

in cases where a central area of destruction or erosion of the bone has taken place. Nodules, if seen, may be mistaken for metastases.<sup>6</sup> In the case reported here the roentgenologist believed that the localized areas of increased density were probably due to localized tags projecting from the parietal pleura and stated that it would not be possible to exclude the diagnosis of tumour deposits.

Experienced exfoliative cytologists can be of great diagnostic assistance but on the whole the definite recognition of characteristic cells may be extremely difficult. This subject has been extensively reviewed recently by Saphir<sup>23</sup> and Foot.<sup>24</sup>

Despite the fact that diffuse pleural mesotheliomas metastasize relatively late, there is no effective treatment. Irradiation of pleural and peritoneal diffuse mesotheliomas has been attempted and reported by numerous authors<sup>4, 6, 24</sup> but even when temporary relief was noticed in some patients and even when symptoms and tumour masses disappeared temporarily,<sup>24</sup> the ultimate outcome was not cure but recurrence followed by death. The same result was observed following surgical removal of masses by peeling the tumour from the pleural surface.<sup>6, 21, 25</sup> Treatment with radioactive colloidal gold<sup>4, 26</sup> and methyl-bis-(beta-chlorethyl)-amine hydrochloride<sup>4</sup> has been attempted with equivocal results. Some authors, therefore, urge early diagnosis<sup>18</sup> in order to save patients extensive and exhausting but useless treatment in the diffuse variety of pleural mesothelioma.

#### SUMMARY

A case of diffuse pleural mesothelioma in a 52-year-old woman has been reported in which the patient died within one year from the onset of symptoms.

Our patient had findings which we believe characteristic: extreme dyspnoea, non-productive cough, aching pain in the lateral chest wall, normal temperature, and increased respiratory rate. The non-hæmorrhagic pleural effusion present reaccumulated very rapidly and the secretion produced by the tumour cells showed a high content of mucopolysaccharides but failed to stain for mucin.

#### REFERENCES

1. FISCHER, W.: Die Gewächse der Lunge und des Brustfells. In: Handbuch der speziellen pathologischen Anatomie und Histologie, Band 3, Teil 3, edited by F. Henke and O. Lubarsch, Springer Verlag, Berlin, 1931, p. 558.
2. WILLIS, R. A.: *J. Path. & Bact.*, 47: 35, 1938.
3. *Idem*: Pathology of tumours, 2nd ed., C. V. Mosby Company, St. Louis, Mo., 1953.
4. GODWIN, M. C.: *Cancer*, 10: 298, 1957.
5. STOUT, A. P. AND HIMADI, G. M.: *Ann. Surg.*, 133: 50, 1951.
6. KLEMPERER, P. AND RABIN, C. B.: *Arch. Path.*, 11: 385, 1931.
7. PATTEN, B. M.: Human embryology, The Blakiston Company, Philadelphia, 1946.
8. GESCHICKTER, C. F.: *Am. J. Cancer*, 26: 378, 1936.
9. WAGNER, E.: *Arch. d. Heilk.*, 11: 497, 1870.
10. STOUT, A. P. AND MURRAY, M. R.: *A.M.A. Arch. Path.*, 34: 951, 1942.
11. CLAGETT, O. T., McDONALD, J. R. AND SCHMIDT, H. W.: *J. Thoracic Surg.*, 24: 213, 1952.
12. ICHIBA, K., ITO, N. AND AOKI, H.: *Gann, Tokyo*, 47: 742, 1956.
13. FUKUOKA, Y., YOSHIOKA, S. AND TAKEDA, Y.: *Ibid.*, 47: 733, 1956.
14. CUTTINO, J. T.: *A.M.A. Arch. Path.*, 51: 553, 1951.
15. WOYKE, S.: *Patologia Polska*, 7: 403, 1956.
16. KABELKA, M. *et al.*: *Cesk. pediat.*, 11: 881, 1956.

