

THE RADIOLOGICAL DEMONSTRATION OF *DRACUNCULUS MEDINENSIS*

GEORGE COHEN, M.B., B.CH., D.M.R.D., R.C.P. (Lond.), R.C.S. (Eng.), Radiologist, Johannesburg

The parasite *Dracunculus medinensis* (guinea worm) is endemic in certain parts of Africa and Asia, including the valley of the Nile, Uganda, Lake Chad, the West Coast of Africa (Ghana), Iran, Arabia, Korea, India, China, and the south-east parts of Soviet Russia. It is also known to occur in the West Indies, Brazil and the Guianas. It has, however, never been reported from the Congo basin.¹

Mode of Infection and Clinical Features

The parasite embryos swim actively in water to enter the body cavity of a minute crustacean *Cyclops quadricornus*, which is swallowed by man in his drinking water. The cyclops is digested, the parasite is set free, and larvae make their way from the stomach to the subcutaneous tissues. It does not harm its host until it is about to produce its young, when it

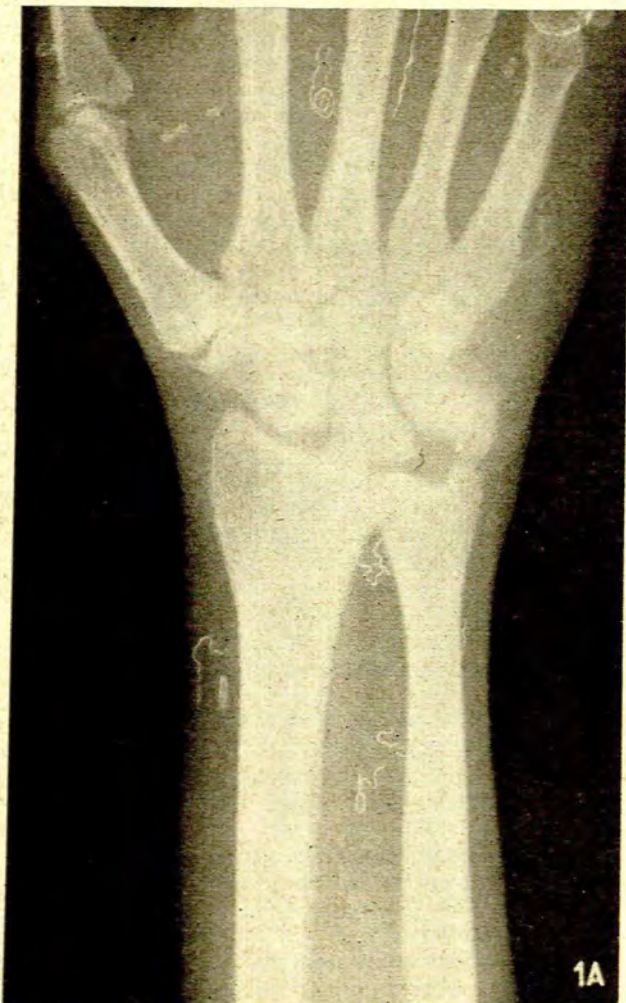


Fig. 1A. X-ray of hand, showing male and female *Dracunculus medinensis* (to ensure clarity on reproduction the photograph has been touched up).

