

There are changes of nutrition in the tissues; at least, I am under a strong impression that a particular kind of muscular atrophy which especially attacks the facial muscles is one of the results of large and long doses of hypodermic morphia." As long as the ulcers caused by the injections discharge pus, Mrs. II. has a good appetite, is lively, bright and amiable. A person seeing her and not knowing the history of the case, would never suspect that the patient was out of health, so cheerful and lively is she at all times. The clearness of the complexion is especially noteworthy. When the ulcers cease to discharge, the patient becomes feverish, and either vomits, coughs, or has a diarrhoea, and discharges from the stomach, bowels or lungs, matter having the same appearance as that coming from the leg. Generally, the discharge is from the stomach. The leg usually stops discharging matter every three or four months. Since last April (1871), the leg has not ceased discharging, and since the same time the patient has menstruated regularly. The discharges from the stomach, bowels or lungs have a marked connection with the amount of morphia injected, the patient requiring much less morphia after them. In a week the amount of morphia injected is reduced from sixteen grains to four or five grains daily. The amount is usually increased gradually by the necessities of the patient up to twelve, fourteen or sixteen grains, and reduced as above. The bowels never move without an enema. When the injection is delayed for a half hour beyond its usual time, the patient has severe pain and soon becomes rigid. From June 14, 1870, to December 31, 1871, eighteen and one half months, there have been injected six ounces of sulphate of morphia. This is a less amount than for any equal period of time since the injections were begun. For a long time, eight grains were injected daily, and there was another long period, during which twelve grains were injected daily, and still a third, during which sixteen grains were injected daily. It seems that eight grains would be a low average of the amount injected daily. If we take eight grains for the average daily injection, this lady has used, subcutaneously, in the last four years, at least twenty-four ounces of sulphate of morphia. At this time, after consuming such an enormous quantity, she is in better health than at any other time for the last four years. She has no desire for opium, would gladly leave off its use, and has made repeated attempts to do so, but, without success.

Mrs. II. shows none of the injurious effects of opium, as laid down by writers. The constipation may be ascribed to her confinement to a warm room.

Selected Papers.

THE DIAGNOSIS OF THE FIRST STAGE OF CARCINOMA COLLI UTERI, WITH REMARKS UPON ITS ANATOMY AND TREATMENT.

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THE recognition of the local commencement of cancer of the cervix uteri is, as is well known attended with difficulty, is indeed, so far as absolute certainty is concerned, regarded as impossible, especially in those cases in which the disease does not in the beginning display itself in the form of superficial growths, but rather as a circumscribed infiltration, the mucous membranes remaining intact. "Of all forms of cancer of the cervix uteri, the only ones which offer any difficulty in diagnosis are those in which the mucous membrane remains intact, or perhaps better said, only that stage of so-called cancer offers any difficulty in which disintegration has not yet appeared. In these cases, however, the difficulties are, for the most part, so considerable that a definite diagnosis can but seldom be made. Where one or more hard nodules can be felt lying under the smooth mucous covering, the diagnosis is comparatively simple and easy; but in those cases, on the contrary, in which the vaginal portion feels enlarged, smooth, hard and thickly swelled, it is impossible to distinguish cancer from simple benignant hypertrophy or from chronic metritis. Let the differential diagnosis tables as laid down in various textbooks be ever so clear and seductive, the fact still remains that in such cases in practice one is always doubtful and uncertain, even if he does leave the whole matter to the untrustworthy decision of the so-called *tactus eruditus*. It is of the utmost importance as regards the treatment, that we should recognize just these cases, in the large majority of which, so far as we can judge, a part of the vaginal portion remains healthy."* So Gusserow represents the present state of our knowledge in his otherwise excellent "Clinical Lecture on

* Volkmann's Sammlung Clin. Vorträge, No. 18.

Carcinoma Uteri." And it is this statement, with the closing reference to its important significance, which induces me to publish the following article, the substance of which I had intended to reserve for a larger work.

