

THE MORBID CHANGES AND SURGERY OF THE NAIL.¹

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MR. PRESIDENT and Gentlemen: I read this paper more for my own instruction than for yours, hoping that it may provoke discussion, and that I may thereby learn the views of members of riper experience and maturer judgment than my own. The nail seems a somewhat trivial and ordinary subject to occupy the minds of learned members of this Society, but it is only by contemplating the smaller objects that we are fully able to appreciate the larger; and in practice, as in life, the careful attention to little things often tends greatly to one's success. In order properly to understand the morbid changes of the nail, it is necessary to be familiar with its normal structure. Pardon me, therefore, if I refresh your memories by briefly referring to its anatomy. A nail is a peculiar arrangement of epidermal cells: the undermost of which are rounded or elongated; the superficial are flattened, and of a more hairy consistence. That modified portion of the corium by which the nail is secreted forms the matrix, and extends beneath its root and body. The back edge of the nail or root is received into a shallow, crescentic groove in the matrix. The front part is free, and projects beyond the extremity of the digit. The intermediate portion of the nail rests, by its broad under surface, on the front part of the matrix, which here forms its bed. The part between the root and free extremity of the nail makes up its body. The matrix beneath the body is not uniformly smooth on the surface, but is raised in the form of longitudinal and nearly parallel ridges, on which are moulded the epidermal cells of which the nail is made up. The growth of the nail is effected by a constant production of cells from beneath and behind.

Excessive growth of nail substance occurs either by multiplication of the nails or increase in bulk. This anomaly includes the occurrence of nails in unusual places, such as on scapular region, on last phalanx of supernumerary fingers or toes, double nails on fingers or toes, etc.

Both go by the name of onychauxis or hypertrophy. These vary. In the first it appears spherically curved, glossy on surface; a grayish-white color, unshapely, thick, opaque, has a massive feel, and is very hard. When the whole nail is affected, its free border has a tendency to curve downwards. It may occur in various directions, according as it is disturbed in the vertical or transverse way (onychogryphosis). In its simplest form, it becomes clam-like. In other cases, it may curve spirally.

Symptoms. Loses its elasticity; becomes thickened. Loss of tactile sense. It is very much diminished, and reduced to a minimum. Patient unable to execute fine work, and, when enlargement considerable, incapacitated for work. When toe-nails affected, walking interfered with; and, at the same time, most unpleasant effects (inflammation and suppuration) are produced by nails enlarged laterally. If uncared for, they penetrate toward the lateral groove and grow in. In the second form they are slightly lustrous, dirty, yellowish-brown, or yellowish grayish-white. Externally, have well-marked longitudinal ribs; at intervals, transverse, more or less elevated ridges, and here and there, horny plates.

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Etiology. Onychauxis may be congenital or acquired. In the former case, it dates from the embryonal period, and the anomaly appears in the course of life; in the great majority of cases, acquired.

Defective or altogether neglected care of nail may cause it. Uncleanliness, accumulation of all sorts of substances on the nail-bed act as irritants. This sometimes occurs in old people and bed-ridden patients.

Traumatic influences. Any considerable pressure for some time from in front or sideways on the extremities, as too short or narrow shoe, increases nutrition of nail-bed by augmented afflux of blood, and gives rise to hypertrophy.

Extension of morbid inflammatory processes of the corium and the connective tissue of the cutis to the matrix of the nail, as psoriasis, eczema, etc.

Defective formation of the nail, atrophy, etc., absence of the nails (anonychia), or their retarded growth, may also be congenital or acquired — causes much the same as in hypertrophy. Thermic and chemical irritations, traumatic influences, knock, blow, or pinch, inflammations associated with suppurative and ulcerative processes, febrile diseases, and all chronic wasting diseases, may be ranked as etiological factors. The cutaneous and nervous affections causing hyperplasia may also give rise to aplasia.

Characteristics of an imperfectly developed nail. Lustrous, delicate, a whitish-gray color, giving the impression of a thickened membrane, possessing but a slight hardness, readily broken and flexible. Dr. Ashurst observes, in a foot-note in his "Principles and Practice of Surgery," that Guenthre, a Danish surgeon, and Nillien, of Illinois, have noticed that the growth of nail is retarded during the early stages of fractures, to be resumed as repair goes on. They suggest this as a means of testing the progress of the cure, without disturbing the dressings in cases of delayed union or false joint. The growth of nail, however, may be checked by any cause which interferes with the nutrition of the part. Hence the test might not be universally applicable. Mitchell has noticed an arrest of growth in cases of cerebral paralysis. Gay the same, as a result of compression of the subclavian artery.

