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THE EARLY DIAGNOSIS OF CANCER

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Whilst every specimen removed at operation is not submitted for pathological examination, the experience in this laboratory, being the only one of its kind in the Eastern Province, gives a fairly accurate idea of the relative incidence of cancer in this area. Table I shows the common cancers

TABLE I. CANCER, IN ORDER OF FREQUENCY, SEEN AT THE S.A.I.M.R., PORT ELIZABETH, DURING 1957

Organ	*Number of specimens seen*	*Organ*	*Number of specimens seen*
Skin	90	Stomach	24
Prostate	66	Rectum	21
Cervix	62	Urinary bladder ..	16
Breast	60	Endometrium ..	16
Oesophagus (and pharynx)	25	Ovaries	16
		Lungs	14
Colon	25		

encountered, in order of frequency, during the year 1957. As these are the common cancers in any locality, although not necessarily in this order, it seems worth while to review the features which would lead to their early diagnosis.

Cancer of the Skin

This may begin as a senile keratosis, a leukoplakia, a papule or a verrucous lesion which later ulcerates. It may arise from a lentigo or a pigmented naevus, or it may arise from apparently normal skin. Experience in this laboratory shows that the majority of cases are correctly diagnosed on clinical grounds. Because, however, there are some lesions with which it might be confused (chronic non-specific ulcer, molluscum sebaceum etc.) a specimen should be submitted for histological confirmation.

Cancer of the Prostate Gland

From a consideration of the writings of various authors, the experience of others and our own experience, surprisingly few generally accepted facts emerge. This much however seems clear:

1. It is practically impossible to diagnose macroscopically cancer of the prostate in the early stages. Though we examine more than 150 prostate glands a year we are seldom able to give an opinion as to malignancy on the basis of size, shape, colour, contour or consistency.

2. In a high percentage of cases it is exceedingly difficult to diagnose cancer of the prostate microscopically. These difficulties are not due to a malignant appearance which is in fact benign, but rather to a benign appearance which is in fact malignant.

3. Pathologists differ in what they believe are the criteria of malignancy. Hence one pathologist may report a gland benign, whilst another will report the same gland malignant.

4. It is an exceedingly common condition; some authors state that it occurs in 30% of men over 50 years of age.[1]

5. There are two distinct biological types of cancer of the prostate. One is the latent type and is often discovered as a coincident lesion in men who die from other causes. The other is active, infiltrating and forming metastases. There is no morphological means of distinguishing between the latent and the active form.

6. The most important clinical symptoms of cancer of the prostate are those grouped under the term prostatism. The most important clinical sign is hardness of the gland on rectal examination.

7. The serum-acid-phosphatase estimation is of little or no value in the early diagnosis of cancer of the prostate, but is important if there are secondary growths.

8. Cancer of the prostate may be present in a gland of normal size.

In view of all this, what should be the attitude of the general practitioner? The symptoms of prostatism and the finding of a hard prostate gland, whether that hardness be diffuse or patchy, should warrant a provisional diagnosis of prostatic cancer. Some such cases will prove to be cases of stone, fibrosis, or some other benign lesion, but such errors are of little or no importance. Cases which are provisionally diagnosed on the basis of prostatism and a hard prostate demand assessment by a skilled urologist.

Cancer of the Cervix

The first symptom is usually vaginal bleeding. This is not severe in the early stages and is often brought about by trauma, especially coitus. A watery or blood-stained vaginal discharge is another important early feature. Either of these demand a thorough gynaecological examination. Schiller's test is in no way diagnostic but it may indicate the portion of the cervix from which a biopsy should be taken.

Clinicians are so conscious of the incidence of cancer of the cervix that cervical-biopsy specimens are amongst the more common specimens received at this laboratory. The diagnosis of cervical cancer is thus on a secure basis. It has, however, been shown that a vaginal or cervical smear will show some cases which biopsy failed to show. Ideally the smear method should be used in conjunction with biopsy in those cases where cancer is suspected, and alone in cases

where it is not suspected. This, however, might be regarded as superfluous and as not justifying the trouble, time and expense involved. Obviously, if vaginal smears were sent from every woman not suspected of having cancer of the cervix, there would be little time for anything else in the laboratory.