Extensive observation and a consideration of the anatomy of the disease have, I believe, supplied me safe signs for a differential diagnosis, in the peculiar hardness of the cancerous infiltration, in the relation of the mucous membrane to the hard mass underneath, and, finally, in the effect of dilatation by sponge tents. Since devoting my attention particularly to these points in deciding between a commencing carcinoma with unbroken mucous membrane and simple diffused or circumscribed hyperplasia, benignant infiltration, they have never failed me, though the decision was, to be sure, in consideration of the rarity of the former disease, almost always in favor of the latter.

The hardness of the cancerous deposit in comparison with the consistency of a simple induration, be it never so dense and cicatricial like, is well known; still the judgment in such a case is altogether subjective, and the bounds between the two diseases are always hard to determine. I will therefore not place this characteristic in the foreground, though for me it has always been very reliable.

The other two symptoms, on the contrary, are unequivocal, and briefly expressed are as follows:—first, the mucous membrane in a cancerous growth is firmly connected with the underlying induration and immovable over it, which is not the case in mere hyperplastic thickening and induration; and, second, while the latter, under the pressure of compressed sponge in the cervical canal, becomes regularly (even though at times inconsiderably) looser, softer and thinner, the cancerous infiltration remains unalterably hard and rigid, and cannot be stretched.

What clinical experience has thus taught is clearly explained by a consideration of the microscopic anatomy of the disease; and this compels me to make a short digression upon the development of cancer, which is the more in place as all accounts of the origin of the disease labor under the objection of indecision and incompleteness, referring, for the most part, to the manner in which it develops itself externally and other matters of only secondary importance; thus Förster's distinction of papillary and parenchymatous epithelial

cancer*; the division by Blau into canceroid, as villous papillary tumor, and carcinoma as uniform infiltration of the deeper layers of the cervix†; and Gusserow's omission of any decided opinion upon the subject.‡

The results of Waldeyer's investigations, which my colleague has kindly permitted me here to anticipate, help us to a clear and satisfactory explanation of the observed phenomena. He shows that cancer of the cervix uteri is developed from the rete Malpighi of the mucous membrane, or, in extremely rare cases, from the glands of the cervical canal. The latter form of development gives rise to the alveolar or colloid carcinoma, and is, as remarked, so extremely rare that Waldeyer has had but one opportunity of examining a case of the kind. I also have seen but one. He can, therefore, accept the form originating from the rete Malpighi as the type of carcinoma uteri. As a rule, the disease is developed from the interpapillary depressions of the epithelium, and accordingly originates oftenest on or close by the lips of the os, but may, of course, appear in other places free from papillæ.

According as the growth of the epithelium into the tissues below is or is not attended by a simultaneous growth of the papillæ, two forms of cancer may be distinguished—the papillary villous (commonly called cauliflower excrescence) and the simple infiltrated form. In every case, however, the irregular epithelial growth remains the essential part of the disease.

The formation of vascular villi by the papillæ of the portio vaginalis is of secondary importance. It may precede, appear simultaneously or be a later accompaniment of the penetrating epithelial growth. In the first case the carcinomatous character of the disease begins with the commencement of the irregular abnormal (atypisch) epithelial growth; till then the villous excrescence on the vaginal portion must be considered as a simple papillary tumor, fibrous papilloma, as, in fact, such tumors of the part are regarded, and in most cases, without further complication, successfully treated.

The cases in which both epithelial growth and papillary hypertrophy appear simultaneously may perhaps be the most frequent, and accordingly all papillary vegetations of the cervix must be held in suspicion, es-

* Handb. der. Pathol. Anatomie, II. Bd., Aufl. 2.

† Kiringer's Pathologische Anatomisches über den Gebärmutterkrebs.

‡ Loc. cit.

pecially in consideration of the possible subsequent cancerous degeneration of a previously simple papillary hypertrophy.

