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.

FIG. 1

Radiographs of the distal phalanx of the left little finger showing the cystic area.

This paper describes an intra-osseous lesion with special reference to the electron microscopic findings, and analyses the eight cases previously reported.

CASE REPORT

A Japanese housewife aged thirty-three was referred in October 1971, two years after the gradual onset of stabbing pain in the distal phalanx of the left little finger. There was no history of injury or infection.

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-myelinated 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

FIG. 2

FIG. 3

Figure 2—A section of the lesion showing an angiomatous type of structure. (Haematoxylin and eosin, $\times 120$.) Figure 3—Another section showing polyhedral and epithelioid cells. (Haematoxylin and eosin, $\times 500$.)

FIG. 4

FIG. 5

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 I). 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

TABLE I
A SYNOPSIS OF EIGHT REPORTED CASES OF INTRA-OSSEOUS GLOMUS TUMOUR

Author	Date	Age (years)	Sex	Site *	Duration of symptoms	Radiographic appearance	Treatment
Iglesias de la Torre <i>et al.</i>	1939	32	Female	Left ring finger	4 years	Cystic cavity, 5 mm in diameter	Disarticulation
Lattes and Bull	1948	28	Female	Right thumb	4 years	Honeycomb area	Curettage and bone graft
Lehman and Kraissl	1949	48	Female	Left little finger	6 years	Punched-out cystic space	Curettage
		36	Female	Right thumb	14 months	Circumscribed radiolucent area	Excision
Mackenzie	1962	30	Female	Left little finger	2 years	Circular cystic area	Amputation
		61	Female	Left thumb	6 years	Cystic lesion	Excision
Siegel	1967	24	Male	Left index	10 months	Round, smooth-walled osteolytic lesion	Curettage
Ishii <i>et al.</i>	1973	60	Male	Left little finger	Not known	Round, radiolucent area	Curettage and bone graft

* Distal phalanx, without exception.

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, neuroma 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.

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