antibiotics who had no brown discoloration of the tongue. The results suggest that the so-called "parasitic" theory of black tongue is untenable. They indicate also that the presence of bacteria or fungi is incidental and of no aetiological significance.

It is well known that nicotinic acid deficiency produces the syndrome of black tongue in dogs. A nicotinic acid deficiency following antibiotic treatment has also been suggested as the cause of the discoloration in man (Ellinger and Shattock, 1946b), the deficiency being due to the destructive action of the antibiotics on the intestinal bacterial flora which normally produce nicotinic acid. Cross (1949) showed, however, that nicotinic acid given simultaneously with penicillin does not prevent the occurrence of black tongue. The rapid development of the discoloration also renders the deficiency theory improbable.

So far nothing is known about the nature of this pigment and about the mechanism of its production, and it is difficult to explain how four antibiotics which are chemically distinct can produce the same effect. It remains to be seen whether the new antibiotics (terramycin, bacitracin, etc.) will exert the same action on the tongue. It is noteworthy that black tongue has also been found in persons treated with sulphanilamide (Burgheim, 1939; Ellinger and Shattock, 1946a).

Treatment of the idiopathic black hairy tongue is of interest. Strange as it may seem at first, the antibiotics which produce black tongue can also cure it. This phenomenon has also been observed by other investigators who used aureomycin lozenges (Cornbleet, Cohen, and Musgrave, 1951). Parenterally administered penicillin had no effect (Kleinert, 1946). Antibiotics do not remove the pigmentation; on the contrary, in the first few days of treatment the brown discoloration deepens appreciably. The "curing" effect of antibiotics is produced by their facilitating the total removal of the "hairs." The disappearance of the growth in a case of black hairy tongue treated with x rays (Gandy, 1952) can probably be explained by the same mechanism.

Summary and Conclusions

Clinical observations and microscopical examinations of the lingual scrapings were made in 57 cases of black tongue: in 23 patients treated systemically with antibiotics; in 18 using antibiotics (penicillin, aureomycin, chloramphenicol, and streptomycin) locally in the mouth; and in 16 suffering from idiopathic black tongue.

Discoloration of the tongue occurred in about 10% of cases treated systemically with chloramphenicol and aureomycin, and generally appeared after one week's treatment.

Local application of antibiotics gave rise to discoloration of the tongue in 40% of persons; it usually appeared in the first three to five days of treatment, in rare instances even in twenty-four hours.

No evidence was found that any special type of bacteria or fungi is of significance in the aetiology of black tongue, whether occurring spontaneously or in response to treatment with antibiotics.

Locally applied antibiotics were used to treat six cases of idiopathic black hairy tongue, with good results. The mechanism of this therapeutic action is discussed.

ADDENDUM.—After the paper was submitted for publication, investigations were carried out with large amounts of terramycin oral drops applied locally. The terramycin was kindly supplied by C. Pfizer and Co., New York. Two out of four healthy volunteers developed black tongue with complete absence of bacteria and fungi.

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RENAL TUMOURS

BY

RALPH SHACKMAN, M.B., B.S., F.R.C.S.

Surgeon, Hammersmith Hospital; Senior Lecturer in Surgery, London University, Postgraduate Medical School

AND

OWEN DANIEL, M.B., B.S., F.R.C.S.

Assistant Lecturer in Surgery, London University, Postgraduate Medical School

This communication is based on a review of the case records of all patients with tumours of the kidney seen at the Postgraduate Medical School, Hammersmith Hospital, in the 12-year period 1939–50. We have accepted the simple classification (Willis, 1948) of (1) epithelial tumours arising in the kidney parenchyma, (2) epithelial tumours arising in the kidney pelvis, and (3) embryonal tumours. In our opinion no useful purpose is served by attempting to distinguish between the hypernephroma of Grawitz (1884) and the renal carcinoma of Ewing (1940).

Incidence

Fifty-one patients with tumours of the kidney were seen in the 12-year period—38 (21 males, 17 females) had carcinoma of the renal parenchyma, 10 (7 males, 3 females) had tumours of the renal pelvis, and 3 (1 male, 2 females) had embryonal tumours. With the exception of six carcinomas of the renal parenchyma all the tumours were examined histologically.

Tumours of the kidney are comparatively rare. In our 700-bed general hospital the average annual incidence of all tumours of the kidney has been roughly four, which is somewhat less than that of carcinoma of the bladder (Shackman, 1947). The relative incidence of the three

different types of renal tumour has been roughly 13:3:1, and is similar to that reported by Dick and Flint (1951) and Riches, Griffiths, and Thackray (1951).

