ABSTRACT OF DISCUSSION

DR. A. J. OCHSNER, Chicago: The field of spleen surgery is at present exceedingly circumscribed, for the reasons given by Dr. Mayo, and because we do not yet understand the full relation between enlargement of the spleen and anemia. Twenty years ago, in 1889, while the Italians were making use of the advancement in abdominal surgery and applying it to the removal of large spleens, which were so numerous in Italy, I had an opportunity of assisting my chief, at that time Dr. Charles T. Parkes, in the removal of a number of spleens. We soon learned that the spleen in which removal was desirable could not be removed with safety to the patient, and in the case of other spleens there was no occasion for removal. In our part of the country, these other spleens which became enlarged as the result of chronic malaria, were harmless unless the pedicle was twisted. I have since removed a number of spleens and have come to the conclusion that when a spleen is removed in a case in which there is not a splenic leukemia of advanced character, the operation is quite as safe as is the one for removal of the thyroid or of the uterus or any other simple operation, provided that the same systematic plan is followed. There should be no severe traction on the pedicle of the spleen or great manipulation of the veins, because they are exceedingly friable. After severing the pedicle below, care should be taken to protect the smaller veins which often enter the spleen from above. If one is careless, one will find that some of the large veins which pass through the accessory ligament are exceedingly troublesome, but when these things are looked after in patients not suffering from splenic leukemia, the operation is a safe one. I have had one of these patients go through a severe pneumonia afterward under the care of one of our best internists, who found no difference whatever in the course of the disease. If the leucocytosis is higher than 50,000, then one can count on a fatal hemorrhage after the splenectomy. My experience in fifteen or twenty cases is not sufficient to be of any value except as a guide. If there is leucocytosis accompanied by a rise in temperature, then, of course, there is no occasion for the operation, because one would no more operate in this chronic condition while there is an acute infectious condition present than for any other chronic surgical condition. Therefore, if the leucocytosis is the result of the leukemia, one must be guarded in the operation, and not fear hemorrhage from the large vessels at all, but hemorrhage from the small adhesions. The blood will continue to ooze out. Gauze may be sutured over the surface, and the blood will ooze out of the stitch holes. It will ooze out, no matter what one does in these cases of advanced splenic leukemia.

THE PROLIFERATING FORMS OF CUTANEOUS SYPHILIDS *

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When through the works of Schaudinn and Hoffman we have learned to know the germ of syphilis, and when we have found that to be a living spirillum belonging to the class of the protozoa, we can be satisfied that we have made a forward step in the intimate knowledge of syphilis and also of other diseases produced by kindred organisms. In a short article on elephantiasis¹ which was presented to the American Dermatological Association, I remarked that this condition of the penis and scrotum was often due to syphilis, and that all cases of elephantiasis are started by the presence of infectious germs or of parasites, which cause continuous irritations in the tissues and a stasis in the progress of the

lymph. Indeed, after the observation of Blaschko², who found the presence of spirochetes in the syphilitic tissues, in the tunics of the blood vessels, in their divisions, in the surrounding infiltration, in the coagulated lymph, in the lymph spaces and in the lymph vessels, it is not difficult to infer that the presence of the germ is the cause of the proliferation of the tissues.

Cornil and Ranvier³ had already outlined the idea that a prolonged irritation of the derma caused an hypertrophic dermatitis with formation of papillary productions of the skin. This tendency to formation of fibrous tissues in the skin is very marked in the syphilitic inflammations of the skin, which are considered as the exponent type of the formative dermatitis. In the old syphilitic papules the lesion consists only in the enlargement of the papillæ.

In all infectious inflammatory processes of the skin Unna⁴ finds that through the formation of thick epithelium the papillæ are irritated and proliferate. They are deformed, elongated and often subject to secondary decussation. In some cases of proliferating syphilitic lesions the same condition is found. In consequence of the irritating secretion of the mucous patches, of the presence of excretions, of neglect of cleanliness, the epithelium is macerated and causes irritation of the underlying papillæ, which start to proliferate. This condition is found in the secondary period when hypertrophic mucous patches are proliferating (Fig. 1).