Carcinoma of the third description, *i. e.* that which comes to a villous growth only very late or not at all, shows itself merely in the form of circumscribed or more diffuse infiltration of the labia of the os or of the whole cervix uteri. In this form, the course of development is in brief the following: At a certain more or less well-defined point of the vaginal portion, the deeper layers of epithelium, corresponding to the rete Malpighi of the outer skin, begin to penetrate into the underlying stratum of connective tissue, the process being attended by a copious vascularization of the latter. The inward growth must naturally emanate from the deepest lying epithelial cells, *viz.*, from the interpapillary depressions. The penetrating processes of growing epithelium press deeper and deeper inwards, thrust apart the bands of connective tissue and bundles of smooth muscular fibres, and so form an irregularly branched collection of cells, which appear as if infiltrated or, perhaps better, injected into the substance of the cervix. The last comparison is better adapted, since we in fact meet with abundant abnormal epithelial growths in the lymphatic spaces and vessels.

Since the development of cancer always begins with the abnormally rapid growth of the deeper layers of epithelium, it is very possible that the disease may be far advanced, even though the superficial epithelial layers remain entirely unchanged. Hence the frequent mention of the primary deep development of uterine cancer with an outwardly healthy mucous surface. It is a mistake, however, to fancy the epithelium entirely unconcerned in the process. In many cases, to be sure, and even at an early stage of the disease, the outer layers of epithelium are thrown off, and the beginning cancer is presented in the form of an erosion, as well as an epithelial infiltration of the submucous layers of connective tissue.

Farther, it is to be remarked that in the uterus, just as on the skin, the cancerous development may start from a small, circumscribed collection of epithelial cells, and penetrate hence inwards into the tissue, or extend outwards towards the surface.

In the first case, the disease must appear as a small, circumscribed induration (*Knoten*), lying deep down in the substance of the uterus; in the second, as the so-called corroding ulcer, *ulcus phagedænicum* or *corrodens* of authors.

If the disease has advanced to marked papillary growths or ulcerous disintegration, the diagnosis is comparatively easy, but even in the cases in which there is externally no disease, the immobility of the mucous membrane must be recognized as a condition in perfect conformity with the established facts in regard to the development of carcinoma.

Since the carcinomatous indurations and infiltrations owe their origin directly to the most important constituent of the mucous membrane, namely, its epithelium, and are thus intimately connected with its superficial layers, any motion of the latter upon the new growth is prevented.

The different effect of compressed sponge upon carcinoma and homoplastic induration will be understood if we consider that in the first case the diseased tissues, as if injected with wax, are filled with an inflexible mass, which deprives them of all elasticity and renders them incapable either of being stretched without rupture by the mechanical pressure of the swelling sponge, or of being softened by the fluid fluxion and exudation which the sponge indirectly incites in other conditions of structure.

In fact, these two effects of compressed sponge correspond exactly with the two conditions accompanying labor, *viz.*, the pressure of the advancing foetus and the attending hyperæmia; and it was, in fact, this last comparison which led me to the idea of using the sponge in the way indicated.

My first case was that of a patient whose irregularly indurated, enlarged, fissured cervix uteri had frequently been held for cancerous and its extirpation recommended. The absence of carcinomatous hardness, however, and a mucous membrane entirely normal, and easily movable, except at the fissured points, aroused in my mind a doubt of the correctness of the diagnosis; and every idea of carcinoma disappeared when, the next day, after the introduction of a compressed sponge, I found the indurated and thickened portion much softer and thinner. The later history of the case confirmed the correctness of my diagnosis.

I have very often since argued in this way the absence of cancerous disease, and subsequently proved the justice of my conclusions by microscopic examination after removal of the inflamed and hyperplastic vaginal portion (an operation which is attended with immediate benefit, and is in itself without danger). If, as is true, the opposite cannot be so often proved, the difficulty lies only in the infrequency with

which cases of primary parenchymatous cancerous disease without papillary hypertrophy of the mucous membrane are observed in the beginning of their course. I have met with but two cases of the sort in all, but in both, the signs in question proved their reliability as criteria for the differential diagnosis.

