But is not this the very kind of community, where men of all ages are living in such close contact and where there is no lack of carriers, in which mass radiography (whether by miniature screen photography or otherwise) is essentially called for? Wherever carried out, this aid to early diagnosis has proved of immense service. Already our ex-Royal Navy patients are being admitted at a much earlier stage of disease than before routine radiography was undertaken. Practical difficulties in the way of such a scheme are obvious, but with the necessary good will they can be overcome. What cannot be achieved by official means can at least be started by voluntary effort, and I am glad to say that research in this direction is about to be made by the Seamen's Hospital Society. When the value of such examination can be demonstrated clearly, official recognition should follow and the seaman victim of tuberculosis have a brighter future.

The proportion of "pick-ups" (a horrible term which seems to have come to stay!) from miniature mass radiography as given by different workers in this country (Dudley, 1941; Galbraith, 1941; Clark, Poulsson, and Gage, 1941; Clark, 1942) varies from 0.3 to 1.6%. The population of British seamen afloat was stated by the Registrar-General of Shipping to be 89,000 in 1931. Taking the number to-day as a round 100,000 and the proportion of cases found with active tuberculosis as 1%, we should expect that eventually 1,000 men would be removed from active service when all the 100,000 had been examined. But the examinations could only be done gradually, and the loss of men would therefore be gradual also, whilst after a year or two the number of men found affected should be very much less.

It has been said that such a loss of personnel is not practicable in wartime. But if sources of infection are allowed to remain the eventual loss is likely to be higher still. Conditions at sea to-day are worse than ever. The likelihood of infection is greater and the increased mental and physical strain must reduce resistance. Exposure or immersion due to enemy action also necessarily plays a part. No one can tell how long the war will last, and it would undoubtedly be sound policy to eliminate the open infectious cases as a beginning. It seems certain that after a few years of routine radiography and elimination of carriers the incidence of disease would rapidly diminish. Some system of medical record cards would have to be devised so that re-examination at suitable intervals could be arranged.

Earlier Treatment

Earlier diagnosis would be useless unless followed by earlier treatment. Here also there is room for improvement. Just as in the case of landmen, a man may ignore advice to have treatment and may continue to work, to his ultimate cost. Indeed, it is quite possible for a man rejected by one company's doctor to seek employment with another company or in a different port and to be accepted. Short of some medical record card as suggested above, there seems to be no way of stopping this; but such a system presents obvious difficulties. Those who make a diagnosis of tuberculosis in a seaman should therefore stress the seriousness of the matter and the necessity for early treatment. The word "tuberculosis" means little to these men. They may never have heard of the disease, and much less ever thought that they might themselves be afflicted. I believe that an educational anti-tuberculosis campaign, on the lines of those organized on land by the N.A.P.T., would be of immense value. By arousing the interest of the shipping companies and their medical staff it should be possible to organize simple talks to the men and to distribute suitable literature. This would help to secure both earlier diagnosis and earlier treatment, and the chronic cough would not be so readily overlooked by both the victim and the ship surgeon.

The provision of beds in suitable institutions for the number of patients expected may present difficulty, but the wide distribution among the different ports should make this problem capable of solution. It is difficult to say whether earlier diagnosis would materially shorten the duration of treatment required. In some cases this would be so; in others, in which collapse therapy by surgical means proved to be practicable because of less extensive disease, the duration of sanatorium treatment might be lengthened. Moreover, there should be fewer patients dying shortly after admission. A more careful

assignment of cases would be required so that beds available for active treatment should not be wasted on hopeless cases. It seems probable, however, that more beds would have to be made available in this sanatorium.

Summary

A brief review is given of the evidence available regarding the mortality from tuberculosis in the Merchant Navy.

It appears that the mortality rate is higher than that of the general population ashore.

Men from the Merchant Navy arrive for treatment in a more advanced stage of disease than the general population.

Earlier diagnosis is essential. This could be achieved by more careful routine physical examination, but, best of all, by routine radiography.

An extensive educational and anti-tuberculosis campaign should be organized with a view to earlier diagnosis and treatment.

In view of the importance of the Merchant Navy, every means possible should be employed to maintain the health of these men. Routine radiography is therefore fully justifiable, and would lead to the elimination of sources of infection.