In tertiary forms the proliferating papillæ have their origin from ulcerative forms and the epithelium has no relation to the irritation. This vegetating condition of the papillæ is often associated with and has close relation to elephantiasis. Indeed, the tendency of the syphilitic process to produce lymphatic stasis is well established. The edema indurativum of Sigmund, the *œdème scléreux* of Fournier, the edema induratum of Lang, are the result of a firm edema-like infiltration in the skin and subcutaneous tissue. Tschlenow⁵ following the ideas of Pick, considered elephantiasis of the vulva as a result of syphilis. He referred to a woman with enormous elephantiasis of the labia, in whom the skin was covered with wart-like efflorescences extending to the vagina and the affection had begun with papillary proliferations.

Balzer and Deshayes⁶ found in a patient who had been syphilitic for thirty-three years, suffering with tuberculous vegetating syphilid of the thigh for ten years, an enormous edema of the penis and of the scrotum. When these luetic lesions healed up hypertrophic scars were formed. In the same man the tongue was covered with hypertrophic papillary growths. On those papillary growths specific treatment had very little influence.

From my experience I can state that vegetating papillomata in syphilis can occasionally develop in all periods of the disease. They may be found on an initial lesion, and also on other syphilitic products of the skin and mucous membranes. These vegetations, although harmless, are troublesome on account of their obstinacy and their tendency to recur. In my case, shown in Figure 1, the vegetating papillary growths had their

2. Blaschko, A.: Ueber Spirochæten Befunde in syphilitischen erkrankten Gewebe, Berl. Klin., 1906, No. 13.

3. Cornil and Ranvier: Manuel d'histologie pathologique, Paris, 1876, p. 1204.

4. Unna, P. G.: Die Histopathologie der Hautkrankheiten, Berlin, 1894, p. 205.

5. Tschlenow, M.: Syphilis und Elephantiasis der Vulva, Med. Oboz., 1902, No. 11; ref. Arch. f. Derm. u. Syph., lxxvi, 299.

6. Balzer and Deshayes: Syphilides tertiaires avec éléphantiasis des organes génitaux et glossite hypertrophique, Ann. de dermat. et syph., 1906, p. 196; ref. Arch. f. Dermat. u. Syph., lxxxvi, 422.

* Read in the Section on Dermatology of the American Medical Association, at the Sixtieth Annual Session, held at Atlantic City, June, 1909.

1. Ravogli: Elephantiasis of Penis and Scrotum Due to Syphilis, Jour. Cutan. Dis., February, 1907, p. 61.

base on an eruption of mucous patches thickly crowded on the labia majora and minora, extending to the perianal region downward and to the clitoris, pubis and fossa crurogenitalis upward in the form of a triangle. Many of these formations were large and pedunculated. Infection in this woman dated back eighteen months.

Fig. 1.—Vegetating papillary growths on the labia majora and minora.

Vegetating forms of syphilis of this kind have their origin in papules, which occur on the skin and on the mucous membranes. In a young woman infected for five years I found two vegetations on the dorsum linguæ.

Fig. 2.—Papillomatous growths and elephantiasis of the labia.

They were of the size of a grain of corn, oval, hard, thick, slightly reddish, of a shiny appearance. I had them scraped off, but after healing they are still somewhat perceptible. Allen⁷ referred to cases of vegetations

7. Allen, Charles W.: *Syphilis of the Mucous Membranes, A System of Genito-Urinary Diseases* (by P. A. Morrow), ii, 230

under the surface of the tongue, lips and soft palate in syphilitics. The surface of the elevated plaques spreads irregularly from unequal lengths of the papillæ and forms papillomatous groups of cauliflower appearance.

In late syphilis papillomatous growths come together with a thickening of the-tissues in an elephantiasis form. A mulatto woman aged 30 (Fig. 2), infected by her husband at their marriage twelve years ago, previously weak and anemic, is greatly run down in her general

Fig. 3.—Elephantiasis of the penis.

system, showing plainly the effects of the diathesis. No syphilitic symptoms are perceptible, except in her genitals. The labia are greatly enlarged, hard and thick. This was much plainer on the right one, which has reached the size of an orange covered with thick and hard papillary vegetations. Some vegetations have invaded the ostium vaginæ, which is nearly occluded, and have extended to the perineum. No pain is connected with this condition beyond the discomfort due to their presence. The papillary growths are hard, elastic, and moistened with secretion of nauseous odor. Their color is rose-red, and in many points they are whiter than the normal skin.

Fig. 4.—Hypertrophic papillæ transversely cut, with spirochetes.