17. SANO, M. E., WEISS, E. AND GAULT, E. S.: *J. Thoracic Surg.*, 19: 783, 1950.
18. BARRETT, N. R. AND ELKINGTON, J. ST.C.C.: *Brit. J. Surg.*, 26: 314, 1938.
19. HAUST, M. D. AND KIPKIE, G. F.: Pleural mesotheliomas, Review article. In preparation.
20. SACONE, A. AND COBLENTZ, A.: *Am. J. Clin. Path.*, 13: 186, 1943.
21. TRAMUJAS, A. AND ARTIGAS, G. V.: *Rev. brasil. tuberc.*, 25: 657, 1957.
22. MEYER, K. AND CHAFFEE, E.: *Proc. Soc. Exper. Biol. & Med.*, 42: 797, 1939.
23. SAPHIR, O.: *Am. J. Clin. Path.*, 19: 309, 1949.
24. FOOT, N. C.: *Cancer*, 12: 429, 1959.
25. PENDERGRASS, E. P. AND EDEIKEN, J.: *Ibid.*, 7: 899, 1954.
26. HOCHBERG, L. A.: *Am. Rev. Tuberc.*, 63: 150, 1951.
27. ROSE, R. G., PALMER, J. D. AND LOUGHEED, M. N.: *Cancer*, 8: 478, 1955.

#### PUCK ANEURYSM\*

J. S. CAMPBELL, M.D.,  
PIERRE FOURNIER, M.D. and  
D. P. HILL, M.D., Ottawa, Ont.

INJURIES in ice hockey are insufficiently typical to give rise to medical slang in line with "sports car elbow" and "hula hoop syndrome", but we have recently encountered in amateur hockey players two examples of a lesion which we believe may be fittingly identified in the title of this report. Both lesions were traumatic pseudoaneurysms of the superficial temporal artery. Neither was diagnosed with assurance until removed and examined histologically, although in each case the history of trauma was unequivocal: each patient had within recent months been struck in the head by a hockey puck.

CASE 1.—This 23-year-old university student was struck on the left side of the head by a hockey puck on February 22, 1958. He was knocked off his feet but did not lose consciousness. Immediately afterward, considerable contusion developed, but subsided within about one week, by which time a small nodular pulsatile swelling was noted at the site of injury. This swelling grew gradually larger. It was neither painful nor tender.

On examination, a firm rounded nodule was visible within the "sideburn" area of the scalp about two to three fingers' breadths antero-superior to the left external auditory meatus. This nodule moved freely with the scalp upon the deeper tissues; the overlying epidermis could be moved only slightly upon the surface of the nodule. Pulsation was appreciable only when the lesion was pulled downward toward the zygomatic arch.

At operation, on April 22, 1958, the lesion appeared as an ovoid "blue-domed" cyst-like structure lying immediately deep to the scalp. Vascular pedicles were encountered at each extremity of the lesion. Bleeding was brisk until these pedicles were ligated and sectioned; the lesion was then dissected free without difficulty.

\*From the Departments of Pathology of the University of Ottawa and the Ottawa General Hospital.



Fig. 1.—Wall of pseudoaneurysm composed largely of scar tissue. Here the lumen is lined by organizing thrombus. At the top of the field lies dense fibrous connective tissue contiguous with the adventitia of the involved segment of temporal artery.  $\times 150$ .

#### Pathological Examination

Grossly, the lesion was an ovoid sac measuring about 1.0 x 0.7 x 0.7 cm. with thin but tough greyish-white membranous walls enclosing clotted blood. Microscopically, the walls of the sac were composed of granulation and scar tissue riddled with hæmosiderin deposits. The sac was bordered in areas by dense fascia and skeletal muscle, and was lined by organizing thrombus (Fig. 1). At one extremity of one of the sections the wall of the sac incorporated the media and the internal elastic lamina of a medium-sized muscular artery. The adventitia of this vessel was continuous with the outer coat of the lesion.

CASE 2.—This 19-year-old township clerk was struck in the left fronto-temporal region by a hockey puck at an unstated time during the winter of 1957-1958. Loss of consciousness was not recorded. Subsequently, a persistent nodular swelling developed at the site of injury. This nodule was neither painful nor tender, but its presence "annoyed" the patient when he lay on his left side in bed. On examination, a soft, fluctuant, non-pulsatile freely mobile lump measuring about 1.0 cm. in diameter was visible in the left temporal region about two fingers' breadths above the lateral end of the eyebrow. The lesion was removed on April 29, 1958.

#### Pathological Examination

Grossly the lesion appeared as a small, firm, saccular dilatation upon a blood vessel. The lesion was spherical and measured 0.4 cm. in diameter. It contained clotted blood. Microscopically, the walls and lumen of the lesion were in continuity with those of a medium-sized

muscular artery (Fig. 2). The histological structure of the wall was identical to that of the lesion described in Case 1.

