

A NOTE ON THE PARASITIC PROTOZOA LATELY FOUND IN CANCER.

By H. G. PLIMMER, M.R.C.S., F.L.S.

At the present moment much is being written, both in England and abroad, concerning the parasitic origin of cancer, and as I have had opportunities of examining several cases lately, with reference to this parasitic origin, I wish to place the few following observations on record.

The protozoa, which have been discovered in cancerous tumours, have been most carefully described by Dr. Armand Ruffer, and Mr. J. Herbert Walker, in the *BRITISH MEDICAL JOURNAL* in July and November, 1892, and more fully in the *Journal of Pathology*, October, 1892, and I have been able to confirm their observations entirely. I have examined specimens from thirteen cases of recent carcinoma, prepared specially for the purpose of demonstrating these organisms, and also fifty-three specimens, taken from thirty-seven cases of various carcinomata, prepared according to the ordinary pathological methods during the last eight years, and in all of these cases, without exception, I have been able to demonstrate the parasite; with some difficulty in those specimens prepared by the older methods, but still with certainty. After examining these specimens most carefully with powers up to 3,000 diameters, and by the aid of photography, I have no doubt whatever that the bodies described by Dr. Ruffer and Mr. Walker are parasitic protozoa. They have no resemblance in structure, or position, to the many forms of cells undergoing degeneration, which we so often see in cancers; and they cannot be confounded, when once they have been seen, with the appearances caused by the endogenous formation of cells. They are found most plentifully near the growing edge of the cancer, and in the glands which become secondarily affected; but they are not found, or only found in very small numbers, in that part of the cancer which is undergoing degeneration, so that it is sometimes necessary to cut sections from various parts of the growth, in order to demonstrate the presence of these bodies satisfactorily. They are not to be found either in the very fibrous parts of cancers, and I have never seen them in cells undergoing karyokinesis, although I have often met with them in the very next cell to that undergoing division. The structure, too, of these bodies is very typical: they are nearly or quite round, with a nucleus, which is always visible in well prepared specimens, and with a capsule which can also be seen in every instance; from this capsule in a certain number of specimens rays extend centripetally towards the nucleus, and from the nucleus also rays extend radially towards the capsule, these latter being usually fainter and finer than the capsular rays. But these are not seen in every instance, and their significance is as yet undetermined. The size of the bodies varies considerably, even in the same specimen; in one lately under observation I measured some varying between 0.0137 m.m. and 6.317 μ ; and in many specimens small chromatin granules are scattered through the protoplasm of the organism.

During the observations I have made on these bodies I have obtained, I think, evidence of the amoeboid nature of the cancer cell, and, as this is a matter of great importance, especially as regards the method of secondary infection in cases of cancer, further observations in this direction will be made.

Dr. Ruffer and I have lately tried a variety of fixing reagents, and so far the method by which these organisms are best demonstrated is the following:

Small pieces of perfectly fresh tissue are fixed for twenty-four hours in Foa's solution, which is made as follows: Equal parts of a 5 per cent. solution of bichromate of potash and of a saturated solution of perchloride of mercury in 0.75 per cent. salt solution, mixed just before using. The pieces of tissue are then washed in running water for twenty-four hours, and they are then placed for twenty-four hours in 30 per cent. alcohol, then for twenty-four hours in 60 per cent. alcohol, then for twenty-four hours in 90 per cent. alcohol, and then, until hardened, in absolute alcohol. They are

afterwards imbedded in paraffin, and sectioned, and stained on the slide with the Ehrlich-Biondi triple stain, washed out with alcohol, cleared with xylol, and mounted in xylol balsam. This method, although somewhat complex, gives greatly superior results to any other of the many methods we have tried.

RECTAL CANCER.

RECTAL EXCISION FOR CANCER: THE SELECTION OF SUITABLE CASES AND THE PROGNOSIS.¹

By HARRISON CRIPPS, F.R.C.S.,
Assistant Surgeon to St. Bartholomew's Hospital.

It is only within comparatively recent years that rectal cancer has been dealt with to any extent by direct surgical treatment. The operation formerly found little favour in this country, and had practically dropped out of use until its revival fourteen or fifteen years ago. The disfavour with which the operation was viewed rose from the extremely unfavourable results both as regards the immediate mortality of the operation and the speedy recurrence of the disease.

By the increase of our knowledge in the treatment of wounds the mortality following surgical operations has materially diminished, so that the intrinsic risk following excision of the rectum is less than formerly, but those who have had any considerable experience of rectal cancer must know only too well that excision can never become the treatment for all or even the majority of cases, and that any attempt to make it so will again bring discredit on the operation. Recent surgical ingenuity has somewhat extended the range in which rectal cancer can be removed, and if this ingenuity was always tempered with discretion useful progress would be made. It is not sufficient to show that an extensive operation can be performed, involving even the partial resection of the sacrum, unless it can be further shown that a fair proportion of patients survive the operation with a substantial amelioration of their condition, or even a fair chance of a permanent cure.

If these conditions are to be fulfilled, a careful selection of cases suitable for operation will have to be made. There are doubtless occasionally cases in which severe and high operations may be justifiable, but such instances are rare. Speaking generally, no operation should be undertaken unless there is a fair prospect of a complete removal of the disease. If the entire growth be not taken away the portions left seem to grow more rapidly than ever, the embryonic scar tissue forming a favourable nidus for extension.

According to my researches into the pathology of rectal cancer, there is practically only one form of the disease—adenoid carcinoma; yet, by the bedside, growths have very different clinical features. The length of time that the disease has been in progress accounts for some of this difference, but it is by no means the only factor. In some cases the growth may have been present for many months, or even a year or two, yet only have affected the bowel in a comparatively superficial manner, it having chiefly crept along the mucous and submucous coats without completely perforating the muscular layers of the bowel. In other cases, even from the first, the cancer extends more rapidly in the deeper parts than on the surface, quickly invading and perforating the muscular coats, and then spreading widely into the neighbouring tissues. It thus becomes bound to the sacrum behind, the bladder, prostate, or uterus in front, and it is especially apt to invade the peritoneum of Douglas's pouch.

So long as the disease has not perforated the muscular coats, the prospects of an operation are hopeful. It means that the cancerous affection may still be confined to the rectum, and that, by the removal of the whole or a portion of that organ, it may possibly be eradicated. On the other hand, when it has once extended beyond the bowel, the prognosis becomes most unfavourable. It is true that surgically the rectum can be dissected out from the neighbouring organs, and surrounding indurated portions of tissue can be subse-

¹ Read in the Section of Surgery at the Annual Meeting of the British Medical Association held in Nottingham, July, 1892.