Whereas tumours of the renal parenchyma and renal pelvis usually occur in adults, renal embryomas usually occur in children. There have been no exceptions to this general rule in our series; the ages of patients with parenchymal tumours ranged from 35 to 77 years, those with pelvic tumours from 47 to 72 years, and those with embryomas from 2 to 7 years.

All three types of renal tumour are usually unilateral, but three adult patients (6%) in our series had bilateral parenchymal tumours: one of these, however, had multiple metastases, and the tumour in the contralateral kidney was therefore not necessarily a second primary.

Clinical Features

Pain, palpable loin swelling, and haematuria are said to be the cardinal clinical features, but it is recognized that one or more of these symptoms and signs may be absent even when a tumour is large. On occasion it is a distal metastasis which first draws attention to the disease (Creevy, 1935).

Pain.—Three of the 38 patients with carcinoma of the renal parenchyma were admitted in a comatose condition and no reliable history could be obtained. In the remaining 35 pain occurred sooner or later in 24 and was the first and most prominent symptom in 11. Pain also occurred in 3 of the 10 patients with tumours of the renal pelvis, but was absent in all three children with renal embryomas. The 24 patients with carcinoma of the renal parenchyma who complained of pain included 16 with severe intermittent aching in the affected loin, five with severe intermittent pain in one or other upper abdominal quadrant, one with typical renal colic associated with the passage of clots of blood, one with painful clot retention of urine, and one with pain in the neck and shoulder due to extensive metastases in the cervical vertebrae and cervical lymph nodes. Twelve of the 16 patients with loin pain and three of the five with abdominal pain were found to have extensive tumours infiltrating the vertebral or paravertebral tissues: of the remaining six patients, three were found to have hydronephrosis and three had considerable haemorrhage into apparently circumscribed tumours. The three patients with painful tumours of the renal pelvis all had squamous carcinomas; two had marked hydronephrosis due to obstruction of the pelvi-ureteral junction by tumour, and one had extensive local infiltration of the growth.

Palpable Loin Swelling.—A palpable loin swelling was noted in 23 of the 38 patients with carcinoma of the renal parenchyma, 2 of the 10 patients with tumours of the renal pelvis, and in all three children with renal embryomas. All the palpable tumours exceeded 3 in. (7.5 cm.) in diameter, and, as might be expected, those tumours which were situated at the lower pole of the right kidney were felt more often than those which were situated at any other site. A renal tumour which is less than 3 in. (7.5 cm.) in diameter does not materially increase the dimensions of a kidney unless it grows outwards from one or other pole, and is not likely to be palpable unless it develops in a lower pole.

Haematuria.—Sixteen of the 38 patients with carcinoma of the renal parenchyma complained of one or more attacks of haematuria, and 7 of the 16 had haematuria as a primary symptom. In 12 of these 16 patients the tumours were found to have grown into the pelvis of the kidney, but in the other four the tumours were well circumscribed and had spread the calices apart without invading them. Congestion of the radicles of the renal veins may possibly account for the haematuria of these latter patients. Excluding the three patients who were admitted in coma and from whom no history was obtainable, 19 of 35 patients with carcinoma of the renal parenchyma denied any history of haematuria. Yet 15 of them had large necrotic growths wholly or partly

replacing the kidney and involving the pelvis, and only four had well-circumscribed tumours nowhere invading the pelvis. Nine of the 10 patients with tumours of the renal pelvis had haematuria; indeed, intermittent painless haematuria was the sole complaint in eight. The single instance of a tumour of the renal pelvis occurring without haematuria was found in a patient who had a carcinoma which had invaded the peritoneum and spleen and other adjacent structures. Painless haematuria was the first symptom in one of the children with a renal embryoma, but a very large tumour was found in the right flank a few weeks later. The other two children had no haematuria at any stage of their illness.

Weakness.—Weakness, or a feeling of tiredness, was a frequent and often dominant symptom in patients with carcinoma of the renal parenchyma; in fact, 14 of 35 patients made specific mention of it, and in nine it was the first indication of disease. Where weakness accompanies a renal parenchymal cancer it generally has a sinister significance: 7 of the 14 patients who complained of this symptom died within six months, four others died within eighteen months, and only three survived more than two years from the onset of the first symptoms of disease. Weakness was not a symptom in any of the 10 patients with carcinoma of the renal pelvis or in the three children with renal embryomas. The weakness did not seem to bear any relation to the degree of anaemia, and several patients who complained of weakness were found to have normal haemoglobin values. Loss of weight, however, often seemed to be associated with the weakness, and a notable preponderance of pulmonary and pleural metastases was found at necropsy in these particular cases.