#### COMMENT

Traumatic pseudoaneurysms arise when rupture of a vessel wall, classically an artery, is incomplete, permitting the adventitia to contain the consequent hæmorrhage; in the event of complete rupture, they occur where the vessel is so firmly supported by dense connective tissue that bleeding is localized.<sup>1</sup> In our Case 1, the lesion was evidently obscured for about a week by contusion; a similar event is implied in Case 2. The gradual enlargement of the lesion in Case 1 may be attributable to gradual yielding of the fibrous walls of the sac to arterial tension, but it is curious that this lesion was felt to pulsate only when depressed towards the zygoma. Perhaps it had recently become cut off from circulation and merely transmitted the temporal artery pulsations. Why the sac in Case 2 did not enlarge or pulsate may possibly be explained by the thickness of its walls. In each case, the finding of absent or atypical pulsations balked the diagnosis.

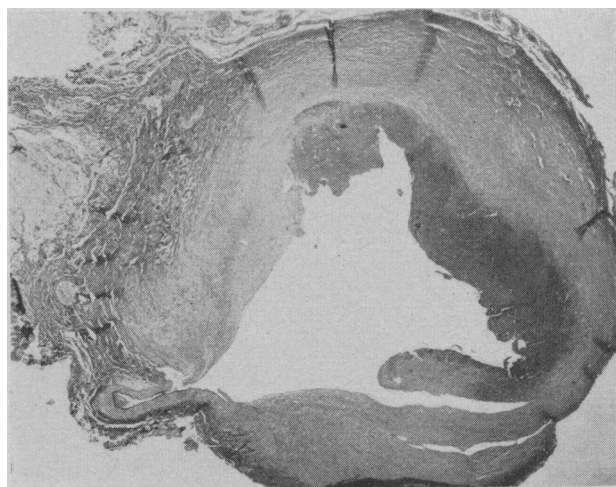


Fig. 2.—Traumatic pseudoaneurysm of superficial temporal artery (anterior branch). Note that the lumen of the artery communicates freely with the sac, but that the walls of the lesion are quite thick. Organizing thrombosis partially lines the sac opposite the artery.  $\times 20$ .

Motor and industrial accidents, knife and bullet wounds, injuries in warfare and fist-fights, blows by balls and by sticks and canes, falls on the head, fencing and sabre duelling, arteriotomy, kicks by horses and pecks by roosters have been described as causes of pseudoaneurysms of the temporal artery.<sup>2-5</sup> So far as we are aware, blows by hockey pucks have not been implicated previously, but we would defend our use of the term "puck aneurysm" as a means of drawing attention to a potentially serious hazard in an internationally popular sport. Although it is well known that to be struck in the head by a hockey puck cannot be an entirely benign event, it is perhaps insufficiently appreci-

ated that a regulation hockey puck weighs 165 grams and may travel at a velocity in excess of 120 feet per second.<sup>6</sup> When such a missile strikes the head, delayed as well as immediate sequelæ cannot be wholly unexpected. In the cases reported here, it may be felt that the patients got off lightly, but on the other hand, it can be pointed out that in both instances the injuries could have been prevented by the wearing of a suitably designed protective helmet.

#### SUMMARY

Two instances of traumatic pseudoaneurysm of the superficial temporal artery are reported in amateur hockey players who were struck in the head by pucks. These injuries could have been prevented by the wearing of protective helmets.

Dr. A. G. Watson, surgeon to the Hull-Ottawa Junior Canadiens, encouraged the writing of this report, and was so kind as to obtain data relative to the velocity of hockey pucks from the Montreal Canadiens organization. We are indebted to Drs. Alfred Larocque and E. W. Peterson for permission to include clinical data.

#### REFERENCES

1. ACKERMAN, L. V.: Surgical pathology, 2nd ed., C. V. Mosby Company, St. Louis, 1959, p. 901.
2. JAHNKE, E. J. JR., HUGHES, C. W. AND CAMPBELL, D.: *U.S. Armed Forces M. J.*, 5: 16, 1954.
3. PESCOVITZ, H. AND MALOOF, W. G.: *Ibid.*, 5: 890, 1954.
4. SMITH, F.: *Brit. J. Surg.*, 37: 241, 1949.
5. WINSLOW, N. AND EDWARDS, M.: *Bull. School Med. Univ. Maryland*, 19: 57, 1954; 119, 171, 1935.
6. WATSON, A. G.: Personal communication.