Research in mass radiography for the Merchant Navy is about to be carried out by the Seamen's Hospital Society.

REFERENCES

- Clark, K. C. (1942). *Radiography*, 8, 18.
 — Poulsson, K. T., and Gage, H. C. (1941). *Brit. J. Radiol.*, 14, 250.
 Cox, G. Lissant (1936). Annual Report on Tuberculosis for Lancashire.
 Dudley, S. F. (1941). *Proc. roy. Soc. Med.*, 34, 401.
 Galbraith, D. (1941). *British Medical Journal*, 1, 699.
 Home, W. E. (1934). *Lancet*, 1, 1081.
 Wilson, J. G. (1936). *Ibid.*, 2, 645.
 Wood, J. E. (1928). *Brit. J. Tuberc.*, 22, 57.

PARALDEHYDE IN OBSTETRICS

WITH SPECIAL REFERENCE TO INTRAMUSCULAR INJECTIONS

BY

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Paraldehyde in various forms and prescriptions has been used in obstetrics as well as in other branches of medicine for a considerable number of years. It was highly extolled by F. N. Reynolds in his *Relief of Pain in Childbirth* (London, 1934) as one of the very best methods of relieving pain in labour. He advocated its use per rectum mixed with olive oil (1 dr. of paraldehyde to 1 oz. of olive oil, with an average dosage of 6 to 8 oz., according to the patient's weight). This was preceded about half an hour earlier by an injection of morphine gr. 1/6 with hyoscine gr. 1/150.

Particulars of the Method

I have used this method, mainly in primiparae, in a large number of cases for the past 8 years, both in hospital and in private practice. A midwife should carry out this treatment only on a doctor's instructions.* She must have a good knowledge of the technique of giving it, and must observe the following details:

1. The bowel should be empty at the time of injection.
2. The injection should be run into the rectum by tube and funnel, with a large catheter terminal, fairly rapidly (approximately 4 minutes) in between two pains. Should a pain occur during the injection the nurse should hold the buttocks together with a pad of gauze at the anus, to prevent return flow. The same precaution is necessary for about 10 minutes when the injection is completed.
3. In spite of the advocated dosage of 1 dr. of paraldehyde to 1 oz. of olive oil, it is better to put the dosage of paraldehyde estimated into a total of 5 to 6 oz. of olive oil, otherwise there is increased danger of its being returned.
4. Obviously a very low presenting part will add to the difficulty.

Main Uses.—With this method the ideal procedure is in a prolonged first stage, and for practical purposes this will mainly

* Report of investigation by the British College of Obstetricians and Gynaecologists, *Lancet*, 1936, 1, 283.

concern primiparae with 2 to 3 fingers dilatation, with severe pain and slow progress. It will very often be useful also in multiparae with imperfect rotation of the occiput.

As with all methods of analgesia in obstetrics, the technique will vary according to the different types of patient. Provided, however, that the proper time is chosen to use it, one can count on anything between 4 and 8 hours of effective analgesia (and also a quite high degree of amnesia) if the patient does not unexpectedly develop second-stage pains—a condition which, of course, is due to imperfect judgment of the progress of labour, but which, even so, is of no great disadvantage, as any of the ordinary methods of anaesthesia used in the second stage are still applicable. About 15 to 20 minutes after the injection the patient begins to sleep fairly deeply between pains, but partially wakes up with a variable degree of restlessness during active contractions. Even then, if only gently restrained and not talked to, she will often know nothing about this period the following day. It is, however, imperative that a midwife be in attendance all the time, as the restlessness may lead to a patient's falling off the bed during the contraction phase. In a high proportion of cases—e.g., primiparae with 2 to 3 fingers dilatation and the occiput in front—this method will obscure and very often completely banish pain not only until full dilatation has occurred but possibly until the head is actually visible, and sometimes even to crowning. It is not expected to be efficient for actual delivery of the head.