Fever.—Temperatures ranging from 99 to 100° F. (37.2 to 37.8° C.) occurred in 21 of the 38 patients with carcinoma of the renal parenchyma, in 3 of the 10 patients with tumours of the renal pelvis, and in two of the three children with renal embryomas. When fever occurs in patients with carcinoma of the renal parenchyma it may be due to extensive necrosis in the primary tumour and may be relieved by nephrectomy. This was the case in three of our patients. In general, however, pyrexia is an indication of a poor prognosis (Griffiths and Thackray, 1949), and is often associated with the presence of extensive pulmonary metastases. The fever that was present in three of our patients with tumours of the renal pelvis was due in one case to a closed pyonephrosis on the same side as the tumour, in another to obstruction of the opposite kidney by tumour spread in continuity, and in a third to extensive lymph-node and osseous metastases as well as bilateral pleural effusions.

Varicocele.—Varicocele was noted in 3 of the 21 men with carcinoma of the renal parenchyma and was an early manifestation of disease; two patients had large tumours of the left kidney with extensive perineal infiltration and nodules of growth along the renal pedicle and inferior vena cava; the third patient had a large tumour of the lower pole of the right kidney with infiltration of the peritoneum and other neighbouring structures.

Investigations

Urinalysis

Twenty-five patients with carcinoma of the renal parenchyma and seven with tumours of the renal pelvis had their urine examined by microscopy and bacterial culture. The urine of 21 of the 25 contained some pus cells and red blood cells; 12 had moderate or marked pyuria, but in only three was the urine infected. The urine of the other four was reported to show no red corpuscles or pus cells, yet all four had large tumours and two had had gross haematuria; it is likely that repeated examinations of the urine would have shown some abnormality in these particular cases.

The urine of seven patients with tumours of the renal pelvis was reported to contain scanty or numerous pus cells,

and in all but one there was an excess of red blood cells; in five of these the urine was sterile on culture and in two it was infected.

Urinalysis was omitted in the three children with renal embryomas.

Radiology

Plain radiographs of the urinary tract were available for study in 23 of the 38 patients with carcinoma of the renal parenchyma and showed enlargement of a renal shadow in 11 and calcification in one.

Intravenous pyelography was performed on 20 of these 23 patients and the pyelograms suggested the correct diagnosis in 18 but gave no clue to the diagnosis in two. The main abnormalities seen on intravenous pyelography were defective filling of part or disappearance of the whole of a calix in six cases, defective filling or disappearance of the renal pelvis in nine, distortion of calices in four, dilatation of the renal pelvis in two, displacement of the kidney in five, and displacement of the ureter in two. Absence of excretory activity, shown by intravenous urography, is generally interpreted as an indication of a poor prognosis (Wade, 1933; Griffiths and Thackray, 1949). Five of our patients showed no excretion from the affected kidneys, and were found at operation or necropsy to have either infiltration of the renal pedicle by tumour or practically complete replacement of the kidney by tumour tissue. A normal excretion pyelogram, however, does not necessarily mean that a tumour is small or the prognosis good, and 5 of the 11 patients with normal excretion pyelograms were found at operation to have inoperable tumours widely infiltrating the surrounding tissues.

Retrograde pyelograms were made on nine patients with carcinoma of the renal parenchyma, and the films suggested the correct diagnosis in all nine. They showed abnormalities similar to those seen in the intravenous pyelograms, but the clearer pictures obtained by the retrograde technique proved more valuable for diagnosis.

Plain radiographs of the urinary tract of all 10 patients with tumours of the renal pelvis showed no abnormality of the renal shadows. Intravenous pyelography was performed on nine of these patients, and the films suggested the correct diagnosis in five, but gave no clue to the diagnosis in four. Absence of excretory activity occurred in two affected kidneys, and was found to be due in one case to a pyonephrosis with a large papilliferous carcinoma of the pelvis and in another to a transitional-cell carcinoma lining the whole of the pelvis and everywhere infiltrating the kidney parenchyma.

The main abnormalities seen in the intravenous pyelograms of the patients with tumours of the renal pelvis were dilatation of the pelvis or of a calix in five instances, defective filling of the pelvis in three, and defective filling of a calix in two.

Retrograde pyelography carried out in two patients with tumours of the renal pelvis showed a distinct filling defect of the pelvis together with a moderate hydronephrosis in both cases. In a third patient it was impossible to pass a ureteric catheter beyond the pelvi-ureteric junction because it was blocked by an extensive squamous-celled cancer.

