collapsed. It was opened, but bled freely.

The child's condition remained critical after the operation, and he ran a swinging temperature for five days. The wound drained cerebrospinal fluid for seven days. After the packs were removed from the sinus groove the wound and external meatus were filled with magnesium sulphate paste, and this was continued for seven days. Very good drainage was obtained by this method; nor, in spite of the sulphonamide medication, did he ever exhibit cyanosis.

A lumbar puncture was performed daily for fourteen days under ethyl chloride anaesthesia. Fluid was removed until the pressure appeared normal, as much as 44 c.cm. being removed at a time. Six days after the operation the pathologist reported that the streptococci grown from the cerebrospinal fluid were haemolytic. At the time of the lumbar puncture on this day polyvalent anti-streptococcal serum was given—6 c.cm. intrathecally and 15 c.cm. intramuscularly, after a test dose of 0.5 c.cm. diluted 1 in 10. The fluid removed at this time was almost clear, and when examined was found to be sterile. After this it became quite clear and remained so, although the pressure continued to be raised considerably.

The dosage of sulphanilamide and sulphapyridine was:

Prontosil soluble	4/10/39	10 c.cm. of 5% solution.	
,, ,,	5/10/39	5 c.cm. of 5% ,,	morning.
,, ,,	5/10/39	5 c.cm. of 2.5% ,,	evening.
,, ,,	10/10/39	5 c.cm. of 2.5% ,,	morning and evening.
Sulphapyridine	4/10/39	3 grammes.	
,,	5/10/39		

Sulphanilamide: 1 gramme six-hourly for three days, then 0.5 gramme four-hourly for four days; this was followed, after an interval of twenty-four hours, by 0.5 gramme four-hourly for three days, and after another interval of twenty-four hours by 0.5 gramme four-hourly for three days. In all 39 grammes were given.

The wound finally healed on December 28, 1939, and the child seemed normal in every respect.

My thanks are due to Dr. H. H. Gleave, pathologist at the Royal South Hants and Southampton Hospital, for the examinations of the cerebrospinal fluid. I am also indebted to Mr. Norman W. MacKeith for permission to publish these notes.

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The National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality (Carnegie House, 117, Piccadilly, W.1) has published in pamphlet form, price 6d., a note entitled "Preparation for Marriage," by Mr. Kenneth Walker, F.R.C.S.

Reviews

THE MEDICAL ANNUAL

The Medical Annual, 1940. A Year Book of Treatment and Practitioner's Index. Fifty-eighth year. Editors: H. Letheby Tidy, M.D., F.R.C.P., and A. Rendle Short, B.S., B.Sc., F.R.C.S. (Pp. 604; 62 illustrations; 65 plates, plain and coloured. 20s. net.) Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd.

In these days of rapid advance in all fields of medicine it is becoming more and more difficult for the medical man to keep abreast of what is happening. And it is becoming more and more essential for him to keep up to date, for the new discoveries that are being made are quickly being translated into practical therapeutics. An ever greater precision is being demanded of the modern doctor. Such books as the *Medical Annual*, the 1940 volume of which has now been issued, fulfil a most useful purpose in giving the general reader each year a conspectus of what has happened in the year past. It is, as many readers are aware, no mere compilation of abstracts. Many of its entries are valuable articles written by authorities in the subjects dealt with. This year's volume well sustains the high standard of previous years, and the editors and publishers are to be congratulated on serving the medical profession so handsomely. The *Medical Annual* would be an ideal gift from a grateful patient to a general practitioner.

HUMAN GASTRIC SECRETION

Human Gastric Secretion: A Quantitative Study of Gastric Secretion in Normal and Pathological Conditions. By Bengt J. E. Ihre, M.D. With a foreword by Sir Arthur Hurst, M.D., F.R.C.P. (Pp. 232; 36 figures. 12s. 6d. net.) London: Oxford University Press. 1939.

Advances in the knowledge of diseases of the stomach have tended to follow the two streams of pathological thought initiated last century: the anatomical conception of gastritis presented by Broussais, and the functional idea of secretion and mobility originating from Kussmaul and based on the use of the stomach tube. Improved *x*-ray technique, the gastroscope, and histological examination of material fixed at operation or immediately after death have all contributed, together with the Rehfuss fractional test meal. Developments in the methods used to secure stomach secretion without admixture of food are now being made, alcohol and caffeine solutions having been most often tried.

Dr. B. J. E. Ihre, assistant to Professor Berglund of Stockholm, has put together his own and other workers' experiences on human gastric secretion in normal and pathological states. His material consisted of twenty-four normal healthy young people, and of seventy cases of gastric or duodenal ulcer, gastritis without ulcer, and pernicious anaemia. They were investigated in great detail, a double tube being introduced, one of these to remove the stomach juices, the other to pass into the duodenum; the position of the tubes was proved by the recovery of clear alkaline bile and gastric juice with no bile staining respectively. By continuous aspiration with water suction the gastric secretion is obtained without mixture with saliva. After some fasting specimens, histamine is given subcutaneously, and one hour later sixteen international units of insulin (Leo) intravenously, the gastric secretion being collected over twenty-minute periods. The insulin is considered to represent the vagal juice, the histamine the juice of the chemical phase of