THE TREATMENT OF CARCINOMA BY LEAD COLLOIDS.

BY

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As it has been my experience, and that of many who have been using the later preparations of colloidal lead prepared by the British Colloids Company and others, that considerable reaction has been met with after injection, Mr. Patterson has asked me to state the results obtained with the colloidal iodine preparation¹ with which he has been supplying me for nearly two years. Mr. Patterson has had considerable experience in the preparation of lead colloids with the Liverpool centre.

This preparation has been used by me in some sixty odd cases of malignant disease in St. Mary's Hospital, Mount Vernon Hospital, and also in private. Beyond the first batch of about half a dozen cases none have had any reaction whatsoever, and the reaction in the first cases, we thought, was probably due to some contamination of the preparation, as it had been opened and examined previous to use. Reaction never again followed the use of the colloidal iodine.

The preparation contains 0.2 per cent. of lead in the form of lead iodide. It is intended for intravenous injection, and so it is made isotonic by means of glucose, for sodium chloride would be unsuitable in the presence of lead. It contains, further, a trace of thyroid extract; the exact amount cannot be given, for the dried extract contains a varying proportion of inert matter, but it may be definitely stated to be less than 0.02 per cent. A trace of cresol is added, to act as a preservative, since glucose is present. The addition of the trace of cresol is not regarded as making the preparation sterile; it is sterile, and the cresol is added purely as a precautionary measure.

The usual course is four doses, given at four to five days' interval, with the precautionary tests for the urine, blood, and the liver efficiency, which are insisted upon by the Liverpool centre. I have given three courses at intervals to some patients, and in one I gave ten doses at weekly intervals.

This method of treatment cannot, and does not, attempt to replace operation. It is important that the growth should be removed as widely as possible, and the injections then given in the hope that they will attack any small foci which may have started in the internal organs.

The method may be used with advantage, and the results are best seen, in inoperable cases. There is every hope that, though a cure may not be brought about, the rapidity of the growth may be lessened, and at the same time it gives the patient the feeling that something is being attempted. Too many cases are brought which are past all hopes of being benefited in the smallest degree. In early cases, where operations and other procedures, such as radium and x rays, are used, the results can hardly be attributed to one agent or to one procedure, and therefore definite scientific data are very difficult to obtain.

It is too early, of course, to attempt to publish results obtained from the injection of lead, but there is no doubt that lead colloids give satisfactory results sufficiently frequently to justify hope that the growth may be retarded or may even disappear. At the same time, the limitations of this form of treatment must be realized. It is a most unsuitable form of treatment to give when the walls of a hollow viscus have been extensively invaded by the growth, because destruction of the growth means destruction of the wall of the viscus, and rapid death must follow. In certain cases, as in oesophageal strictures where a gastrostomy has been performed for cicatricial contraction of the oesophagus, this contraction has been greatly increased and the growth of a tumour brought to a standstill, so that the word "cure" may almost be used, but cure will not mean the restoration of the natural passages.

In passing, I might say that in one of my oesophageal

¹ The commercial manufacture of the preparation has been undertaken, under the personal supervision of Mr. Patterson, by the British Drug Houses, Ltd., Graham Street, London, N.1.

cases the large, hard mass of secondary glands in the neck disappeared. A second case was lost through destruction of the growth. Two large secondary masses of breast carcinoma, which had recurred on the chest wall, completely broke down during the course of injections; unfortunately, one of the masses had penetrated the chest wall, and the breaking down set up septic pneumonia in the lung to which it was adherent, and the patient died. In yet another case of breast carcinoma, where the breast had been removed and a course of treatment given, internal secondary growths broke down, and the patient died through haemorrhage, because one of the growths had invaded the wall of the splenic artery. It may some day be possible to obviate these accidents.

Growths of the solid variety or in the solid viscera, or in situations which are not vital, may be dealt with fearlessly. Patients suffering from kidney disease with albumin in the urine, or showing the extremes of anaemia, are hardly subjects for such treatment.

In conclusion, I have to thank Mr. Patterson for kindly letting me make use of his preparation in the above cases. I gladly accede to his wish that I should state the harmlessness and absence of reaction of the preparation. I have used material from one single batch for more than a year, which proves that the preparation may be considered perfectly stable.

THE COMPARATIVE VALUE OF THE "AMMONIA-COEFFICIENT" AND THE RATIO BETWEEN FREE AND AMMONIA-COMBINED ACID IN URINE.

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THE object of this communication is to consider the comparative value of two quantities which are used in the examination of urine, both of which give a valuable indication of physiological activities. The comparison was instituted with a view to determining which of these two values has the better practical diagnostic possibilities. Both quantities are ratios, and the mechanism involved in the case of one of these was outlined by us at the provincial meeting of the Children's Section of the Royal Society of Medicine held in Bristol in June, 1923,¹ and dealt with more fully subsequently.²

The first of these ratios is obtained by titrating 25 c.cm. of urine with decinormal sodium hydroxide solution, using as indicator phenolphthalein; this gives the free acid value; then to the same solution neutral formaldehyde solution is added (Folin's method), when a further titration with alkali gives the ammonia-combined acid, or ammonia.

The ratio, which we will designate R_A , is obtained by dividing the second titration by the first, and represents the ratio of ammonia to free acid present in the urine. The second ratio involves the same titrations, but in addition the nitrogen is determined by the usual hypobromite method; a ratio is obtained by comparing the nitrogen existing as ammonia with the total nitrogen from the hypobromite determination. This ratio we will call R_U . The two ratios are therefore:

$$R_A = \frac{\text{Ammonia}}{\text{Acid.}}$$

$$R_U = \frac{\text{Nitrogen as ammonia}}{\text{Total nitrogen (hypobromite).}}$$

As a practical point it will be seen that R_U requires a third determination which is by no means as accurate or simple as the ordinary titrations needed for R_A . (R_U closely corresponds with what is generally termed the "ammonia coefficient.")

The employment of ratios is of considerable importance, since the wide variations in concentrations of urine would stultify results considered singly because the quantity of