THE PAINFUL SUBCUTANEOUS TUBERCLE
(TUBERCULUM DOLOROSUM)

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In the days before Virchow and his contemporaries had classified neoplasms, the surgeons of the last half of the eighteenth century and the first half of the nineteenth century occasionally encountered extremely painful and tender subepidermal and subcutaneous nodules of small size, characterized by paroxysms of pain of longer or shorter duration, sometimes spontaneous and sometimes induced by pressure, changes in temperature, and other physical variations in the environment.

These nodules were first studied as a group by William Wood of Edinburgh in 1812. Very little of significance has been added to the clinical picture since his day. He gave them the name of painful subcutaneous tubercle and this was widely adopted by European and English writers, being latinized as tuberculum dolorosum or translated verbatim into other languages. As early as 1858, Virchow established the fact that multiple cutaneous leiomyomas could be tubercula dolorosa and in 1873 Axel Key described the first solitary leiomyomatous tuberculum dolorosum, which he removed from the subcutaneous tissues of the poet Strandberg’s finger.

A second important group of the tubercula dolorosa is composed of the tumors of the neuromyo-arterial glomus. These were first recognized and accurately named by P. Masson in 1924.

A somewhat related lesion, which also occasions paroxysmal attacks of pain but can hardly be classified as a tuberculum dolorosum, is the peculiar disease known as chondrodermatitis nodularis chronica helicis, first reported and named by Winkler in 1915 and later described by Foerster, Culver, Dubreuilh and others. This is not a true cutaneous or subcutaneous tumor but an inflammatory lesion associated with subperichondrial proliferation of cartilaginous nodules in the helix with superficial ulceration and probably circulatory deficiencies. About 90 per cent of the sufferers are males.

Almost all of the reported superficial nodules associated with paroxysmal pain seem to have been either glomus tumors or leiomyomas. But occasionally a report is encountered which suggests that tumors of other kinds may produce the same painful symptoms. Chandelux in 1882, for instance, reported two cases which he described respectively as a papillary fibroma of a sweat gland in the forearm of a fifty-four-year-old man, and a tubular epithelioma of a sweat gland in the arm of a forty-three-year-old woman. While both of these may have been glomus tumors, it is impossible to be sure of this. Alexis Thomson in his monograph published in 1900 described a “fibroma” of the sheath of the left external saphenous nerve at the ankle in a thirty-four-year-old woman which he called “a typical example of what was formerly called the
Many surgeons at this time believed that tubercula dolorosa were simply neuromatous tumors of one sort or another. This was the opinion of Courvoisier in 1886, of Hofmeister and Schreiber in 1907, and of Oppenheim in 1913. No doubt neurogenous tumors may be tubercula dolorosa, but examples of neurofibromas or neuromas causing the type of painful paroxysm characteristic of the tubercula dolorosa are extremely uncommon.

An interesting contribution was made in 1926 by Most, who reported two cases which he classified as tubercula dolorosa. One of the patients was a man twenty-one years old with recurring tumors over the shin, which Henke called endotheliomas or hemangio-endotheliomas, while the second was a man of forty-six with a fibrosarcoma of lowest malignancy in the side of the foot. In both cases the tumors were extremely painful and tender, but Most does not describe paroxysmal attacks.

These scattered reports suggest that various types of small superficial tumors may occasion paroxysmal pain and thus be properly classified as tubercula dolorosa. The writer determined to find out more about the histopathology of these peculiar nodules and to try to understand the mechanism of pain production in them. Accordingly the clinical records of 2081 cases of cutaneous and subcutaneous tumors and cysts which had been removed or biopsied were studied. These were classified, after microscopic examination, under thirty-seven different main diagnostic headings (Table I). Among them there were 20 in which the tumors had occasioned paroxysmal pain. Nine of these were glomus tumors and 4 were solitary leiomyomas. The other 7 were of various kinds, viz: multiple cavernous hemangiomas, venous hemangioma, multiple neurofibromas, fibrosarcoma, keloid, dermoid cyst, and, in one patient, a fibroma associated with a benign epithelioma type of sebaceous cyst, both of which were accompanied by paroxysmal pains. Reference to the table will show 40 other cases with severe pain, but not of a paroxysmal character, unassociated with infection. Eighteen different tumor types are represented in this second group.

