

A NOTE ON THE PREVALENCE OF LEAD POISONING IN INDIA

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It is a melancholy thought to our profession, as Sir James Mackenzie pointed out, that a large percentage of cases of all kinds are never diagnosed. We may take comfort from the fact that a good number of such are cases of lesser ailments, the duration of which does not permit much investigation, but the position would be more serious if a suspicion should arise that major ailments also were escaping us.

There appeared recently in the *British Medical Journal* an article by Professor Bramwell (1931) on the subject of lead poisoning, which might have attracted much attention in this country, since it emphasised the protean character of the manifestations of this disease and should have suggested at least an occasional solution of the complexity of some of the cases with which we have to deal.

The object of this note is to invite the attention of practitioners to the prevalence of lead poisoning in this country. I do not propose to discuss its symptomatology or treatment as these are fully dealt with in all the standard textbooks, but I wish to warn practitioners of the necessity of keeping this disease in mind.

It must be the common experience of those of us who handle many outpatients to meet a large number of cases which defy speedy diagnosis. I will take only two instances, (1) vague abdominal pain, and (2) irregular nervous syndromes.

(1) From time to time cases arrive at hospital with severe abdominal pain and other symptoms suggesting intestinal obstruction. Such cases demand the most anxious consideration as to whether to operate or not, and every faculty is called into play to assist in the decision. Eventually many such cases are left alone, given anti-spasmodics, and the next day they are found to be much better. On the other hand some are operated upon and another successful appendicectomy is added to the list! I suggest that many of these cases are examples of lead colic.

(2) Although cases of nervous disease are common enough, it is curious that only a small number can be labelled with one of the names so common in England. Nearly all the cases seen are cases of atypical combined lesions.

In fact if we were to consider what is the commonest form of recognisable nervous disease we should be forced to say progressive muscular atrophy. Most of us must have seen a number of examples of this disease, and usually atypical in one respect, namely the age of the patient. This view may be compared with the fact that wasting of the hand muscles is one of the typical lesions of lead poisoning.

Examination of the usual type of combined tract lesions has frequently suggested that the case is one of meningo-vascular syphilis, and the evidence of a positive Wassermann reaction may often confirm this view. Further, anti-syphilitic treatment in certain cases produces marked benefit, and there can be no doubt that this type of disease is not uncommon. But a residuum of cases remains, which although they may give a positive Wassermann, do not benefit from treatment, and I suggest that a number of these will be found to be cases of plumbism. Illustrations will be afforded by the cases quoted.

A case of nephritis is also quoted, and confirmation has been found for the textbook statement that urine excretion is often deficient in plumbism. The blue line on the gums, regarded as a classical symptom has not been noted quite as described. It is not usual to find a blue line on the dental margin, but to find blotchy patches on any part of the gums.

If we accept the fact that plumbism is by no means uncommon in India, it is next necessary to consider how the disease is contracted. There can be little doubt that the principal source is from the habit of "tinning" vessels. The tin which is used for this purpose is frequently adulterated with lead. The adulteration may be deliberate, or fortuitous.

The poison may then be conveyed by cooking in such vessels, or by the use of such vessels for storage, particularly of ghee. Ghee kept in tinned vessels may be found to show green spots. These green spots are composed of lead oleate.

This question seems well worthy of the attention of the Indian Research Fund Association.* If these findings can be confirmed independently, legislation might follow which would control an entirely preventable cause of disablement.

A summary of a few cases is appended.

I should like to express my thanks to Drs. Mankad and Fozdar for their energetic co-operation in making these investigations and providing the case summaries, and not least to Mr. J. D. Anklesaria, lecturer on chemistry at this school, who has carried out all the chemical investigations.

Case I.—A married girl, aged about 20, was admitted in the hospital with 3 or 4 months' history of menorrhagia and metrorrhagia—the bleeding was enough to cause anxiety and was immediately responsible for the patient's seeking of admission to hospital. When admitted she was stated to have been mentally incoherent for a year; she had gradually developed spastic paraplegia, with marked ankle clonus and Babinski's sign for the last eight months and nystagmus, but without any sensory or sphincter trouble. The patient was very pale and had patches of dermatitis on the limbs and trunk.

*The reader's attention is drawn to a paper by Lieutenant-Colonel T. C. Boyd, I.M.S., and Dr. H. D. Ganguly, which appeared in the *Indian Journal of Medical Research* of July, 1932. A résumé of this is given in our 'current topics' section.

While demonstrating the case to the students, disseminated sclerosis, subacute combined degeneration, cerebro-spinal syphilis, progressive muscular atrophy, spinal tumour, and plumbism were considered. The Wassermann reaction was negative and on the grounds of spastic paraplegia, plumbism being excluded, a tentative diagnosis of disseminated sclerosis was made. The demonstrator learnt from the article of Professor Bramwell referred to above that spastic paraplegia could occur in plumbism and he then looked for a blue line on the gum, which was not there. On inquiry the patient was found to have had an abortion 2 years ago and as the pallor and uterine bleeding could not be explained by his diagnosis of disseminated sclerosis, the urine of the patient was examined for lead. Heavy traces of the metal were detected by the chemist, and the diagnosis settled. A little over three months after, the patient left the hospital, walking unsupported though with an element of spasticity, mentally much improved, without any pallor, with a normal skin, and normal menstrual functions.

