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## SOLITARY LIVER GRANULOMAS IN MAN CAUSED BY *CAPILLARIA HEPATICA* (BANCROFT, 1893) IN CZECHOSLOVAKIA

Systematic histology of liver nodules (mostly calcified) from Šikl's Department of Pathology, Medical School, Charles University, Plzeň (found mainly in postmortem of farm labourers), and from the Department of Pathology, Psychiatric Clinic, Dobruška, disclosed subcapsular lesions of a remarkably similar character. Our studies were performed from 1960—1970. The lesions represented foci of encapsulated liver necrosis, apparently nonconfluent except along the margins of the individual foci. Histology showed a structure of infiltrated liver parenchyma in the necrosis, a small area of which was completely destroyed and replaced by an accumulation of exudate cells. Most of the foci were calcified, the necrotic tissue was considerably resorbed and, at the surface, transformed into bone tissue together with the

encapsulation. Evidence was obtained from a series of sections that the stripes of necrotic lesions are interconnected and apparently of parasitic origin. It took ten years to find remnants of a filiform nematode, which were difficult to identify, in the necrotic centre; these were occupying a small area in one of the foci. In view of the localisation in the liver and in spite of its considerably indistinct structure we suggest that the worm is *Capillaria hepatica* (Bancroft, 1893), a parasite of the liver of rodents.

Re-examination of a relatively fresh granuloma taken in postmortem with suspicion of tumorous metastasis into the liver, disclosed the presence of *Capillaria hepatica* at the beginning of autolysis. A whitish nodular formation (30 mm in diameter) was arising

from the surface of the right liver lobe. The portion cut for histology contained irregularly spherical foci of necrotic liver tissue, overlying each other and confluent. In the section, the diameter of the foci surpassed 10 mm, the lesion itself was extended to a depth of 20 mm. The necroses starting to be encapsulated by fibroblastic proliferation, contained numerous canals filled mainly with serous exudate. In the section, their diameter ranged from 0.3—0.9 mm. In one of the wider canals, we found the anterior end of the worm coiled into a ball; its body continued through the part of the canal encountered in necropsy. The internal structures of the parasite, although greatly damaged by autolysis, were still identifiable with histological methods.

It is typical of nematodes of the genus *Capillaria* that they coil into a ball, when conditions are unsuitable. Therefore, their dead bodies occupy a minute space only in the granuloma and, hence, can easily be overlooked in the daily routine. Upon re-examination of the material (a total of 9 cases), we succeeded in disclosing the parasite in seven of these cases. Since the histopathological picture of these lesions is most characteristic, we believe that the remaining 2 cases should also be listed to this series. In several of these cases, it was possible to study the long-term development of the granulomas and the mode of resorption of the parasite. Evidence of the presence of the parasite could be obtained from an even completely calcified focus. Unless the parasite was not damaged by resorption, it was possible to reconstruct the shape of its body from a series of histological sections. Sometimes, however, we found only minute remnants of its body, but also these could be identified with histological methods in the calcified focus and during bone metaplasia of the necrotic tissue.

We should like to add that this is the first evidence of the presence of *Capillaria hepatica* in man in Europe. It involves an as yet undescribed pathological form of disease, i.e., the solitary liver granuloma. Human cases

recorded from India (MacArthur W. P., Proc. Roy. Soc. Med. 17: 83, 1924), North America (Calle S., Pediatrics 27: 648—655, 1961); MacQuown A. L., Amer. J. trop. Med. Hyg. 30: 761—767, 1950; MacQuown A. L., Amer. J. Clin. Pathol. 24: 448—452, 1954) and South America (Piazza R., Correa M. O., Fleury R. N., Rev. Inst. Med. trop. Sao Paulo 5: 37—41, 1963), the Pacific (Ewing G. M., Tilden I. L., J. Pediat. 48: 341—348, 1956) and South Africa (Kallichurum S., Elsdon-Dew R., S. African med. J.: 25: 860—861, 1961), describe a massive affection of the liver similar to that found in rodents spontaneously infected with *C. hepatica*. In Czechoslovakia, a low incidence of *C. hepatica* has been found in rats, house mice, other small rodents (Tenora F., Zavadil R., Acta Univ. Agr., Brno 15: 357—368, 1967) and in hares (Zajíček D., Sb. Česk. Akad. Zeměd. věd - Vet. med. 3 (XXXI): 211—216, 1958). In view of the fact that the intensity of infection depends on the number of eggs ingested, a massive infection of the liver of man in Europe, similar to that recorded from the tropics, may occur if conditions of infection were to be exceptionally favourable.

Summary: Out of 9 cases with solitary liver granulomas of parasitic origin, the presence of *Capillaria hepatica* (Bancroft, 1893) in man was confirmed in 7 cases for the first time in Europe. The pathological character of the lesions is very specific and, therefore, their etiological agent can be identified even if no direct evidence of the presence of *C. hepatica* has been obtained. Earlier reports on the incidence of infection in man from the tropics describe only massive affections of the liver similar to those found in animals, mainly rodents, after spontaneous infection with this parasite.

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