An analysis of the tissues composing the various tumors of the group associated with paroxysmal pain shows that in the majority of them there are found one or more of three tissue types, viz: smooth muscle, blood vessels, and nerves. The observation has occasionally been made that the pain of a leiomyoma is associated with the sudden contraction of its muscle, and the pain of the glomus tumor with the sudden dilatation and engorgement of its blood vessels. On that basis we might predicate that the pain of cavernous and venous hemangioma is associated with sudden vascular engorgement and of the dermoid cyst with sudden contraction of the numerous smooth muscle bundles in its wall, but even if this were true it does not furnish any explanation of the pain in the cases of fibroma, fibrosarcoma, keloid and the benign epithelioma of a sebaceous cyst, nor does it explain the absence of pain in hundreds of similar cases.

The question of pain production has received much attention in recent years. The entire fifteenth volume of the Proceedings of the Association for Research in Nervous and Mental Diseases printed in 1935 is devoted to a symposium on pain, and a similar symposium of the French Neurological So-
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Table I: Pain and Tenderness in Tumors of the Skin and Subcutaneous Tissues

<table>
<thead>
<tr>
<th>Tumor Type</th>
<th>No. Cases</th>
<th>No Pain</th>
<th>Not Recorded</th>
<th>Pain with Infection or Injury</th>
<th>Unexplained Pain and/or Tenderness</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td>Glomus tumor</td>
<td>25</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>7</td>
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<tr>
<td>Leiomyoma</td>
<td>38</td>
<td>8</td>
<td>5</td>
<td>14</td>
<td>7</td>
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<tr>
<td>Angioma</td>
<td>241</td>
<td>(76)</td>
<td>(130)</td>
<td>(13)</td>
<td>(17)</td>
</tr>
<tr>
<td>Cap. hemangioma</td>
<td>(58)</td>
<td>13</td>
<td>42</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Cap. hemangioma, gran. type</td>
<td>(93)</td>
<td>32</td>
<td>47</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Cavern. hemangioma</td>
<td>(48)</td>
<td>13</td>
<td>26</td>
<td>3</td>
<td>5</td>
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<tr>
<td>Venous hemangioma</td>
<td>(25)</td>
<td>9</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Lymphangioma</td>
<td>(10)</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Hemangioendothelioma</td>
<td>(7)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Neurilemoma</td>
<td>51</td>
<td>17</td>
<td>17</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Neurofibroma</td>
<td>37</td>
<td>13</td>
<td>9</td>
<td>0</td>
<td>12</td>
</tr>
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<td>Neurora</td>
<td>14</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>4</td>
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<tr>
<td>Gran.-cell myoblast.</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Fibroma</td>
<td>241</td>
<td>78</td>
<td>134</td>
<td>9</td>
<td>19</td>
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<tr>
<td>Fibrosarcoma</td>
<td>86</td>
<td>28</td>
<td>39</td>
<td>3</td>
<td>15</td>
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<tr>
<td>Xanthoma</td>
<td>70</td>
<td>23</td>
<td>36</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Keloíd</td>
<td>25</td>
<td>2</td>
<td>18</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Myxoma</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Lipoma</td>
<td>185</td>
<td>81</td>
<td>77</td>
<td>5</td>
<td>15</td>
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<tr>
<td>Liposarcoma</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Sweat gland tumors and cysts</td>
<td>41</td>
<td>12</td>
<td>20</td>
<td>1</td>
<td>7</td>
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<tr>
<td>Sebaceous adenoma</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sebaceous cyst</td>
<td>263</td>
<td>56</td>
<td>170</td>
<td>32</td>
<td>5</td>
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<tr>
<td>Implantation cyst</td>
<td>79</td>
<td>19</td>
<td>36</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Dermoid cyst</td>
<td>62</td>
<td>43</td>
<td>14</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Cyst (type?)</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Endometrioma</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
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<tr>
<td>Composite tumor</td>
<td>21</td>
<td>9</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Osteoma, osteochondroma and chondroma</td>
<td>17</td>
<td>4</td>
<td>7</td>
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<td>4</td>
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<tr>
<td>Lymphoblastoma*</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metastatic carcinoma</td>
<td>12</td>
<td>4</td>
<td>3</td>
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<td>3</td>
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<tr>
<td>Molluscum contagiosum</td>
<td>9</td>
<td>2</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Basal-cell epithelioma</td>
<td>166</td>
<td>31</td>
<td>118</td>
<td>2</td>
<td>14</td>
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<tr>
<td>Squamous-cell epithelioma</td>
<td>83</td>
<td>10</td>
<td>64</td>
<td>2</td>
<td>6</td>
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<tr>
<td>Kaposi’s disease</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Pigmented mole</td>
<td>196</td>
<td>38</td>
<td>166</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Malignant melanoma</td>
<td>70</td>
<td>15</td>
<td>41</td>
<td>11</td>
<td>2</td>
</tr>
</tbody>
</table>