Figure 3 shows a colored man, aged 28, who was infected for six years. He had elephantiasis of the penis. The skin and the connective tissues of the organ were thickened, hard and enormously swollen. The glans penis was converted into a mass of vegetations which protruded from a swollen and edematous prepuce.

An ulceration from the radix of the penis extended to the whole right inguinal region. The ulcerated surface was covered with thick hard papillary proliferations of the size of a split pea or larger. They bled easily and overlapped the normal skin for over half an inch. The penis was amputated, the vegetations were scraped off and the surface burned with thermocautery. The wound of the penis healed up promptly, but the granulations came back in the same form.

angular or cubical shape, with one or two nuclei well stained by hematoxylin, and between them are found abundant mitoses. These cells keep getting still larger and stronger and make an enormous mass of epithelial layer of the granular portion. When they reach the papillæ they appear fusiform, elongated and forming a columnar arrangement (Fig. 6.)

The papillæ are enlarged, elongated and protruding like sprouts in every direction in this mass of epidermic

Fig. 5.—Epidermic layer of syphilitic proliferations.

Fig. 6.—Epidermic cells disposed around the papillæ.

Fig. 7.—Hypertrophic papillæ in a mass of epidermic layer.

I have had occasion to see some forms of proliferating syphilis around the anus forming some obstacle to defecation in the form of a large cauliflower mass.

From each one of the cases I took a small part of the vegetations for biopsy. One little piece was treated with Levaditi stain for spirochetes. In the vegetating papules of secondary nature the spirochetes were found, as can be seen from the micrographs. In Figure 4 they are disposed around the enlarged papillæ in the form of small spirilla. In the interpapillary tissues the spirochetes are disposed longitudinally following the disposition of the connective fibers. In the vegetations

cells. In Figure 7 they are made up with connective tissue fibers, and enlarged connective tissue corpuscles; in some places a strong layer of plasma cells can be seen. The tissue forming the papillæ are infiltrated with white small cells. Figure 8 shows small inflammatory cells in enlarged connective tissues and an artery and a vein enlarged and filled with blood.

The papillary layer is greatly enlarged (Fig. 9) and infiltrated. The connective tissue fibers are hypertrophic and contain large blood vessels. It is very difficult to differentiate these specimens from those of tuberculosis verrucosa cutis.

Fig. 8.—Enlarged papillæ with enlarged vein and artery.

Fig. 9.—Papillary layer, infiltrated with hypertrophic papillæ.

Fig. 10.—Proliferating syphilid; plasma cells; hypertrophy of collagenous tissues; no elastic fibers.

of tertiary period in Cases 2 and 3 I was not able to see the presence of spirochetes.

The specimens treated with ordinary stains, such as hematoxylin and eosin or picric acid and hematoxylin, show an enormous hypertrophy of the epidermis. The stratum corneum is missing and is replaced by a mass of juicy epithelial cells with small nuclei, which do not take the stain. In Figure 5 gradually the epidermic cells begin to show that they are much larger, of tri-

The same condition is found in the deep layers of the derma; only the connective tissue fibers are much enlarged and hypertrophic. Specimens stained with orcein and then treated with hydrochloric acid have failed to show elastic fibers. It seems that the infiltrating process, pressing the elastic fibers, causes their disappearance. The same loss of elastic fibers I have found in keloid, in the elephantiasis tissues, in tuberculous tissues—in short, in all tissues in which thick infil-

trating process has taken place. It seems that the delicate elastic fibers are soon damaged and disappear, leaving the collagenous tissues free to proliferate. (Fig. 10).