X-ray films of the spine, pelvis, and long bones for bony metastases may be misleading. Out of 26 patients submitted eventually to post-mortem examination, nine with tumours of the renal parenchyma and one with a tumour of the renal pelvis were all proved at necropsy to have extensive metastatic deposits in bones which, x-rayed within a month or so of death, had showed no bony abnormality.

Anaemia

Nineteen of the 38 patients with carcinoma of the renal parenchyma had moderate or severe anaemia, while, in contrast, at least 8 of the 10 patients with tumours of the renal pelvis had normal haemoglobin values. The cause of the anaemia is obscure and cannot be related either to the degree of haematuria or to the site and extent of metastases. It is

possible that unknown products of tumour necrosis are capable of suppressing blood formation, and it may be significant that seven of nine severely anaemic patients also had fever.

Treatment

The treatment of choice for renal tumours is nephrectomy, or nephro-ureterectomy in the case of renal pelvic tumours. Extensive local infiltration may prevent operative removal, but distal dissemination is not necessarily a contraindication to surgical excision of the primary growth; a solitary metastasis of a renal parenchymal tumour may be reasonably excised, and on occasion it is justifiable to carry out a palliative excision of a necrotic or bleeding primary tumour.

In our series nephrectomy or nephro-ureterectomy was carried out in 17 of the 38 patients with carcinoma of the renal parenchyma, 8 of the 10 patients with tumours of the renal pelvis, and the three children with renal embryomas.

Twenty patients with carcinoma of the renal parenchyma were considered to be inoperable; two being moribund on admission, four having extensively infiltrating and excessively vascular tumours, and 14 having multiple metastases in the lungs, skeleton, brain, or skin. A single patient refused surgical treatment.

Two cases of carcinoma of the renal pelvis were considered to be inoperable, one having extensive local infiltration and another extensive spinal and general metastases.

In all, 55% of our patients with renal tumours were treated by nephrectomy or nephro-ureterectomy and 43% were inoperable; this operability rate is lower than that reported by Riches, Griffiths, and Thackray (1951), perhaps because our series includes all hospital cases, medical and surgical.

Post-operative irradiation was given to seven patients with carcinoma of the renal parenchyma, to one with a renal pelvic tumour, and to the three children with embryomas. Two patients with inoperable tumours of the renal parenchyma were treated by deep x-ray therapy alone.

Results

The overall picture of the end-results of our series of patients with tumours of the kidney must be regarded as unfavourable, for 39 (76%) of the 51 patients were dead within an arbitrary period of four years from the time they were first seen. This sad state of affairs, however, is not really a true reflection on the treatment, since 23 (43%) of the patients proved to be inoperable.

Of the 38 patients with carcinoma of the renal parenchyma, 27 died of their disease at times varying from three weeks to eight years from the time they were first seen at hospital. One who was inoperable lived for just over four years after exploration; one other died six months after nephrectomy from causes unassociated with the kidney lesion and at necropsy there was no evidence of tumour; four others died shortly after operation; and five still survive—one at eight years, one at two years, two at two and a half years, and one at one year after nephrectomy.

Of the 10 patients with carcinoma of the renal pelvis, two were inoperable and were dead within four months of their admission to hospital, four died of their disease within two years of their nephrectomy, one survived eight years to die of natural causes, and three still survive at two, three, and three years after nephrectomy.

The three children with renal embryomas died of their disease three, five, and eighteen months after nephrectomy.

Comment

It is unfortunately true that renal tumours, like other deep-seated growths, remain for long inconspicuous. This means that the chances of successful treatment are often correspondingly poor, a fact borne out by the high proportion of inoperable cases in our series of patients and the indifferent end-results of treatment.

The symptoms of pain and haematuria usually cause a patient to seek medical advice, but there can be no guaran-

tee that the disease is still curable even when hospital attendance quickly follows the onset of symptoms.

Loin pain may sometimes be due to the associated hydro-nephrosis, but is often caused by extensive local infiltration of the paravertebral and vertebral tissues, which is synonymous with inoperability.

The presence or absence of haematuria has, in our experience, proved to be of little value in deducing either the size or the pathological picture of renal parenchymal tumours, but it is rare for a tumour of the renal pelvis to occur without bleeding.

The close relation between the cells of all three types of renal tumours and the blood vessels of their stroma increases the risk of distal dissemination. Occult metastases (Shackman and Harrison, 1948) may already be present at the time of operation, and there is a considerable risk of vascular dissemination as the result of handling the tumour at operation unless early ligation of the renal pedicle is practised. This is best achieved through an abdominal or thoraco-abdominal incision.

