

formations of vessels. We can speak of a preponderance of the muscular new-formation especially in cases where a large proportion of the parietal elements consists of young smooth muscular fibres. Angioma racemosum, too, may suffer uncommon hypertrophy of the muscular elements of the media during thickening of the vessel-wall. Often, however, the opposite condition takes place, the muscle-fibres being crushed by sclerosis of the media, which fact also enters into consideration in the case of other vascular tumors.

Particularly characteristic are very small, subcutaneous, sharply circumscribed, softly elastic tumors (especially on the back, Virchow) which reach the size of a lentil and larger, and are conspicuous by their painfulness. They consist of a coil of vessels in a condition of myomatous degeneration. A subcutaneous myoma of the palm of a young man, in whom the tumor had been noticed even in early infancy, shows this condition in a pronounced form. The tumor was easily enucleated, smooth, invested with a lamellar capsule, softly elastic, on the cut surface smooth, moist, and consisted of a basement substance having a somewhat reddish translucency, and a dense fibrous felted network. The histological appearance of the tumor is reproduced in the preceding illustration (Fig. 74).

Immediately beneath the capsule (*c g*) appears a confused network of convoluted trabeculae of smooth muscle-fibres (*g m*), on which nuclei are made evident at frequent intervals by treatment with safranin, and the body of which seems to have serrate borders and flat processes. The muscular fibres are grouped around the axis of trabeculae, which contain minute clear spaces or cords of smooth or flat, coarsely granular cells (*z i*), which could be easily recognized as endothelia. Immediately around these cell-cords, the muscle-fibres were grouped parallel to their long axis, while the peripheral fibre-layers were usually situated transversely, concentrically, or radially. Between the cords these elements form true convolutions, and they are also found detached, sometimes in the interstitial tissue as trabeculae loosened from the vessel-wall; the interstitial tissue consists otherwise of few narrow stellate cells, loose connective-tissue trabeculae, and an almost homogeneous intermediate substance (*b z*); finally sparse plasmatic channels and capillaries course along this intermediate substance. Therefore, it is probable that the tumor sprang from an abnormal vascular rudiment of mainly arterial nature, in which the muscular portion of the vessel-wall furnished the tumor material. Brigide and Marcacci have seen similar tumors, and a lymphangiectatic tumor is described by Axel Key.

β. New-formations of the cutaneous muscular network (myomes dartiques, Besnier). They arise as diffuse, solitary, or multiple tumors, especially of the scrotum, the labia, and the mamma. When similar tumors were found at other parts of the skin, I would assume that they developed from trabeculae of smooth muscular fibres.

Rindfleisch was the first to call attention to a form of lymphangiectatic elephantiasis of the scrotum, in which the smooth muscle-fibres between the dilated lymph-vessels were uncommonly augmented, and on the strength of this observation he ventures the suggestion that this form is traceable to stasis, due to the muscular hypertrophy. In a case of pachydermia in a child *æt.* three years examined by me, the skin, especially of the genitals and lower extremities, had been from birth tense, wrinkled and warty, brownish, translucent. The epidermis over the folds and warts was thinned, its papillae thin, far apart, while, in the corresponding depressions, the corneous layer was thickened and the papillae crowded. On the prominences the cutis is gelatinously homogeneous, containing a large number of lymph and blood capillaries, but otherwise deficient in cells, with few stellate elements. The deepest part of the cutis, which is smooth, contains few glands, and vessels surrounded by a slight accumulation of round cells. By

far the greatest part of this portion, however, consists of a layer of closely packed muscular trabeculae, each up to 0.3 mm. in thickness, the whole running parallel with the surface of the body and about one millimetre in thickness; they are surrounded by separate connective-tissue sheaths. The thickness of this layer is in exact proportion to the intensity of the process. Better known are circumscribed forms of these myomata which resemble those of the uterus. Förster describes such a case, in which the skin of the scrotum contained numerous small superficial muscular tumors, and a larger pediculated one; similar structures, whose nature was not determined more closely, were seated in the skin of the abdomen.

Kraemer extirpated from the labium majus of a young woman a large myoma which underwent slight contractions during its removal.

The myomas of the skin of the mamma are somewhat different. In the first place, Virchow describes the case of a man in whom numerous superficial, painful, reddish tubercles had formed, up to the size of a cherry, in the neighborhood of the nipples; they contain, besides dilated vessels, a preponderating mass of smooth muscular fibres (myoma telangiectodes). Verneuil found in a young man, especially on the breasts, flat, lentil-sized and smaller, in the depth pea-sized, reddish, not sharply bordered tumors which had developed painlessly, grew slowly, and later became painful. They consisted mainly of muscular fibres not connected with the vessels, and of a few nerves and striated muscle-fibres, the origin of which it would be difficult to ascertain.

Virchow believes that, in the case of many *nævi pilosi*, numerous muscular trabeculae form from the arrectores pili. Balzer also has described a case in which there were numerous superficial, small muscular tumors, especially of the mamma, and which sprang from the arrectores pili.