In all processes in which a constant irritation is maintained in the tissues of the papillæ proliferate and papillomatous vegetations are formed. The same tendency to proliferations is found in tuberculosis verrucosa, in several kinds of cancer, in blastomycotic lesions, in any process in which parasites, having taken abode in the tissues, mechanically with their presence and chemically with their toxins maintain a constant irritation. The presence of the treponema in the connective tissues of the derma maintains a constant irritation with a tendency to abundant exudation in the form of indurated edema. The collagenous tissues grow and form papillary growths. Indeed, as Virchow stated, every deviation of the nutrition of the tissues is the direct result of the exudation which enters between them. The tissues have the property of nutrition, and every cell has its own life, *vita propria*. This property of the cells of maintaining their own life was studied in the epithelium by Hertwig and Phol, and especially Legrand,⁸ who found that infiltration cells in the imbibed tissues can not remain for a long time, but either they must undergo degeneration or they must divide and proliferate. This condition is well perceived in case of poisonous elements in the skin. In fact, in tuberculosis cutis there is seen a central area, the nearest to the poison, where the cells are degenerated, an intermediary one, where the cells are proliferating, and a peripheral one, more remote from the toxic influence, where normal cells are still found. In a general way it may be said that the deleterious action of the parasites on the tissues is produced by their poisonous secretions and also by their mechanical presence. In syphilis the treponema is not only a poison but a virus, which is reproduced in the organism, and keeps extending its deleterious action. It spreads in the system, remains latent for a while, and then finds new locations, where it produces its chronic lesions. The tissues affected with the treponema are infiltrated, and the infiltration undergoes necrosis and ulceration results, while the other cells are proliferating and form masses of papillary granulations. These connective elements are always produced by the existing tissues. The lack of elastic fibers is remarkable in the specimens, as is the immense growths of collagenous elements and of plasma cells. It seems that the elongation and enlargement of the vegetating papillæ represents a process of acanthosis. I have found the same deficiency of elastic fibers in the keloidal productions, and in this same process it seems that the lack of elastic fibers leaves the collagenous substance free to grow and to increase and form vegetations. The growth of epithelium occurring in these vegetating forms of syphilids takes the appearance of certain cancers, especially of the *ulcus rodens*. The epithelium is not capable of cornification and as a consequence undergoes a process of colliquation and a cicatrix can not be formed. Indeed in certain cases it is difficult to make the differential diagnosis of the proliferating syphilid from a papillomatous carcinoma. To the same condition can be referred the not infrequent occurrence of the carcinoma on syphilitic proliferating ulcers.

8. Legrand, L.: *Cancer et milieu intérieur*, Semaine méd., 1909, xx, ii.

In fact the proliferating masses of the tertiary syphilitic ulcers show no special characteristics, and they have common characters with the proliferations of other morbid processes. The imbibition of the tissues from the lymph stasis, the hypernutrition of the connective tissue corpuscles, cause their division and their proliferation. The elastic fibers which maintain the connective tissues in their limits are gradually lost, and the collagenous elements are left free to proliferate without any restraint.

That the spirochete is the starting element of the irritation there is no doubt, as is clearly shown in the secondary vegetating patches. In the tertiary vegetating masses spirochetes were not found. This, however, does not diminish the value of the assertion that the presence of micro-organisms is the origin of proliferating granulations. It is possible that at this period the spirochete cannot be stained, or very likely it is concealed in the deep tissues, causing stasis of the lymph, ulceration, and the tissues so irritated start to granulate, and continue to granulate, but are unable to obtain a good solid epidermic layer to stop their growth.

In reference to treatment, it is not difficult to bring the proliferating patches of the secondary period to recovery. Internal constitutional treatment with external application of calomel, or bathing with solutions of 1 to 500 of bichlorid of mercury, are capable of producing involution of the vegetating plaques. In some cases it is necessary to use strong caustics, as in the case shown in Figure 1 it was necessary to scrape the whole vegetating surface with the sharp curette.

In the case shown in Figure 2 a reconstituent diet with tonics, decoction of Zittmann,⁹ alternating with a saturated solution of iodid of potassium taken internally, has given satisfactory results. Local bathing with bichlorid solution 1 to 1,000 and a local application of emplastrum hydrargyri, have produced the involution of the granulations and a great diminution of the elephantiasic condition of the labium.

In the case represented by Figure 3 the penis was amputated and the proliferating surface was scraped off and burned with thermocautery. In spite of this treatment the proliferations recurred with annoying persistence. The applications of mercurial plasters irritated and did not produce any benefit. The application of resorcin in the form of a salve one drachm to one ounce of petroleum did some good. The cicatrix was obtained only after a few exposures to the x-ray. This produced a shrinking of the granulations, and the epithelium begun to be formed. The resulting cicatrix was somewhat bulky and of a keloidal appearance.

