

By our method 10 foetal cells approximate to 0.25 ml. foetal blood, the Liverpool "at risk" level.

However, despite earlier reports,^{1,2} it is still not generally appreciated that the mode of delivery can have quite a marked effect on both the incidence and size of foeto-maternal transfusion. Any prolonged or difficult labour, especially if the placenta is excessively damaged, can cause quite large trans-placental haemorrhages. For instance in a series to be reported elsewhere,³ 21% of 42 women whose placenta was removed manually had evidence of a foeto-maternal transfusion of more than 10 ml., the largest being 75 ml. Similar damage to the foeto-maternal vessels can occur during amniocentesis and such manoeuvres as external version (11 November, p. 354).

Unless these facts are appreciated there is still a risk that some women may be unnecessarily immunized, even when anti-D gamma-globulin is generally available.—I am, etc.,

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- ¹ Wimböfer, H., Schneider, J., and Leidenberger, F., *Gebursh. u. Frauenheilk.*, 1962, 22, 589.
² Zipsky, A., Pollock, J., Neelands, P., Chown, B., and Israels, L. G., *Lancet*, 1963, 2, 489.
³ Devi, B., Jennison, R. F., and Langley, F. A., *J. Obstet. Gynaec. Brit. Comm.*, in press.

Renal Pain of Vascular Origin

SIR,—We were interested to read your leading article on renal pain of vascular origin (13 January, p. 72), particularly with reference to the suggestion that obstruction of the right ureter may result from its compression by the right common iliac artery at the pelvic brim.

In the past year we have found during the course of excretory urography three parous female patients in whom the right ureter appeared dilated as far down as the pelvic brim. These appearances were found during the course of investigation of recurrent urinary infection and all were confirmed by subsequent ascending ureterography. The appearances of the ureter below the sacro-iliac joint were normal. We considered that these patients exhibited the characteristic signs of the "right ovarian vein syndrome."^{1,2} There was no evidence of ureteric deviation such as might suggest idiopathic retroperitoneal fibrosis. In one of our patients who complained of pain in the right renal area the signs of obstruction were so marked that exploration was undertaken. The dilatation of the ureter was found to end at the point at which it crossed the right common iliac artery and it was easily mobilized. The right ovarian vein crossed the ureter at a higher level and there was no suggestion that the ureter was trapped between the two vessels as has been demonstrated by Derrick, *et al.*³ The ureter was not opened and no extrinsic cause of obstruction was thus demonstrated.

Subsequent excretory urography shows the appearances to persist four months later, and we have tended to regard the pathology as being comparable to the "neuromuscular incoordination" of pelvi-ureteric junction obstruction or idiopathic megaureter.

Right ovarian vein obstruction has been advanced by Clark¹ as a possible explanation of the fact that in 95% of patients pyelonephritis of pregnancy is right sided. As the ureters bear a similar relationship to both common iliac arteries as they cross the pelvic brim, we would be interested in hearing whether Dr. Kreef can offer an explanation as to why the signs and symptoms of iliac artery obstruction are limited to the right side.—We are, etc.,

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- ¹ Clark, J. C., in *Clinical Urography; an Atlas and Textbook of Roentgenologic Diagnosis*, 1964, 2nd ed., edited by J. L. Emmett. Philadelphia.
² Derrick, F. C., Rosenblum, R. R., and Lynch, K. M., *J. Urol. (Baltimore)*, 1967, 97, 633.

Guinea-worm Arthritis of Knee Joint

SIR,—I was pleased to read the article of Professor C. R. R. M. Reddy and Mr. M. Sivaramappa (20 January, p. 155), drawing attention to involvement of the knee joint in guinea-worm infections. It seems probable that articular manifestations of dracontiasis occur frequently in the many areas of the tropics where guinea-worm is endemic, but, as the authors state in their article, these have received scant attention in medical literature. While working in Western Nigeria I saw a number of patients with a monoarthritis that appeared to be associated with an active guinea-worm infection. The knee was the joint most frequently involved, but patients with involvement of the ankle, wrist, and elbow were also seen. Patients with "guinea-worm arthritis" were found to fall into one of two categories.