Total                                      | 2081      | 584     | 1140         | 95                            | 202      | 40     | 20§        |

* Includes mycosis fungoides, lymphosarcoma and Hodgkin’s disease. † Same case. ‡ This cyst had a lot of smooth muscle in its wall. § Of patients with paroxysmal pain, 13 were females and 7 males.

Society has been published in the Revue Neurologique for 1937. For over ten years Sir Thomas Lewis and his associates have devoted themselves to research in peripheral vascular diseases and the pain associated with them. Their results have been published in Heart and Clinical Science. But a perusal of
these papers, and of many others on the same subject, has left the writer with a sense of frustration when he attempts to apply the recorded facts to the paroxysmal pain of the tuberculum dolorosum.

It seems to be generally agreed that pain is perceived in the brain and that the pain impulses are transported thither from the periphery either by fibers in the sensory nerves or by way of the sympathetic nerves reaching the posterior roots through the rami communicantes. Lewis has postulated the existence of a third local nervous system which is concerned with transmission of hyperalgesia because he found it possible to induce hyperalgesia in the surrounding zone by crushing tissue in an area of skin surface which had its sensory and sympathetic systems both blocked. In spite of the block the hyperalgesia spread from the crushed area to adjacent unblocked areas. He proposes to call this third nervous system the "nocifensor system." But it still remains undetermined whether or not there are definite pain receptors. One group agrees with Frey that such receptors exist, while a larger group follows Goldscheider in the opinion that there are no definite pain receptors as such, but that over-stimulation of any of the known receptors will result in painful sensations.

In addition to over-stimulation of receptors and nerve trunks directly, pain is said to result when there is spasmodic contraction of muscle or when a sudden increase of tension occurs in non-distensible tissues. The actual stimulus is supposed by some to come through the physicochemical operation upon receptors or neurites of substances which are probably in the nature of H-ions or acid metabolites. Lewis calls them "H substances" and Comel "substances capilleriètes." Thus, there seems to be some reason for supposing that the tumors with smooth muscle may have been painful because of its spasmodic contraction and that sudden intracapsular dilatation of the vascular tumors may have occasioned paroxysmal attacks in this group. But these ideas will not explain the pain of the fibroma, the fibrosarcoma, the keloid, the neurofibroma, and the benign epithelioma. Moreover, in all of the tubercula dolorosa one must predicate a hyperesthesia in the affected zones since stimuli such as exposure to cold weather or slight pressure which are not sufficient to induce paroxysms of pain in most individuals with similar tumors, will do so in these cases. Occasionally there seems to be some reason for supposing that the affected individuals are nervously unstable. Unfortunately our case histories furnish little pertinent information in this regard. Case IX, in which a glomus tumor first began to cause paroxysms of pain following a crash of thunder when the patient was pregnant, might be considered an example of nervous instability, but in most of the other cases where adequate histories have been obtained there was nothing to suggest instability preceding the appearance of the pain, although in a number it developed after the repeated painful attacks over a period of years.

