Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF *CYSTICERCUS CELLULOSÆ* IN MAN.

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THE following case of *Cysticercus cellulosæ* occurring in an army pensioner is of sufficient rarity and interest to merit record.

J. V. B. was admitted to this hospital on Jan. 24th, 1921, with the invaliding disability of malaria and an indefinite history of fits. During the routine case-taking examination of this patient it was found that he had what appeared to be several subcutaneous nodules, varying in size from that of a pea to a cherry. The body distribution was as follows: One at the angle of the right lip, three on the front of the chest, 15 on the back and posterior aspect of the neck, and five on each of the arms and legs. As the nodules seemed roughly to follow the line of the cutaneous nerves a provisional diagnosis of multiple neuro-fibromata was made pending the removal and examination of one of the nodules.

On the 30th three of the small tumours were excised. During the process of removal it was found that the nodules were intramuscular cysts, being covered by a few muscle fibres, subcutaneous tissues, and skin.

Following is a description of the condition found:

(1) Each individual cyst really consisted of two, an ectocyst and an endocyst. The wall of the ectocyst was composed of dense fibrous tissue, reactive from the patient.

(2) On opening the wall of the ectocyst about half a c.cm. of serous fluid escaped and the endocyst was exposed; this was the true *Cysticercus cellulosæ*.

(3) The wall of the smaller cyst—i.e., the *Cysticercus cellulosæ*—was the caudal vesicle of the worm, into which the worm's head and body were invaginated like a glove turned partly inside out. We were able, by gentle pressure, to evaginate these parts of the worm from its caudal vesicle, through a very small aperture in the cyst wall. The head carried four suckers and a rostellum armed with a double row of chitinous hooks.

Signs and symptoms.—The patient complained: (a) That he had fits, about one every four weeks; (b) that whenever he had a high temperature, whether from malaria or from other causes, the "little lumps" become very sore. With regard to the fits, he was observed in three of these during his stay in hospital; they were not epileptiform in character, but were more like vertigo. There were no localising signs of a cerebral tumour; the patient's cranial nerves, as well as his deep reflexes, were quite normal. There was no history of headaches, or of vomiting, nor was there any error of refraction present; the fundi oculi were quite normal. Several blood counts were taken; an average of these showed red blood corpuscles 5,675,000, white blood corpuscles 14,375, and of the white blood corpuscles 20 per cent. were consistently eosinophiles.

History.—A brief account of the patient's life before his admission to hospital may be of interest. Born in London, in 1885, he lived there until 1908, employed for some years as a horse-breaker; he was always healthy. He joined the Regular Army in 1908 and went direct to India, where he was stationed for six years, during which period there was no history of any illness. He stated that he never bathed in rivers or lakes, but that when in India he used to drink rain-water. He returned to England in 1914 and was drafted to Salonica in 1917; at this latter place he contracted malaria in 1918. During the latter year he noticed "little lumps" forming in the skin of his face and on the back of his neck.

Treatment.—In addition to treatment of the malaria every attempt was made to rid the patient of the cysticerci. A concentrated course of intravenous neokharsivan was given without any apparent benefit. Following this a course of antimony tartrate intravenously was tried, but with little or no appreciable result. The third method of treatment was purely local and was of some benefit; it consisted of puncture of the superficial cysts with a hypodermic needle and injection of carbolic acid in glycerine (20 per cent.) into them. A brisk local reaction occurred, but it was followed by the disappearance of the cyst in a day or two. Unfortunately, it

was only the most superficial cysts that could be treated in this way. In all 18 cysts have been destroyed, but numerous others are probably present in the deeper tissues.

Mode of infection.—It is an acknowledged fact that if man eats "measly pork"—viz., pig's muscle in which *Cysticerci cellulosæ* are embedded—he will develop the adult *Tænia solium*, which will live as a parasite in his intestines. If, however, he unfortunately ingests, either in his food or drink, the ova or an egg filled segment of the *Tænia solium* he stands a chance of infection with the encysted embryonic form (i.e., *Cysticercus cellulosæ*) of the tape-worm, and may himself become "measly." Man seems to be particularly immune from this condition, and I have only been able to trace six prior brain-cases in the literature¹ as having occurred in Great Britain. When, thus rarely, the ripe ova of the tape-worm find their way into the human stomach their shell is dissolved by the gastric juice; the freed embryos pass, by means of their hooklets, through the walls of the stomach or intestines, and are dispersed by the blood-stream into all parts of the body, but they seem to have a particular tendency to settle in the brain, spinal cord, and the inter-fascicular connective tissue of the muscles. Küchenmeister, whilst experimenting on condemned criminals in 1855,² and Leuckart in 1856, found that auto-infection could occur—viz., that a patient harbouring tape-worms could infect himself with *Cysticercus cellulosæ* either by contaminating his food-stuffs with hands soiled with ova, or by regurgitating the ova or ripe segments of the worm during the act of vomiting.

Exactly how this pensioner became infected is purely a matter for speculation. He had never, to the best of his belief, passed a tape-worm, and certainly did not pass one during his stay in hospital, as his stools were most carefully examined, against a dark background, after the administration of large doses of anthelmintics. It is possible that he ingested the ova or a ripe segment of a tape-worm in the rain-water that he used to drink whilst in India.

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2. Küchenmeister, F.: Wiener medicinische Wochenschrift, 1855 and 1860. Leuckart, R.: Blasenbandwürmer, 1856.

A CASE OF GENERAL INFECTION BY *CYSTICERCUS CELLULOSÆ*.

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THE following case of general infection by *Cysticercus cellulosæ* is sufficiently uncommon to be of interest. The disease was believed to have been contracted in India.

A female patient was admitted to the Mental Hospital on July 13th, 1918, suffering from melancholia and with a history of headache and dimness of vision for two months, having also had two fits with transient weakness of left side a fortnight before admission. Her general condition was fairly good and she talked rationally but was very depressed. She complained of pain on left side of head; there was deafness in left ear; sight in both eyes was so diminished that she could not read newspaper headings; no sign of hemiplegia. There were numerous small shotty sub-