At the present time it would seem that the best plan is to submit a biopsy specimen in suspected cases together with smears.

Cancer of the Breast

The voluminous literature on the subject of the diagnosis of cancer of the breast can be summarized as follows. Every solitary mass in the breast of a woman in the cancer age should be examined histologically. Experience in this laboratory has shown the value of this attitude. The histological examination is best performed by the frozen-section method during the operation so that, in the event of the mass proving malignant, the surgeon may carry on accordingly, and thus save the inconvenience and expense of a possible second operation.

If every breast mass in a woman of the cancer age is regarded as malignant a considerable number of errors will be made. Thus some specimens will prove to be simple hyperplasia, simple tumours, plasma-cell mastitis, and solitary cysts. Such errors however are of no consequence. The importance of discovering a cancer more than balances the inconvenience and anxiety caused by a false-positive diagnosis of malignancy.

Microscopic examination of a discharge from the nipple, when this is present, may be important in diagnosis, and it will be of the greatest importance when a mass cannot be found on palpation. In practice, however, it is found that only a small proportion of breast cancers present this feature; hence it is not of great diagnostic importance.

The surgeon who would treat cancer of the breast must be confident of the diagnosis. This confidence can only be obtained in many cases if a histological examination is made.

Cancer of the Oesophagus

The outstanding symptom of cancer of the oesophagus is dysphagia. This is slowly progressive and occurs first for solids and later for liquids. The other features of the disease, such as retrosternal pain, cough, recurrent-laryngeal-nerve paralysis etc., may occur quite early, but usually dysphagia dominates the clinical picture. The early diagnosis, therefore, will depend upon the thorough investigation of this symptom. This calls for the exclusion of the other well-known causes of dysphagia (Plummer-Vinson syndrome, scleroderma, dermatomyositis, aortic aneurysm etc.) and will involve a radiological examination, oesophagoscopy and possibly a cytological examination of the gastric contents.

Cancer of the Stomach

The early symptoms of cancer of the stomach are vague and no definite conclusion can be drawn from them. All that can be expected from a clinical examination is to arrive at a suspicion of its existence. Persistent dyspepsia, whether this takes the form of epigastric fullness, belching, vague abdominal discomfort, loss of appetite or vomiting—any of these in a person over the age of 40 years calls for investigation and the exclusion of stomach cancer. Several aids to diagnosis are available:

1. *The fractional test meal.* This is a time-honoured investigation but it is difficult to see what help it gives in solving the problem. It is true that some 50-60% of stomach cancers are associated with achlorhydria. But some 40-50%, therefore, show no such association. Furthermore, achlorhydria is found in a number of other diseases and even in some 'normal' people. This procedure, therefore, is mentioned to be dismissed as thoroughly unreliable and possibly even misleading.

2. *Radiological examination.* This is generally regarded as the most useful procedure and should certainly be done in all suspected cases. A filling defect is the classical radiological sign, but the lesion must have progressed considerably before it will give this sign. Bamforth has reported 5 cases of cancer of the stomach all of which were unrecognizable on gross examination.[2]

3. *Gastroscopy.* This method has its advocates and in skilled hands, when combined with biopsy, it should prove the most useful method of all. We in this laboratory, however, have had no experience of it.

4. *Exfoliative cytology.* Writing in a recent number of the *British Medical Journal*, Schade[3] states his experiences in these words: 'So far about 2,500 gastric cytological examinations have been made. Twenty-five cases of carcinoma have been discovered by cytology where other investigations (radiology and gastroscopy) have been negative.' Further on he says: 'One important conclusion to be drawn from our experience is that the best material for cytology was obtained from those cases in which the malignant lesion was subsequently found to be small, often confined to the mucosa.' It seems therefore that in exfoliative cytology we have not only a great aid to diagnosis but a means of diagnosing stomach cancer at a very early stage.