The writer confesses that he feels as completely mystified by the enigma of paroxysmal pain in tubercula dolorosa as when he commenced his study. In regard to histopathological types, however, it seems certain that in addition to leiomyomas and glomus tumors, a variety of other superficial growths may be properly classified as tubercula dolorosa because they too can occasion attacks of paroxysmal pain.
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SUMMARY

An investigation of 2081 superficial tumors of skin and subcutaneous tissues showed that 20 or approximately 1 per cent were associated with attacks of paroxysmal pain. The tumor types included not only leiomyoma and glomus tumor but also neurofibroma, fibroma, fibrosarcoma, keloid, dermoid cyst, and benign epithelioma in a sebaceous cyst. The tuberculum dolorosum, therefore, is not confined to a single tumor form but may manifest itself in a variety of morphological types.

No adequate explanation for the occurrence of the attacks of paroxysmal pain could be found.

HISTORIES OF CASES WITH PAROXYSMAL PAIN

CASE I: Multiple Cavernous Hemangiomas of Knee Region (S. P. 34449, 32708, 32834): M. S., an American girl aged fourteen years, had three small subcutaneous tumors, one in the patellar region, the size of a pea, and two others slightly smaller on the lateral surface of the thigh 3 cm. from the patella. They had appeared four or five years before and her attention was first called to them by pain on walking or when they were struck. At times the patient was scarcely able to walk because of the pain, which radiated to the upper border of the patella. The two lateral tumors occasioned sharp pains every winter, but none was painful in summer. The pain was relieved by rest and initiated or aggravated by pressure or palpation.

The tumors were examined in July and at that time were not spontaneously painful and were only slightly tender. All were sharply circumscribed and subcutaneous. The one above the patella was 7 mm. in diameter and the two lateral tumors 5 mm. each. Two years earlier a similar painful nodule had been removed at another hospital.

All three tumors were excised July 3, 1926. One year later the patient returned with two new subcutaneous nodules near the scar in the suprapatellar region; they were scarlet and similarly painful and tender. These were excised and she was last seen Dec. 29, 1927, without pain or tumors.

Pathological Examination: All five of the tumors are composed of closely packed, engorged blood vessels of the order of capillaries, many of which are widely dilated, forming cavernous structures. The trichrome stain shows scarcely any smooth muscle. No nerves are seen.

CASE II: Venous Hemangioma of Outer Side of Foot (P. & S. 15050): M. E., an American woman aged forty-seven years, had struck the outer side of the right foot against a stone, after which a tumor appeared at the junction of the plantar surface and the lateral border, which grew progressively. It was never tender but was subject to intermittent attacks of pain which radiated up the leg. The tumor formed a swelling 2 cm. in diameter. It had a cyanotic center and was excised with the overlying skin.

Pathological Examination: The specimen is a wedge of skin and subcutaneous tissue from the foot. Immediately beneath the epidermis is a bilobed tumor 8 mm. deep and 4 mm. wide. Sections stained with Masson’s trichrome stain show that this is a hemangioma composed in part of capillaries and in part of thicker vessels with a considerable amount of smooth muscle in their walls. The tumor is lobulated and sharply circumscribed. In the corium and subcutaneous fat surrounding the tumor a very considerable number of nerve bundles is found.

CASE III: Fibroma of Knee and Sebaceous Cyst (Benign Epithelioma Type) of Anterior Deltoïd Region (S. P. 59766): J. C., an American man aged twenty-seven years, had two tumors for an unstated length of time. One was a flat pigmented swelling in the right medial patellar region. When it was hit or subjected to hard pressure an exquisitely sharp agonizing pain resulted which radiated down the leg. Rubbing by the trousers caused no pain. There was also a slightly elevated pinkish mass in the left lower anterior deltoïd region. This at times was exquisitely painful on pressure, the pain radiating to the head.