It may be objected to the use of the compressed sponge as an aid in diagnosis, that by its means the degeneration of the neoplasm, the exulceration of the cancer, will be hastened. That I allow; but, still, there is no harm done, for the extirpation must follow immediately if the disease is found to be carcinoma. It is only when done very early that the operation *can* be attended with any success; and whether a perfect cure ever results, I still very much doubt. For, even in the two above-mentioned cases, in which I recognized the disease in the first stage and operated, so far as the finger could judge, in healthy tissue, the operation was useless. The disease returned almost immediately.

The result was the same in three other cases with ulcerations and superficial growths, in which I applied the galvanocautic wire upon a ring of apparently yet healthy tissue close up to the vaginal attachment, where, to be sure, the burned cut surface did not allow microscopical proof of transition to healthy tissue. In the first case, the wound healed well and showed no change for nearly a year, when suddenly a papillary cancerous growth developed itself with surprising rapidity from the cicatrix. In the second, new papilloma showed itself immediately upon the falling off of the slough. In the third case, after long suppuration and repeated sloughing, a tunnel-shaped cicatrix was formed in the base of the vagina, with which the cervix uteri was closely connected, and I considered the case cured. Upon examination, a year and a half after the operation, I found the cicatrix unchanged; but at present, three months later, there is developed upon the site of the old disease a superficial cancerous induration larger than a pea.

Nevertheless, I must still allow the possibility of a radical cure by early amputation. It is confirmed by the reports of perfectly reliable authors, although there are among those reported many cases of only apparent cure. Certain it is that cures are very rare, and the reason for it is probably to be found in the rapidity with which the lymphatic vessels in the neighborhood of cancer, in contrast to sarcoma, are invaded by the disease.

In the very great majority, however, of cases of carcinoma of the cervix, amputation is inadmissible. On this point I differ completely from Gusserow's too general advice* for operation.

The loss of blood upon the application of instruments and the removal of the diseased portion, is so considerable that it injures the patient more than the temporary retardation of the growth and ulceration can benefit her.

It has always seemed to me that the disease made more rapid advance after the bloody operation, and that the degeneration and disintegration became only more rapid.

If the disease is locally far advanced, the removal of the diseased portion must be accomplished with scalpel and scissors, if there is to be any prospect of a respite of even a few months. For it is with these instruments alone that it is possible to extirpate a pyramidal-shaped piece† whose apex shall extend above the base of the vagina, which level in a case anyways far advanced is always overstepped in the vicinity of the cervical canal. Loop and chain cannot be operated above this level, must cut, therefore, through the midst of the disease, and the following development from the cut surface is all the more luxuriant.

For a while, I deceived myself with the idea that, in cases where the vaginal walls were not yet attacked, it would be possible to remove a portion of the corpus uteri by means of a wedge-shaped incision, but the difficulty of the undertaking became evident upon the first attempt at its execution. The enormous hæmorrhage, the impossibility, in the gushing blood, of controlling the instrument by the eye; the necessity of directing scalpel and scissors in the narrow space with the fingers alone; the danger of injury to the neighboring parts (bladder and especially peritoneum); the repeated tearing out of the hooks fixed in the brittle mass; then, too, the threatening danger of serous inflammation which would attend the tamponning or cauterization of the bleeding wound—all caused me to regard the completion of the operation, without imminent danger to the life of the patient, as impossible.

My advice, therefore, is: very early operation, or, where this is not possible, mere treatment of symptoms.

* Loc. Cit.

† Hegar-Verhand. der Gynäkol. Section der Naturforscher-Versammlung zu Innsbruck. Mon. für Geburtsk 34 Band, S. 391-95.