Case II.—A married male, aged 32, had rather rapidly developed peripheral neuritis without any fever, with a negative Wassermann reaction and without any colic but with a constipation for a few months prior to the neuritis. There was no nystagmus. The neuritis was more of motor than of sensory type though the sensory system was by no means entirely free. While considering the aetiology of the neuritis, lead was thought of. A blue line on the gums was seen easily and the urine was sent for the examination of lead; this was detected. He was treated with sodium thiosulphate intravenously and potassium iodide orally and is on his way to recovery within four months.

Case III.—A married girl, aged about 18, 5 months pregnant, came to the hospital with a badly distended abdomen and the bowels completely locked for 6 days, the coils of the intestines appearing like a ladder under the abdominal wall, there was no vomiting, a clean tongue, a good pulse, and a good general condition. She gave a history of similar attacks for the last ten years, recurring every 6 or 8 weeks and lasting a day or two. She sought admission when she found that the attack had lasted 2 days. In this case the blue line on the gums was searched for and not found. The diagnosis of partial obstruction of the gut was made and the surgeon was summoned in consultation. The latter refused to operate unless vomiting set in or the general condition demanded it, lest premature labour might be precipitated. The patient improved on concentrated magnesium sulphate and hyoscyamus and went home a week later. Next week she was admitted again with signs of uterine bleeding, which ended in a premature delivery. While convalescent from it in the hospital she had again the attack of distension of the abdomen, obstinate constipation, etc. This compelled a urine examination for lead, which was found.

Case IV.—A school boy, aged 12 years, suffered from fever for about 2 months from February 1932, during which time he developed mitral stenosis. In April he attended for low fever and severe dyspnoea. A diagnosis of pericardial effusion was made and was confirmed by x-rays. A partial recovery from it was made by July 1932, when he was seen a second time for oedema all over the left side of the body and left pleural effusion. The oedema soon extended to the right side, but remained always more on the left. There was oliguria and the urine showed much albumen with a trace of sugar, and marked acetonuria. There was definite starvation prior to these symptoms. The diet being limited to a small quantity of boiled milk and very occasionally some bread. The diagnosis of avitaminosis was made by a consultant, and vitamins and a good diet were prescribed. No improvement followed a fortnight's trial. This having been pointed out to the consultant, the latter ordered a urine examination for lead and the report from the chemist showed that this diagnosis was correct.

Case V.—An educated man was going home from work

(Continued at foot of next column)

A NEW CORNEAL SCRAPER FOR TATTOOING

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TATTOOING of very dense opacities of the cornea for æsthetic as well as for optical purposes is quite an old operation. The material commonly used was Indian ink which was introduced into the deep parts of the cornea with either a grooved tattooing needle or an instrument consisting of a number of fine needles in a handle. The results of this small operation were not always very satisfactory, and in a number of cases the effect did not last very long. To remedy these defects, a new technique was devised by which permanent colouring of the cornea could be effected.

The little operation is done as follows:—

The eye is anaesthetised, preferably with butyn 1 to 2 per cent., instilled twice at an interval of five minutes. Cocaine should be avoided as far as possible on account of its drying and exfoliating effects on the corneal epithelium. The eye is washed with a 1:5000 hydrargyri perchloridum solution and later with sterile distilled water. Saline is not to be used on account of its decomposing effects on the solutions used for tattooing. The next step is to scrape off the superficial corneal epithelium. Ordinary Graefe's knives, secondary knives, scalpels, discission needles, pterygium knives and many other instruments have been used to scrape the cornea, but not being satisfied with any of these instruments, I have devised a special corneal scraper of which an illustration is given herewith. The corneal epithelium is very lightly scraped, particular care being taken to scrape the margins of the opacity. If care is not taken in doing this, the result is a black-coloured central spot with white linings. In scraping the cornea, one has to be very particular in those cases where there is partial anterior staphyloma and the iris lying closely matted with the spurious cornea; if care is not taken here, the resulting uveitis may be so

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one evening, after a period of heavy strain, when he fell down in the road and became 'unconscious'. He remained 'unconscious' for three days after which he was brought to Ahmedabad. When seen he was mentally confused, cerebation was very slow, paraplegia was present and he could not sit up; paræsthesia was noted but this might have been an association of the mental confusion. Blue patches were found on the gums and a diagnosis of lead encephalopathy with other evidence of plumbism was made and confirmed by urinary analysis.

The patient rapidly improved, and could walk with assistance within ten days.

REFERENCE

Bramwell, E. (1931). Some Clinical Pictures Attributable to Lead Poisoning. *Brit. Med. Journ.*, Vol. II, p. 87.