1 Contributed by the courtesy of Dr. G. De Yoanna from the Long Island College Hospital.
and neck. Abduction of the arm or putting on an overcoat was especially painful. No statement was made as to whether or not the pain was affected by heat or cold. Both tumors were excised with generous skin margins and after the wounds healed the patient was not seen again.

Pathological Examination: The growth from the knee is an intracutaneous fibroma, 12 mm. long and 3 mm. thick, extending from the papillary layer to the deepest part of the corium. It consists of thick interlaced collagen fibers and a few fibroblasts. Two small nerve twigs penetrate it from below but are not compressed by it. One section shows an unusually large musculus diagonalis cutis adjacent to one end of it. The overlying epidermis is pigmented. The deltoid region tumor lies both within the skin and in the subcutaneous tissue. It is encapsulated and measures 14 × 7 mm. It is composed of a papillary epithelial growth which springs from one area on the inside of the capsule, filling the intracapsular space with tumor cells and desquamated epithelial debris. Vascular fibrous trabeculae pass through the mass of debris provided with foreign body giant cells. The skin muscles are plentiful but not unusual. No nerves are identified.

CASE IV: Fibrosarcoma of Anterior Deltoid Region (P. & S. 1004): S. G., a Jewish man aged thirty-nine, had a swelling on the right anterior shoulder. It had appeared ten years before and had grown larger, causing sticking pains at regular intervals. When examined the mass measured 20 × 15 mm. and formed three pinkish elevations which involved both skin and subcutaneous tissues. It was excised.

Pathological Examination: The tumor is composed of many spindle-shaped cells accompanied by slender collagen fibers which tend to be arranged in interlaced bands. The cells are closely placed and infiltrate the structures of the corium and subcutaneous tissue. The blood vessels are relatively few and, except for the preexisting ones, without muscle coats. Several nerve bundles pass through the tumor, but the perineurium is intact and there is no evidence of compression. Skin muscles are not identified.

CASE V: Multiple Neurofibromas (P. & S. 15026; S. P. 64855): M. M., a Puerto Rican woman aged twenty-seven years, had seven tumors which had appeared successively during the past nine years on the hands, wrist, ankle, elbow, and submental regions. They were subcutaneous and varied from 2 to 25 mm. in diameter. All were subject to attacks of severe pain lasting from two to five minutes, coming on spontaneously or as the result of firm pressure. They were all excised.

Pathological Examination: All seven of the tumors are encapsulated and show the characteristic haphazard arrangement of Schwannian syncytia, neurites, and collagen fibers found in the neurofibroma. In several the Schwannian elements have proliferated to an exaggerated degree, forming large quantities of Type A tissue, sometimes with organoid arrangement and palisading of nuclei commonly seen in the neurilemoma. However, since all of the tumors have neurofibromatous features in some areas, it seems best to classify them as neurofibromas.

CASE VI: Keloid of Appendicectomy Cicatrix (S. P. 47425): T. K., an Austrian Jewess aged eighteen years, returned to the hospital for examination twenty-six months after appendicectomy, complaining that for the past three months she had suffered from sharp sticking pain in the operative scar coming on in attacks lasting ten to fifteen minutes. The attacks were precipitated only by exertion and were relieved by bending over. They never occurred at night. No statement was made about tenderness. The cicatrix, which was keloidal, was excised and a peritoneal band passing between the cecum and parietal peritoneum was divided. Forty-six months later there were no symptoms referable to the scar.

Pathological Examination: There has been a tremendous proliferation of the fibroblasts of the cicatrix with a production of many new collagen fibers some of which are greatly swollen. There is no evidence of neuroma nor are any nerves seen in the cicatrix with the Gros stain. There are many capillaries but none of them has muscular walls.