The prognosis in any individual patient depends not only on the histological grading of the primary tumour but also on the presence or absence of metastases. The former may be accurately assessed by the microscopist (Riches, Griffiths, and Thackray, 1951), but the latter is often proved only by time. Subsequent appearance of metastases after nephrectomy represents the progress of previously present but "hidden" tumour deposits.

All the surgeon can do is to extirpate, where possible, the primary tumour and the associated lymph nodes, and on occasion an apparently isolated distal metastasis. The radiotherapist may have something more to offer, but our experience in this direction, admittedly limited, has not been particularly encouraging.

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The Association of Children's Officers has prepared a memorandum, *Cruelty to Children*, in response to a request made by the Joint Committee of the B.M.A. and the Magistrates' Association. The memorandum sets forth the views of children's officers on the secondary effects of cruelty to children, its definition, types, causes, and incidence. Remedies for neglect and physical violence are not difficult to apply, but prevention of mental cruelty is a much wider problem, says the memorandum, and one on which a lead can be given only by the medical profession, for there is as yet little public awareness of emotional suffering. The legal remedies are outlined and the importance of stable family life as a factor in reducing cruelty is stressed. The economic aspect of prevention is also considered. It may cost up to £5 a week to maintain a child in a children's home, over £6 in an approved school, and as much as £8 in a residential nursery. Children should not be removed from home simply for failure to attend school; it is less expensive to send the school attendance officer to fetch them every day. They should not be removed simply because the home is dirty; it is less expensive to put in a family service unit. Neither should they be removed simply because the house is overcrowded or insanitary or because there is no house; it is less expensive to provide a house. Children should not be removed from their mother simply because she is widowed, unmarried, or deserted, and so has to go out to work; it is less expensive to pay an adequate National Assistance allowance to keep her at home with them. The memorandum is obtainable from the association at Bradninch Hall, Castle Street, Exeter, price 4d.

PEPTIC ULCER IN WOMEN

BY

D. H. CLARK, Ch.M., F.R.C.S.Ed.

Surgical Registrar, Western Infirmary, Glasgow

Many writers have claimed that the symptoms of peptic ulcer—and presumably its activity—are influenced by menstruation and by pregnancy. Thus Taussig (1908), Sutherland (1910), and Szenes (1924) have suggested that menstruation causes an exaggeration of the symptoms of ulcer, while Mussey (1927), Crohn (1927), Hurst and Stewart (1929), and many others have claimed that pregnancy commonly has a beneficial effect. There is some evidence also to suggest that the symptoms of ulcer may be influenced adversely by the onset of the menopause. The investigation reported below was designed to test the validity of these observations.

The evidence here presented was obtained by interviewing 400 women in whom peptic ulcer had been demonstrated either by radiology or at operation. The ulcer was duodenal in 330 cases, gastric in 70. The patients' ages ranged from 21 to 74 years. In most cases the symptoms were of more than five years' duration.

Method of Interview

In a disease which remits and relapses with such facility the manner of eliciting and correlating the evidence is obviously of importance. During the interviews every effort was made to eliminate the element of suggestion. Much of the information was volunteered; much was obtained by questioning, as indirect as possible; some had to be obtained by direct questioning. All of these women had already been interviewed at least once previously, and the standard case record of the peptic ulcer clinic had been completed, so that information was already available on such relevant points as year of birth, age of onset of symptoms, and age at which complications occurred. At interview for the present investigation these points were confirmed. Thereafter inquiry was made into the gynaecological and obstetric history—for example, age at menarche, age at which pregnancies occurred, age at menopause, etc. Finally the effect of those events on the ulcer history was correlated.

Often the patient volunteered some information. If not, the standard questions were asked, "Have you noticed any relationship between your ulcer and menstrual period/pregnancy/menopause? Was your ulcer made better or worse, or did it remain the same? Apart from paraphrasing these questions according to the patient's understanding of them, no further attempt was made to elaborate a correlation. According to the patient's answer, "better," "worse," or "no change noted," the results were assessed. If a relationship had been noticed inquiry was made into the time relationship and the quality and quantity of the worsening or improvement.

Menstruation

Of the 400 patients, 291 had had ulcer symptoms before the menopause. In this group 81 (28%) claimed to have noted some relationship between menstruation and the occurrence of ulcer symptoms. In all these cases the symptoms were worse for a few days or a week before the onset of menstruation. In eight the ill-effect persisted during the menstrual period. In none had the symptoms been noted to increase in the post-menstrual phase.

In interpreting these findings it must be remembered that the symptoms of quite unrelated diseases may be aggravated in the pre-menstrual phase—the result, perhaps, of psychic influences or of the general malaise which many women experience at that time. In those patients who had noted pre-menstrual increase of symptoms there was no evidence