Hyperplasia of the muscular frame-work has been found even in other tumor-formations. Thus I found this condition in a keloid of the lobe of the ear, in perforating tumors of the testicles, etc.; obviously it is much more frequent (especially in sarcoma) than is generally assumed.

A natural sequence to these cases is formed by those myomas found in places where normally no muscular frame-work is present. Arnozan and Vaillard found on the extensor side of the arm countless superficial nodules which spread over the entire trunk, acquired the size of a large lentil, and became painful. The nodules were vascular; they were chiefly made up of independent muscular fibres.

But not all myomas seated in the skin have originated there; in rare cases tumors of parts in the neighborhood of the skin which contain smooth muscular fibres reach under and into the skin; *e. g.*, from the pubo-rectal aponeurosis, from the recto-vaginal septum, from the prostate. Sometimes, too, it may be isolated (detached) germs which have entered the skin and formed tumors there. Marcano describes a case in which from the posterior portion of the labia majora projected a round, easily enucleated, firm muscular tumor the size of an orange which had sprung from the above-mentioned aponeurosis. Probably from the remnant of a branchial cleft, from misplaced germs, there had formed a pigeon-egg-sized fibro-muscular tumor on the lateral region of the neck, round about the narrow invagination of the skin, three cm. in length and beset with numerous hairs. Similar tumors were found under both ears (Klebs).

Myomas of the skin may be grouped according to their origin and appearance, admitting the existence of numerous transitions and combinations.

We can distinguish:

I. *Myomas springing from the vessel-wall* by proliferation of its muscular elements

(*angiomyoma cutis*). They are usually circumscribed and solitary, deeply seated. In relation with the nerves they form irritable tumors (*ganglion dolorosum myomatosum*).

II. *Hyperplasias of the arrectores pili*:

- a. As portions of vascular nævi (Virchow);
- b. Forming multiple tumors.

III. *Neoplasms derived from the deep muscular layer of the skin* (myome dartique, Besnier):

- a. *Diffuse*, as forms of *elephantiasis lymphangiectodes* and *pachydermia myxomatodes*;
- b. *Circumscribed*. This may be polypoid, telangiectatic, multiple, and in the latter case painful.

IV. Myomas which reach the skin secondarily or originate in misplaced germs.

Myomas of the skin are benign, slowly growing tumors, whose variable origin gives rise to different modes of appearance. Sometimes they appear similar to soft or hard fibromas. The location in the genital sphere, perhaps also spontaneous contractility, would lead especially to the supposition of a myoma. The small, multiple, superficial forms might be easily mistaken for sarcomas, but their seat—especially on the mamma—their elasticity, their slow growth, and mainly their painfulness, will permit a diagnosis.

The relative frequency of the latter symptom in the subcutaneous, as in the most superficial forms, finds its explanation, in the former, in their situation by the side of nerves; in the superficial forms, perhaps in an (essential?) participation of the terminal nerve apparatus which is easily irritated by the spontaneous contractility of the muscular elements.

Myomas which are troublesome on account of their size, location, or painfulness are most rationally removed by operation with the knife or the galvano-cautery, and do not return after extirpation.

NEUROMA, ADENOMA, EPITHELIOMA MOLLUSCUM, AND CARCINOMA OF THE SKIN.

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NEUROMA.

VIRCHOW recommended that the term true neuroma be applied only to those tumors which develop from the nervous tissue itself, and are formed of this tissue in great part in their further development. A neuroma is therefore a nervous neoplasm of hyperplastic character.

But this definition does not suffice for all cases. Tumors are frequently found which, in their origin and the primary implication of the nervous tissue, are undoubtedly of a nervous character, but which acquire later such a fibromatous, myxomatous, or carcinomatous nature that scarcely any of the original type remains. At other times, the recognition of the nervous tissue which yet remains is attended with no inconsiderable difficulty, so that the diagnosis cannot be made with certainty.

Despite these objections, we think that Virchow's conception of neuroma should be strictly maintained, in order to avoid the association of growths of different kinds in the same group as neuromata. It seems to me that a tumor, for example, of a fibrous nature, should be called a neuro-fibroma in the same manner that we speak of osteo-sarcoma, myosarcoma, etc

For this reason, we will exclude the consideration of all those homœoplastic and heteroplastic growths in which the nervous tissue plays a subordinate part.

For similar reasons, I will also exclude the so-called painful tubercles, first described by William Wood in 1812. Apart from some unessential peculiarities—that they occur chiefly in the neighborhood of the joints of the upper and lower limbs, particularly upon the smallest cutaneous branches, that they manifest themselves at an advanced age, but may usually be traced back to an earlier period, and that the female sex presents a marked predisposition—the clinical phenomena present such a variety that we will sometimes find the symptoms of neuromata, at other times of fibromata, myomata, and even of cavernous angiomata. From an histological standpoint, we can sometimes