Tumour of Wagner-Meissner touch corpuscles*

Wagner-Meissner neurilemmoma

E. Kaiserling¹ and M.L. Geerts²

¹ Institute of Pathology, University of Kiel, Hospitalstrasse 42, D-2300 Kiel, Federal Republic of Germany
² Department of Dermatology, University of Ghent, De Pintelaan 135, B-9000 Ghent, Belgium

Summary. Two benign tumours composed mainly or exclusively of Wagner-Meissner corpuscles are described. In the first case the touch corpuscles are composed of closely piled laminar cells and surrounded by argyrophilic fibres. In the second case some Schwann cells are observed in between the tactile corpuscles. The light microscopic, electron-microscopic and immunohistochemical results demonstrate that these corpuscles are comparable with the tactile end organs of the skin. Immunohistochemically, neuron-specific enolase, vimentin and protein S-100 could be demonstrated in the tactile corpuscles. Neural processes present in normal Meissner corpuscles are absent and immunohistochemically no nerve fibres or nerve endings can be demonstrated using antibodies to neurofilaments as they are observed in normal touch corpuscles of the skin.

Tumours which consist mainly of multiple touch corpuscles have not been described in the literature. It is suggested to call these tumours Wagner-Meissner neurilemmoma.

Key words: Tactile receptors – Tumours of peripheral nerves – Neuron-specific enolase – Immunohistochemistry – Electron-microscopy

Introduction

The Wagner-Meissner corpuscles are the touch receptors of the skin. They are located in dermal papillae, especially on the palmar and plantar surface. They occur frequently in persons who have neurofibromas or neurinomas (Brögli 1931; Jordan 1933; Scherer 1934; Dible 1963; Masson 1970; Ashley 1978; Enzinger and Weiss 1983), and they have been reported together with traumatic neuromas (Masson 1945; Hill 1951; Shapiro et al. 1973). Meissner corpuscles or structures resembling them (Meissneroid corpuscles

* Dedicated to Professor Dr. Dr. h.c. K. Lennert in honor of his 65th birthday

Offprint request to: Prof. Dr. E. Kaiserling, Institute of Pathology, University of Tübingen, Liebermeisterstrasse, D-7400 Tübingen, Federal Republic of Germany
or pseudo-Meissner corpuscles) are also seen in cellular nevi (Jordan 1933; Lund and Strobbe 1944; Ashley 1978).

In the cases reported to date the tactile corpuscles have been merely part of an otherwise different tumour, that is to say that the presence of tactile corpuscles is only an accessory finding in the diagnosis of neurofibroma or cellular nevus. In the present study a tumour will be described which consists mainly of multiple Wagner-Meissner corpuscles.

Materials and methods

Three tumours were investigated. All of them were excised under local anaesthesia.

Case 1. An 80-year-old man consulted his doctor with a painless tumour of 1 cm in diameter in the skin of the left thigh.

Case 2. In a 33-year-old man a 2 cm large tumour was located on the leg.

Case 3. This case was chosen for comparative reasons. Clinically an exophytically growing tumour of 0.8 cm diameter was present on the forehead of a 49-year-old woman.

The tissue was fixed in 10% formalin and the slides were stained with haematoxilin eosin (H & E), Giemsa, periodic acid-Schiff (PAS), and Bielschowsky’s reticulin stain. The following antigens were localized with the peroxidase-antiperoxidase method (PAP) of Sternberger et al. (1970): neuron-specific enolase (NSE), protein S-100, vimentin, and neurofilaments. The sections were deparaffinized with xylol and rehydrated with ethanol. The endogenous peroxidase-activity was blocked with methanol hydrogen peroxide. After buffering with phosphate and adding normal swine-serum, the sections were incubated with primary antibodies, each diluted in 5% swine serum: NSE 1:300, protein S-100 (Dakopatts, Hamburg, FRG) 1:100, vimentin (Laboserv, Giessen, FRG) 1:10.

The next step was the application of the secondary antibody (swine-anti-rabbit-immunoglobulin), followed by incubation with peroxidase-anti-peroxidase complex (PAP, Dakopatts, Hamburg, FRG).

Neurofilament antibody (Laboserv, Giessen, FRG) was used in a dilution of 1:10 and followed by an incubation with peroxidase conjugated rabbit-anti-mouse immunoglobulin. As a negative control the primary antibody was omitted.

For the electronmicroscopic examination in case 1 the formalin fixed and paraffin embedded material was deparaffinized with xylol, rehydrated, post fixed in 1% osmium tetroxide and embedded in araldite. Sections were stained with uranyl acetate and lead citrate and examined with a Siemens Elmiskop I.

Results

Light microscopic findings

The tumours were oval and were situated in the lower part of the dermis and the subcutaneous fat. Both tumours were well demarcated and encapsulated by concentric collagenous fibres (Figs. 1 and 4).

The tumour in Case 1 contained multiple adjacent cell complexes (Fig. 2), which were reminiscent of Meissner touch receptors of the skin, each composed of 5–20 laminar cells. The characteristic feature was the lamelated pattern of these corpuscles. The nuclei of the laminar cells were located at the periphery of the corpuscles or they were arranged transversely to the long axis of these structures along the lamellae. The nuclei were