INTRA-OSSEOUS GLOMUS TUMOUR
A CASE REPORT

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A rare case of intra-osseous glomus tumour is described, together with a review of eight other reported cases. Electron microscopic studies suggest that glomus cells, the histogenesis of which has not been completely resolved, originate from smooth muscle. Studies in this case support that hypothesis: they showed the important role of contraction of the glomus cells in eliciting the peculiar type of pain.

Glomus tumour has been reported by a number of investigators since the original description by Masson in 1924. It occurs mostly in the corium and subcutaneous tissues, usually of the finger tips, and less frequently in the trunk, arms and legs. The tumour has also been found in the stomach, mediastinum and synovium and very rarely in a medullary cavity.

The nail was not discoloured or deformed but was very tender on pressure. Radiographs of the distal phalanx showed a well-defined, oval, radiolucent area in the terminal half, with no perifocal sclerosis. The cortex was thinned by invasion from within but not expanded (Fig. 1). The blood chemistry and serological examination were normal. The findings strongly suggested a glomus tumour amenable to curettage.

Under general anaesthesia and tourniquet control, a round window about 7 millimetres across was made at the root of the nail. The epithelial nail bed was reflected, revealing extremely thin cortex over a small tumour, reddish-violet in colour and friable. This was thoroughly curetted.

Microscopically the glomus cells which constituted the tumour were polyhedral and epithelioid, and characterised by light cytoplasm and large round nuclei. The tumour presented two different features: a major meandering, haemangioma-like structure and a minor highly cellular structure which looked as if it were closely packed with pebbles (Figs. 2 and 3).

Electron microscopy showed that the cell surfaces were irregular, with short, blunt cytoplasmic processes that allowed the cell to connect with adjacent cells. The cytoplasm contained fine filaments, either thick or thin, which presented focal fusiform condensed bodies. There were many non-membranized nerve fibres which had no particular connections with the glomus cells (Figs. 4 and 5).

The post-operative course was uneventful and the patient has now been entirely free from pain and deformity of the nail for four years.

DISCUSSION

Glomus tumour is uncommon; the incidence was only 1-6 per cent in a series of 500 cases of soft-tissue tumour of the extremities treated in the Mayo Clinic (Carroll and Berman 1972). Glomus tumour in bone is rare, and has accounted for only eight cases in the literature (Iglesias de la Torre, Gomez Camejo and Palacios 1939; Lattes and Bull 1948; Lehman and Kraissl 1949; Mackenzie 1962; Siegel 1967; Ishii, Minami, Asai, Usui, Itagaki and Kobayashi 1973).

The first report of an intra-osseous lesion, by Iglesias de la Torre et al., dates back to 1939. In every reported case the tumour has been in the terminal half of the
Figure 2—A section of the lesion showing an angiomatous type of structure. (Haematoxylin and eosin, × 120.) Figure 3—Another section showing polyhedral and epithelioid cells. (Haematoxylin and eosin, × 500.)

Figure 4—An electronmicroscopic section showing localised areas of electron density (D). Figure 5—Another field showing neural elements, with non-myelinated fibres (N) and Schwann cells in loose matrices (M).

distal phalanx (Table 1). Jaffe (1958) raised the idea that the normal glomus organelle exists in the medullary cavity, and took it for granted that an intra-osseous origin could happen. Lattes and Bull stated that glomus tumour could occur in regions devoid of the glomus organelle, on the assumption that it arises during differentiation of multipotential mesenchymal stem cells.

As mentioned above, glomus cells have myofilaments
in the cytoplasm. This characteristic must provide a reasonably satisfying explanation for the peculiar pain caused by the tumour.

Several diseases enter the differential diagnosis—epithelial inclusion cyst, enchondroma, chronic osteomyelitis and sarcoidosis from the radiological viewpoint, and from the histopathological aspect, haemangioma, neurofibroma, neurona and melanoblastoma.

The treatment of choice is total excision, but because of the small size of the terminal phalanges, curettage has to suffice. Amputation, performed twice in the recorded cases, would seem to be an heroic measure.

**REFERENCES**