Nails may be deformed, degenerated, or discolored. They may be abnormally long or short, broad or narrow, flat or curved. A cut of a pen-knife will cause a bending of the nail. These deformities are not generally amenable to treatment. Too much stress is laid in works on clinical medicine as to the value of the color of the nail in various diseases. These are due to processes of nail-formation.

Animal and vegetable parasites affect the nail. The sarcoptes scabiei attacks the nail. In tropical regions, there are a number of flies which lay their eggs under the nails. Sand-fleas will cause, first, violent pain, and subsequently, paronychia, associated with loss of nail.

Vegetable parasite, onychomycosis. In only two mycoses of the skin, favus and herpes tonsurans, has it been clearly demonstrated that transference of their fungi will cause changes in the nail, that is, onychomycosis. Tinea favosa is rarer than trichophyton or tonsurans. The clinical features are similar. Nails brittle, frayed out, intersected, are lifted up according to the quantity of epidermis under them, become grayish, thickened, flake off, faded, dirty yellow color, and often become greatly disfiguring. Both the achorion schonleinii and trichophyton tonsurans produce the

above alterations. In a few cases, the nail presents a yellow-sulphur color, due to favus.

Horny growths sometimes spring from beneath the nail.

Ungual exostosis frequently appears. Both require excision.

The nail is closely related to the hair. I might mention, in passing, an instance known to me, which will serve to bear out this remark. A gentleman was camping out, some summers ago, in the Hudson Bay region. One night, a dreadful lightning-storm took place. The following morning, not only every hair on his body fell out, but he was also bereft of every nail, and remains hairless and nailless to this day, notwithstanding the use of the whole armamentarium of the pharmacopœia. The matrix of the nail is sometimes the seat of inflammation, etc. In its simpler form, we have *onychia simplex*; in the more severe, *onychia maligna*. This last occurs almost entirely in children under ten years. It is not very frequent. In Holmes's "System of Surgery," Mr. Thomas Smith states that out of seven thousand surgical out-patients of children under ten, he found the disease in nine instances only, and these cases occurred between the ages of one and seven years. May commence from a pinch or crust of finger-end, or result from explosion of fire-crackers. The swollen, bulbous-looking finger-end, the fluid effused beneath the nail; the thickened, flattened, or curled-up, unnatural-looking nail; the foul and painful ulcer exposed beneath it, with its peculiar, characteristic factor, and the hardened, shiny, and livid-red integument around it, are, no doubt, familiar to you all. The disease may go on until the joint is lost, or the phalanx necrosed.

I take a *paronychia* to be an acute inflammation of tissues underlying the nail. The ancients define a *paronychia* as an inflammatory tumor near the nail, involving its pulp or matrix. But in most modern works on surgery you will find described under the head *paronychia*, whitlow, felons, and even inflammation extending up to the hand or arm. The middle or side of the subungual tissues may be affected. Puncture, concussion, contusion, laceration, etc., may give rise to a *paronychia*. If the nail enlarges in width, it will press on the lateral furrow, and this, coupled with compression from a shoe, will cause a *paronychia lateralis*. At first, there will be great irritability of the parts, later, inflammation, suppuration, great proliferation of granulations, destruction of the cutis, of the tendon, opening of the phalangeal joint, caries and necrosis of bones. Usually the internal angle of the great toe is affected, rarely the outside of the little toe, seldom any other toe. It may assume a mild form or become chronic, with now and then an exacerbatory character, may be covered with irregular, spongy, easily-bleeding granulations. It may last for years.

Ingrowing toe-nail almost invariably occurs on the outer side of the nail of the great toe. Psoriasis may effect the nail. It may be, although not necessarily so, an evidence of syphilis. Central part of nail diseased; scabrous thickened, rough, convex, splits, deep fissure between the skin and finger. Nail resembles the concave shell of an oyster. Affection chronic and difficult to cure.