(1) *Patients with acute septic arthritis.*—An acute septic arthritis, sometimes associated with cellulitis, was the commonest form of arthritis encountered in patients with guinea-worm infections. It seems probable that in these patients ulceration of the skin adjacent to a joint provided a track along which bacteria could ascend to the joint cavity. Aspiration of the affected joint produced a frankly purulent fluid from which *Staphylococcus pyogenes* was often isolated. Several patients seen early after the development of acute arthritis made a complete recovery following antibiotic therapy. It was not found necessary to remove the adult worm, for spontaneous healing of the cutaneous ulcer occurred within a few weeks. Patients presenting late frequently had severe joint deformities, and sometimes foci of chronic infection were found. These patients often required surgery. Tetanus is a not an uncommon complication of these chronic infections.

(2) *Patients with an aseptic arthritis.*—A number of patients were seen in whom an arthritis of the knee, for which no other cause could be found, developed in close temporal relationship to the appearance of a guinea-worm ulcer on the affected limb. The affected joints of these patients were not always as acutely inflamed as those of the cases described by Professor Reddy and Dr. Sivaramappa. A 10-year-old schoolboy was seen during a village survey with a small effusion into the knee which appeared to be related to a guinea-worm infection in that leg. He had little in the way of discomfort and was leading a normal life at school. Aspiration of the affected joint of patients in this group yielded a clear synovial

fluid with a low protein content in the range of 2-3 g./100 ml. and a low cell count. Differential cell counts showed a predominance of lymphocytes and mononuclear and synovial cells. The fluid was always sterile. These findings correspond to those described by Reddy and Sivaramappa in their patients, but guinea-worm larvae were seen in only one of the Nigerian patients with this condition. Several of these patients were given antibiotics, but these had no effect on the synovitis. Three middle-aged female patients with involvement of the knee were followed up for several months. Each made a gradual but complete recovery.

It is thus suggested that, in addition to a secondary septic arthritis, and an acute arthritis following discharge of larvae into the joint, a less active synovitis may follow the presence of an adult worm in or adjacent to the knee joint. The synovitis could be the result of purely mechanical factors or the consequence of a low-grade allergic reaction. Limited experience suggests that the outcome in this latter group of patients is favourable and that removal of the adult worm is not necessary.—I am, etc.,

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SIR,—In their article (20 January, p. 155) Professor C. R. R. M. Reddy and Mr. M. Sivaramappa state that they could find only one other report of guinea-worm in the knee joint.

From 1942-63 I was in charge of a mission hospital in an area of western India where dracontiasis is endemic. Worms were found throughout the limbs, the rib-cage, the abdominal musculature, and the scrotum.

I can recall several cases of knee joint arthritis where I aspirated decomposing worms through a wide bore needle, syringing with normal saline and sealing with a compression bandage. In at least one case I removed a complete worm at arthrotomy and was amazed at the rapid recovery of full function.

Many longstanding cases of ankylosis were presumably due to untreated infestation, although most cases of crippling were due to perisynovial adhesions or tendon contractures where a worm had wound itself inextricably around the tendons and become secondarily infected from unskilled attempts at removal.

In the worst case of dracontiasis which I saw the whole leg was a bag of pus. At trans-femoral amputation scores of worms presented in a subcutaneous network. The intensely toxæmic patient succumbed.

Very common were fluctuant swellings at the rib margins caused by worms tracking forward beneath the ribs and meeting an impenetrable fascial barrier. They were usually dead in a sac of sterile pus.

Dr. Arthur Banks is conducting a campaign to eradicate guinea-worm in South Rajasthan by teaching, motivation, and Government assistance in building up stepwells. A typical result is in one village of 65 families where in 1963 he found 107 cases (307 demonstrable worms). He camped there for a week, extracting worms, demonstrating larvae, teaching with posters, house to house visiting, etc. The well was built up at the village panchayat's request, and for two years there have been no fresh cases.—I am, etc.,

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