## LEPROSY: REPORT OF TWO CASES

R. H. D. HARRIS, M.D.,\* and  
G. M. WATKINS, M.B.,† *Edmonton, Alta.*

THERE have been five cases of leprosy in Alberta in the last ten years. The reported total in Canada for the same period was 15. Although it is uncommon in Canada, leprosy is a diagnosis to be borne in mind, particularly in patients coming from countries where it is endemic. The patient's country of sojourn is an important point to establish in the history, as the incubation period may be very long and the disease therefore not apparent on first arrival in Canada. The cases reported here illustrate the two main types of leprosy.

CASE 1.—V.G., a 39-year-old sister of the Russian Orthodox Church, was admitted to the University of Alberta Hospital in April 1958, for diagnosis of a skin rash. She gave the following history. She was born in Shanghai of White Russian parents, and lived most of her life in China. She left in 1951 and spent six months in the Philippines and three months in California. She then came to Canada and has spent the

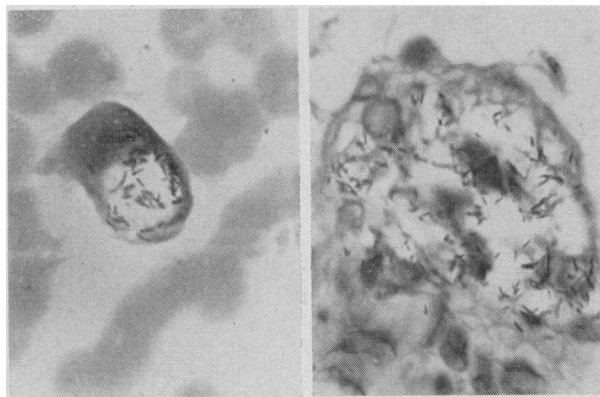


Fig. 1.—Case 1. Peripheral blood smear and bone marrow showing *Mycobacterium lepræ* with Ziehl-Neelsen stain.

last six years in a convent in Alberta with other sisters of her order.

Her symptoms began 18 months before admission to hospital with a raised red patch on her left cheek. This area spread to involve both cheeks and the forehead. She developed induration and discoloration of the skin of both hands and forearms, and of the feet and lower legs. She stated that her condition was aggravated by eating salted pork and herring. She thought that she tired more easily and that she had lost weight.

Physical examination revealed a remarkable copper-coloured induration of the skin of her face, the thickening being most noticeable over the nose and the supraorbital ridges. The eyebrows were absent. Similar changes in the skin had occurred on the extremities. There was generalized lymphadenopathy including palpable epitrochlear nodes. There was diminished sensation of light touch at the finger tips, but other sensory perception was unimpaired. The liver was enlarged to 2 cm. below the costal margin and the spleen was palpable. There were a few small crusted lesions on the finger tips and nostrils.

At this time a diagnosis of acute leukæmia was entertained, but her white blood cell count was 3750/c.mm. with a normal differential count, and smears of peripheral blood and bone marrow were within normal limits. In view of her history and her unusual leonine facies, the possibility of leprosy was suggested. On further questioning, she was unable to give a history of intimate or prolonged contact with lepers, but she thought that she might have had some indirect contact.

Smears of her nasal mucosa when stained by the Ziehl-Neelsen method demonstrated the presence of multiple acid-fast bacilli thought to be Hansen's bacillus (*Mycobacterium lepræ*). Similar bacilli were demonstrated in peripheral blood smears. This is stated to be a rare finding. They were also seen in smears of the bone marrow and in large foamy cells which were seen infiltrating skin biopsy specimens. Her hæmoglobin was 12.5 g. per 100 ml. and hæmatocrit value 40%. Serum cholesterol level was 128 mg. %. Sedimentation rate was 47 mm. in one hour. Blood Kahn test was positive in a dilution of 1:24, blood Wassermann ++. *Treponema pallidum* immobilization test was reported negative. Thymol turbidity was elevated to 16 units. Serum proteins were recorded as 7.5 g. %, with albumin 3.3 g. % and globulin 4.2 g. %. Her cephalin cholesterol flocculation test was reported as 3 plus in 24 hours

\*Department of Medicine, University of Alberta Hospital, Edmonton, Alberta.

†Department of Pædiatrics, University of Alberta Hospital, Edmonton, Alberta.