Syphilis may attack the nail. Jonathan Hutchinson² was one of the first to draw attention, not only to the

state of the nail in syphilitic psoriasis but in congenital syphilis. Nails, symmetrically affected, dry, brittle, fissured and broken at their edges, superficial layers alone diseased. There is, however, a more remarkable affection in the form of a chronic general onychitis. The nails decay and fall off; they first become opaque and much thickened, their substance is soft. The disease is due to inflammation of the matrix which is swollen and readily bleeds. Syphilitic onychia usually attacks the toe-nails and is often associated with ulcerative fissures between the toes. The inflammation is not so severe as in the non-syphilitic form. *Perionyxis* is a syphilitic inflammation surrounding the nail, exists in a dry and moist form. It also has a simple and ulcerative variety. Deep ulcerations forming in the latter. Mucus patches are sometimes seen under the free border of the nail.

The surgery of the nail resolves itself into operative and general treatment. If it be troublesome on account of its longitudinal growth, this must be removed with the scissors in simple cases; when the thickness is increased at the same time, use cutting pliers or saw. *Paronychia lateralis* in its early stage may be treated by removing that part of the nail which threatens to grow in, besides putting into the groove fine threads of charpie and ordering wide shoes. When the inflammation is extensive it is well to use the method of complicated pressure, as devised by Kaposi of Vienna. This consists in first removing that portion of the nail projecting into the inflamed surface, then the swollen edge of skin is carefully pressed downward and the widened space thus gained at the furrow, is filled with accurately inserted threads of charpie cotton. In doing this, care should be taken that the sharp edge of the nail does not come in contact with the irritated part of the skin. This done, strips of adhesive plaster (*emplas diachylon*) are wound round the unguis phalanx, commencing at the affected part from above downwards, each turn being moderately stretched, so as to remove the border of the skin as much as possible from the edge of the nail, to crowd it downwards. If this is done skilfully, it will cause no pain to the patient, and eases his condition at once. He can not only walk, but wear his shoes. After twelve or twenty-four hours, the dressing is taken off, foot bathed and bandaged anew. Kaposi claims that this will cure the patient in from two to four weeks. Some add medicated solution to the charpie, carbolic acid, etc. If greatly developed fungous granulations are present, they should be cut with the scissors down to the base and the bleeding points touched with nitrate of silver. In rare cases will be obliged to resort to Dupuytren's radical operation, that is, inserting pointed end of scissors beneath the nail, divide it into two parts, firmly seizing the diseased side of the nail with pliers, and pulling it out. The nail usually reappears. A great object in in-growing toe-nail is to give the feet all necessary room. In the early stage, when there is no considerable mass of overhanging integument or fungous granulations, pressure of the nail on the soft parts may be relieved by packing into the groove on the affected side, oiled cotton wool with the flat end of a probe or penknife. This may be done without pain. The quantity of wool may be increased at each application, until the soft parts are raised and pushed aside. The free edge of the nail is exposed, beneath which wool should be inserted until the natural state is restored. Nails

² British Medical Journal, 1886, p. 48.

should be allowed to grow so as to form a right angle at the outer corner. If much inflammation, the toe may be kept in water dressing during treatment. Overlapping integument kept in natural relation to the nail by strips of adhesive plaster. Dr. Tilbury Fox says, "In-growing toe-nail is easily cured by softening it and then scraping off as much as possible, so as to thin it in the middle." A similar plan may be adopted to remove splinters imbedded in the nail. Nail scraped thin over the splinter and then cut through. It can in this way be painlessly removed. When the nail cuts deeply into the flesh, causing ulceration and fungous granulations, remove it at once, using ether spray or cocaine. Dupuytren's method, as described above, is the one usually employed by surgeons. Nails may be cut by knife instead of dividing by scissors. Some surgeons prefer to remove the whole nail.