CASE VII: Dermoid Cyst in Midline of Submental Region (S. P. 60353): M. M., an American woman aged twenty-four years, had a lump in the midline of the submental region just above the hyoid bone. It had been present since the age of four and occasionally got larger or smaller quite suddenly. Without relation to the change in size there occurred paroxysmal attacks of pain extending along the anterior border of the sternomastoid muscle. These lasted two to five minutes and were accompanied by lacrimation of the homolateral
eye and hoarseness. The attacks occurred on either side of the neck but were never simultaneously bilateral. When examined the cystic mass was 5 cm. in diameter; it was not tender and was freely movable in the subcutaneous tissues. At operation the cyst was said to measure $25 \times 30$ mm., overlapping the hyoid bone slightly. It was excised and one year later there was no evidence of recurrence of cyst or pain.

**Pathological Examination:** The cyst measures $3 \times 2$ cm. and its wall varies from 2 to 3 mm. in thickness. It is lined by epidermoid squamous epithelium and is filled with sebum and desquamated epithelial debris. In the wall are sebaceous and sweat glands, hair follicles and numerous large, very thick bundles of smooth muscle.


**Case XII: Glomus Tumor (S. P. 57722):** N. S., a Russian Jewess aged fifty-five years, gave a history of eight years of gradually increasing pain beneath the nail of the left ring finger. It was paroxysmal when the nail was pressed. Alcohol injection and crushing of the digital nerves failed to affect the pain. A tumor was excised from the proximal nail bed, where it had hollowed out a cavity in the phalanx. The finger remained symptom-free nearly three years later.

**Pathological Examination:** The tumor measured $7 \times 4$ mm. and was a characteristic glomus tumor.

**Case XIII: Glomus Tumor (S. P. 57329):** G. M., an Italian female aged twenty-seven years, had suffered for a year from gradually increasing pain beneath the left thumb nail. The pain came on in paroxysms lasting about five minutes, sometimes beginning spontaneously, sometimes induced by injury, pressure, or cold. There was a definite point of tenderness corresponding with the pain beneath the proximal half of the nail near its base. No vascular changes or sweating were noted. Oscillometric readings at 100 mm. pressure in the lower third of forearm were: left 4, right 1.5–2.0. The surface temperature of the thumb was: left 25.5°, right 26.5°. With a magnifying glass a bluish spot, 1 mm. in diameter, was seen beneath the nail. Excision of the nail bed in this region was done and two years later the patient was symptomless.

**Pathological Examination:** The tumor measured $3 \times 2$ mm. and was a characteristic glomus tumor.

**Case XIV: Glomus Tumor (S. P. 62035):** M. B., a German Jewess aged fifty-seven years, had for more than fifteen years had a painful area on the medial side of the right middle finger over the midpoint of the distal phalanx. Whenever the finger was struck or exposed to cold, a paroxysm of pain lasting from forty-five to sixty minutes resulted, sometimes shooting up the dorsal surface of the arm to the shoulder. Dish-washing and heat caused no pain. A small, fixed, tender tumor was found in the painful area. Under magnification there was a faint bluish tinge to the overlying skin. X-ray showed lateral erosion of the terminal phalanx. The tumor measuring $7 \times 5 \times 5$ mm., was excised. It was adherent to the periosteum. Six months later the patient was completely free from pain.

**Pathological Examination:** The tumor measured $3 \times 4$ mm. and was a characteristic glomus tumor.

**Case XV: Glomus Tumor (S. P. 57901):** J. C., an Irish man aged seventy-one years, had a bluish tumor beneath the epidermis on the ulnar side of the forearm just above the wrist. When this was touched, it occasioned paroxysms of pain. There was no other history. The tumor was excised and there was no further pain.

**Pathological Examination:** The tumor measured $5 \times 7$ mm. and was a characteristic glomus tumor.

**Case XVI: Glomus Tumor (P. & S. 15024):** A man aged sixty-three years had a tumor on the dorsal aspect of the base of the thumb, along the course of a large vein. It had always been painful but recently was much worse. The pain came in paroxysms induced by touch or by changing the position of the hand, especially on arising in the morning. The patient had to wear a shield to protect the area. The tumor appeared dark blue through the skin. It was excised together with a vein which seemed to pass through it.

**Pathological Examination:** The tumor measured $6 \times 4$ mm. It was a characteristic glomus tumor surrounding a vein.

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