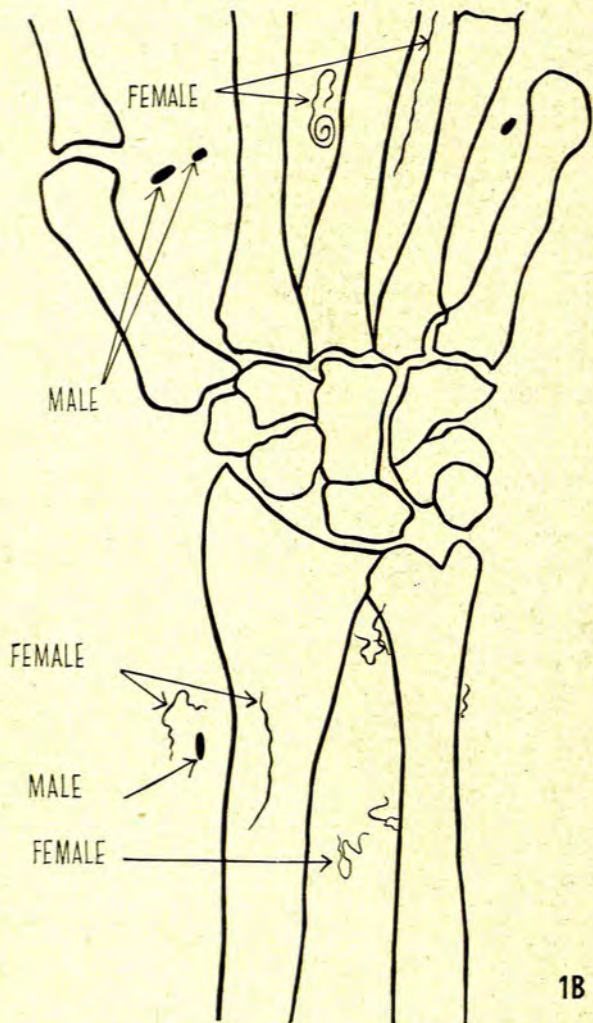


Fig. 1B. Schematic representation of Fig. 1A.

exhibits 'geotropism', that is to say it is 'drawn to earth', nearly always to the feet and lower parts of the legs,² occasionally to the fingers, or breasts in the female and to the scrotum or penis in the male. In 90% of cases,¹ however, it is found in the feet and lower legs, especially in the region of the lateral malleolus of the ankle.

A small blister is then raised on the skin, often associated with local urticaria and a moderate systemic disturbance.² The blister ruptures and large quantities of minute embryos are discharged² and make their way (during bathing) back to the water, thus completing the cycle.

The parasite is sometimes visible and palpable subcutaneously. Abscess formation is common, especially after trauma to the parasite, and may occur if the worm dies before reaching maturity.²

The female is from 32.5 to 120 cm. long and 1.5 mm. wide, the male only 1.2 - 2.9 cm. long and 1 - 4 mm. wide.

Radiological Appearances

Manson-Bahr³ states that the male has never been radiologically demonstrated in man and has only rarely been found microscopically. A statement is also made that it lives 'between the muscles of the groin'³.

Hudellet (quoted by Brocklebank²) showed (1919) that during its life the worm can be radiologically demonstrated with radio-opaque contrast-medium injections. After its death it is more frequently demonstrated, owing to the calcification which occurs in its substance.

It is often curved upon itself with multiple tortuous convolutions, and its curve may embrace a tendon or vessel.

CASE REPORT

A middle-aged African male presented himself at the Lambarene Hospital of Dr. Albert Schweitzer during a brief period when I had the privilege of working in the X-ray department of this hospital. He had 'hurt' his wrist and forearm and was X-rayed for a possible fracture.

On the radiographs multiple linear, oval and serpiginous opacities were demonstrated in the soft tissues of the forearm, wrist and hand. They varied in length from 1 to 40 mm. and in width from 0.1 to 1.0 mm. (Fig. 1).

A diagnosis was made of *Dracunculus medinensis*. The doctors at the hospital had not previously recognized this condition in that particular area but, on systematic investigation of the radiographs that had been stored in their files, the condition had obviously been demonstrated (though the findings were misinterpreted as 'artefacts') in previous cases which had been X-rayed for various vague symptoms subsequently labelled as being due to arthritis, synovitis, sciatica, neuritis, etc.

DISCUSSION

The following features are of interest:

1. From the size and shape of some of the opacities, these obviously represent dead male parasites. The male parasite has, as far as the author is aware, never been demonstrated before. Manson-Bahr appears to concur with this suggestion.³

2. *Dracunculus medinensis* had never previously been demonstrated in the Congo area. (Though, strictly speaking, Lambarene is on the Ogouwe river, geographically it borders on the Congo-basin area).

3. The contention that the male parasite is confined to the groin is also apparently disproved.³

SUMMARY

A case of *Dracunculus medinensis* is presented in which the male parasite is radiologically demonstrated for the first time, and in an area of the body in which it is thought not to have existed. This is the first reported case from the West Coast of Africa south of the equator.

My grateful thanks must be extended to Dr. Albert Schweitzer for being allowed to use his departmental facilities, and to reproduce his radiographs.

REFERENCES

1. Manson-Bahr, P. H. (1950): *Manson's Tropical Diseases*, 13th ed., p. 796. London: Cassell.
2. Brocklebank, J. A. (1944): *Brit. J. Radiol.*, 17, 163.
3. Manson-Bahr, P. H. (1950): *Loc. cit.*,¹ p. 1009.