Dr. Monks has kindly called my attention to Dr. Cotting's, of Boston, method of treating in-growing toe-nail. Anything emanating from Boston is sure to bear the impress of sterling worth. It seems to me to be the most feasible of all methods. He removes the fleshy part of the toe at the side of the nail so that it will have nothing in which to imbed itself. It is no doubt well known to you all. In treating onychia, remove the nail by evulsion, then dress the ulcerative surface with Black wash, or the old standby, Abernethy's solution, $\text{ii}\frac{3}{4}$ liq. potass. arsenitis ad aq. $\text{i}\frac{3}{4}$. Arsenic has a beneficial effect on onychia. Dr. Moreloose, of Ghent, was the first to recommend the powdered nitrate of lead in onychia maligna. It has afterwards been used with great success by Prof. Vauzetti, of Padua, and Sir William MacCormac, of London. It causes considerable pain when applied, but its results are excellent. In severe cases a great portion of the disease with nail may be sliced off. In syphilitic onychia Black wash is the remedy "par excellence." Amputation has occasionally been performed for the cure of onychia maligna. Tonics should always be given. Dr. Living recommends very highly the giving of arsenic in non-syphilitic psoriasis; a tonic will add to the effect. In the syphilitic, mercury is of course the remedy. Appearance of nail improved by filing down with sand-paper. Skin near the margin dressed with white precipitate ointment. We must trace and treat the etiological factors. If an eczema exists this must be treated on dermatological principles, diachylon ointment, etc. In stubborn cases, Prof. Geben recommended using vulcanized rubber stockings and gloves. With all these diseases associated with connective tissue and papillary hypertrophy at the terminal phalanges, pachyderma, ichthyosis, verucca, etc., little can be done except keeping the affected part clean, and removing injurious influences. When syphilis attacks the matrix, anti-syphilitics required; when animal and vegetable parasites are present, anti-parasitics indicated. Ulcerative perionyxis is one of the bugbears of surgical therapeutics. Iodoform and nitrate of silver might be tried. In defective nail-formation, endeavor to find out the causes and treat them. Build up the system with tonics. Pressure by means of the wax nail is useful here. In all cases we should see that the shoe is not at fault, that it fits well, not too loose nor too tight. If the patient is a baker, carpenter, etc., and liable to irritation of the fingers, it is well to surround the end of the phalanx with soft wax.

RECENT PROGRESS IN DISEASES OF THE NERVOUS SYSTEM.

BY PHILIP COOMBS KNAPP, M.D.

ARSENICAL PARALYSIS.

DANA¹ reports two cases of pseudo-tabes from arsenic: one, where the arsenic was given in large doses medicinally; the other, where a single large dose was taken with suicidal intent. Both patients had burning feelings and formication, and sharp pains in the legs. There was pronounced ataxia and loss of muscular sense. In one case there was some cutaneous anæsthesia; in the other, cutaneous sensibility was normal, but there was hyperalgesia. There was some muscular weakness, and static and locomotor ataxia. In one case there was optic neuritis, and in the other the fundus was normal. The cutaneous reflexes were normal, the patellar reflex absent or greatly diminished, and there was a partial reaction of degeneration.

The writer compares these cases with the pseudo-tabes of alcoholic subjects, and the pseudo-tabes that follows diphtheria, and thinks it very probable that the lesion in arsenical pseudo-tabes is also a multiple neuritis, and not a diffuse myelitis, as has been held by Seguin and others. The lesion in post-diphtheritic and alcoholic paralysis is known to be a neuritis, and arsenical paralysis resembles the other forms so closely as to render it probable that it, also, is due to a similar lesion. The writer gives a very full bibliography of the subject, and draws the following conclusions:

(1) A disease resembling tabes dorsalis may be caused by arsenic, either given medicinally, absorbed from wall-paper, or given in a single dose.

(2) Arsenical paralyses of this type, and arsenical paralyses of other types, are not due, at least as a rule—to a diffuse myelitis, as has been taught, but to a multiple neuritis.

(3) Arsenical paralyses, like those from diphtheria, alcohol, lead, and probably other infections and poisons, are of two types:

a. The ordinary mixed motor and sensory paralysis, the motor troubles and atrophy being more marked.

b. The pseudo-tabetic form, in which there is no pronounced motor paralysis, but marked sensory troubles, and especially ataxia.

EXOPHTHALMIC GOITRE.

In a case of exophthalmic goitre recently reported by Jendrassik,² beside the cardinal symptoms of exophthalmos, goitre, and tachycardia, together with tremor and restlessness, there were also noted paralysis of the ocular muscles, of the facial and masticatory muscles, and, to a lesser degree, of the muscles of the pharynx and of the upper extremity. The writer satisfied himself that this paralysis was nuclear, and not peripheral—an external ophthalmoplegia, due to disease of the nuclei in the medulla, a poliomyelitis superior (Wernicke), or, as he prefers to call it, poliomyelencephalitis superior. He questions whether the presence of the symptoms of exophthalmic goitre and of ophthalmoplegia are due to a mere coincidence. He cites other cases like the one reported, and suggests that exophthalmic goitre may be due to disease of the medulla or mesencephalon. Since three distinct and

¹ Brain, January, 1887.

² Arch. f. Psychiatrie, xvii, 301, 1886.