Cancer of the Rectum

The majority of cases of cancer of the rectum occur in the upper third of this organ. They begin as an indurated lesion, a nodule or a plaque. Later, a deep ulcer with characteristic margins forms or the lesion develops into a cauliflower growth. The early symptoms which demand investigation are (1) the passage of blood and mucus at stool, (2) a feeling of incomplete emptying of the bowel and (3) increasing constipation, often manifested by an increasing need for aperients.

On the subject of the diagnosis of cancer of the rectum no one speaks with greater authority than Gabriel,[4] who sums the matter up in the following words: 'It may be safely stated that about 90% of rectal carcinomas can be felt digitally and, if the sigmoidoscope is used in addition, a correct diagnosis should be made in every case'.

The special investigation, therefore, in cases where cancer of the rectum is suspected, is sigmoidoscopy, with which may be included a biopsy.

Cancer of the Colon

Because of its inaccessability, cancer of the colon is exceedingly difficult and usually impossible to diagnose in the early stages. The outstanding symptom is a change in bowel habit. This may manifest itself by increasing constipation, resulting in an increasing need for aperients. Constipation which alternates with diarrhoea is another suggestive symptom. The outstanding sign is the passage of blood and mucus *per rectum*. Three things, however, must be remembered about this sign: Firstly, it is by no means pathognomonic;

secondly, it indicates that the lesion is fairly advanced; and, thirdly, it is obscure if the lesion is situated in the proximal colon. If, for example, the cancer is situated in the caecum, there will be nothing characteristic about the stool on gross examination. In this event, however, the benzidene test for occult blood will be useful. The difficulties therefore, in the early diagnosis of cancer of the colon are very great, so much so that chronic hypochromic anaemia may be, and often is, the presenting feature.

The most important aids to diagnosis at the present time are radiological examination after an opaque meal; more important, an opaque enema and sigmoidoscopic examination with which may be included a biopsy. Cases have been diagnosed by a cytological examination of colonic washings, and this method appears to have distinct value. It is, however, too early yet to state its usefulness.

Cancer of the Bladder

The outstanding clinical feature of cancer of the bladder is a painless intermittent haematuria. Any patient, therefore, in the cancer age who presents this feature must be regarded as having cancer of the bladder until a complete investigation, especially a cystoscopy, is performed. Because the haematuria is often intermittent and painless, a patient during an intermission may be reluctant to submit to a cystoscopic examination. This reluctance is understandable, but he should nevertheless be prevailed upon to submit to examination. If he still refuses recourse may be had to a cytological examination of the urine for malignant cells. This latter, however, is no substitute for a cystoscopic examination, but if positive or doubtful, it may be a strong factor in persuading the patient to have the complete examination. If followed, the procedure outlined above will bring many early cases to light.

Cancer of the Endometrium

Post-menopausal bleeding is probably the most common presenting symptom. It must be remembered, however, that cancer of the endometrium is by no means confined to post-menopausal women. Before the menopause a blood-stained vaginal discharge is an important early feature.

As with cancer of the cervix, clinicians are very conscious of the incidence of endometrial cancer. Well over 1,000 endometrial specimens are received in this laboratory every year. The vast majority of these prove to be benign; nevertheless this figure shows a high degree of suspicion on the part of the clinicians and it is thus felt that few cases are missed. Exfoliative cytology may be used as an adjunct to currettage in suspicious cases but not as a substitute.

Cancer of the Ovaries

It is not possible to diagnose early cancer of the ovaries by purely clinical means. All that can be achieved by a gynaecological examination is to arrive at a suspicion by finding an ovarian mass. Laparotomy will usually disclose the nature of the mass, but sometimes it will not; hence all specimens should be sent to the laboratory for histological examination.

Cancer of the Lung

This was the subject of an earlier paper,[5] and so nothing will be said here except that a suspicion of cancer of the lung should be investigated by radiology, bronchoscopy and exfoliative cytology.

What is badly needed is a reliable serological test for cancer. Many such tests have been proposed in the past but so far none has proved satisfactory. With the exception of cancer of the skin and rectum, we see that clinical assessment of cases leads to little more than a suspicion of the existence of cancer. For accurate diagnosis recourse must be had to special investigations which are: (1) radiological examination, (2) endoscopy (with biopsy) and (3) exfoliative cytology.

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