Limitations.—It is quite obvious that the most important point is a fairly accurate assessment of the progress of labour. The fact that the patient must be continually watched by the midwife is perhaps a slight disadvantage, but this applies equally to a great many other methods. Again, as usual, some estimate of full dilatation is necessary without repeated examinations, but for practical purposes the bulging of the perineum and the gradual opening of the anus during the pains are suggestive enough to warrant examination. For an unusually prolonged first stage, such as is caused by slow rotation of the occipito-posterior or gradual moulding, with minor degrees of disproportion, it may even be necessary to repeat the routine after 8 hours. A further difficulty arises when the patient is becoming uncontrollable or perhaps has agonizing pain, and something rather quicker than the rectal paraldehyde method is required: it was this point which led me to give it by intramuscular injection. This was first suggested to me by Capt. P. T. Northover, R.A.M.C., who had seen it used with success in mental work.

The Method in Use

Obviously, provided that it acted well, a smaller dose would be required to get the patient under control quickly, and for reasons of general convenience 10 c.cm. (2.8 dr.) was tried provisionally. This amount is not too bulky as an injection, though it is better given in two 5-c.cm. doses, separated by an inch or more, without removing the needle from the original skin puncture. The outer side of the thigh, at about the middle, was chosen for injection (I have used this site for all intramuscular injections for more than twenty years). Morphine 1/6 gr. can be given or omitted according to circumstances.

As a rule the patient is under control and definitely sleepy within 10 minutes. If less than 3 to 4 hours is expected to effect the birth of the child there may be no need to increase the dosage, but if 6 to 8 hours is required the remaining 3 to 4 dr. can be given in olive oil by the rectum once the patient is under the intramuscular dose.

This intramuscular method has been extremely useful in occipito-posterior cases that were partly rotated and required 2 to 3 hours longer to complete. It has also been found very useful in severe toxic cases of the pre-eclamptic type, in which it was desirable to keep the patient quiet when not sufficiently dilated for intervention.

Paraldehyde seems to be completely harmless in the renal damage of pregnancy toxæmia, and after dealing with many cases of this nature it was realized that the method might be particularly useful for actual eclampsia. It has now been employed in 10 consecutive cases of fully developed eclampsia. It can be repeated in 8 hours or more should restlessness, twitching, or the onset of labour occur, though in these acute toxic cases labour is often notoriously silent and relatively painless. By such means the majority of eclamptics can be

well controlled for 24 hours, and after this interval it is extremely rare for the fits to recur, and most patients will recover. There appears to be no harm to either mother or child from the use of paraldehyde. The child may be a little on the lazy or sleepy side for a matter of a few hours, or even to a slight extent for one or two days, but no ulterior results need be anticipated.

All 10 eclamptic cases treated with the primary paraldehyde injection, followed by a further instillation by rectum, recovered, but naturally no conclusions can be drawn from such a small number. In a few instances there was some pain at the site of injection, but even though this may continue for one or two days it seems a very minor point compared with the relief of pain at the critical time.

RESULTS OF BACTERIOPHAGE TREATMENT OF BACILLARY DYSENTERY AT ALEXANDRIA

A STATISTICAL RETROSPECT*

BY

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The war, with its influx of troops into the Near and Middle East, has underlined the importance of therapeutic control of bacillary dysentery. The experience of more than twelve years of the use of anti-dysentery bacteriophage in the city of Alexandria may therefore usefully be placed on record. The present paper is based on a statistical investigation of the mortality rates from dysentery over the period 1928-40, and a comparison is made between the statistics for Alexandria and those for the rest of Egypt, where phage has not been so freely available. The direct investigation of bacillary dysentery mortalities has not been possible because an accurate knowledge of the annual number of deaths and of cases in various localities in the country is lacking. The problem has had to be tackled by inference, because for the most part only the aggregate statistics of cases and deaths for the two forms of dysentery, amoebic and bacillary, are tabulated in the official returns.

FIG. 1.—Case mortality from dysentery in Egypt for 1928-40.

[The author furnishes a table showing for the period 1928-40 the number of cases and deaths and the percentage case mortality for dysentery in Alexandria, in Cairo, and in the rest of Egypt (including Cairo). In Alexandria the total annual number of cases of dysentery has averaged about 650 during this period, and has not gone down to any great extent; but the number of deaths has fallen sharply, and the case mortality, which in the earlier years of the period was over 20%, has not during the last five years exceeded 6.5%. In Cairo, on the other hand, there has been no such marked diminution in case mortality, which averaged 29% for the years 1936-8. The

* Abridged for publication.