5 Garfield Place.

ABSTRACT OF DISCUSSION

DR. GEORGE PERNET, London, Eng.: I have long been of the opinion that these secondary vegetative proliferating conditions which are seen in syphilitic lesions, in tuberculosis, yaws and a variety of other conditions, are really due to staphylococcus infection. I have looked on them as epiphenomena, and really due to irritation within the derma. To

9. As this decoction is not official in the U. S. Pharmacopœia, and may not be familiar, the formula is here given as it appears in the National Standard Dispensatory:

Decoction Zittmanni fortius: Take of sarsaparilla root, cut, 100 parts; digest in water 2,600 parts for 24 hours, and add, enclosed in a linen bag, powdered sugar and alum each 6 parts, calomel 4 parts, and cinnamon 1 part; then heat in a covered vessel placed in a steam-bath for 3 hours, stirring frequently, and near the end of the boiling add anise and fennel, bruised, each 4 parts, senna, cut, 24 parts and licorice root, cut, 12 parts. Express, strain, set aside for some time, and decant to obtain 2,500 parts of clear liquid; 2,500 gm. of this are to be divided into 8 parts.

accept this theory, one might have to reconstruct one's views, but that is the conclusion I have arrived at. In the treatment of these lesions, one of the best things I know of is the peroxid of hydrogen.

DR. A. RAVOGLI, Cincinnati: There is no question in my mind that the constant irritation is the cause of the proliferation of the connective tissues of the derma. It is possible, as Dr. Pernet has suggested, that the staphylococcus and the irritation from the different secretions will produce proliferations, but in the particular types that I have presented I am convinced that they are the result of the presence of the spirochetes and the mechanical irritation of the tissues in long-standing syphilitic processes. While any antiseptic, like peroxid of hydrogen, is of some value in the treatment of these lesions, their cure requires a remedy of more decided character, such as the x-ray or curettement, and also the actual cautery.

ANIMAL EXPERIMENTATION AND TUBERCULOSIS *

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ETIOLOGY

Everything that we know to-day of the etiology of tuberculosis, everything that has a direct bearing on the prevention and control of the disease, we owe to animal experimentation. Before the infectious nature of the tubercle became established by animal experimentation no advance was made in the knowledge of tuberculosis in any direction except in that of pathologic anatomy. From Sylvius,¹ who in 1695 first described tubercles and drew attention to their relation to pulmonary phthisis, up to the time of Klencke² in 1843, and even of Villemin³ in 1865, who were the first to demonstrate by inoculation experiments on animals the infectious nature of the tubercle—that is, in a period of 170 years—no advance was made in the etiology of the disease, and this long period was wholly occupied by studies of the pathologic anatomy of tubercle, scrofula, caseation, pulmonary tuberculosis, and discussions of their relation to each other and their classification. Knowledge of the exciting causes of these pathologic processes remained theoretical; they were principally attributed to hereditary tendencies, perverted humors, and various types of inflammation.

Klencke,² in 1843, was the first to demonstrate the infectious nature of "tubercle" by inoculating rabbits in the vein of the neck with "tubercle cells" and producing general miliary tuberculosis in these animals. Klencke, however, hardly realized the importance of his own discovery, and little attention was paid to his work until, in 1865, Villemin,³ by extensive and carefully controlled inoculation experiments on rabbits, confirmed Klencke's views and demonstrated beyond doubt the infectiousness of tubercle by reinoculation from animal to animal. He also obtained evidence of specificity, as control inoculations with other morbid material, such as cancer, pus, bits of pneumonic lung, etc., remained negative. He was as successful with material derived

from the *Perlsucht* disease of cattle as with human tubercle, and thus pointed out the identity of the tuberculous process in man and animals. From his experiments he reached the conclusion that the tubercle itself had nothing specific in its histology, and that the disease must be due to a germ. Scrofula, he considered sometimes tuberculous and at others non-tuberculous, as he could not always produce the disease in his experimental animals with scrofulous products.

Animal experiments were first used as a means of diagnosis by Marcet,⁴ in 1867, who demonstrated the tuberculous nature of material from suspected cases of tuberculosis by producing with it generalized tuberculosis in guinea-pigs, and Edwin Klebs⁵ demonstrated by animal inoculations in 1868 that the sputum of tuberculous patients contained an infective element which was capable of producing the disease in guinea-pigs. Damsche,⁶ in 1882, used animal inoculations to make a diagnosis of urogenital tuberculosis.

While Klencke's and Villemin's results were accepted, the strife for many years continued over the interpretation of these results. Meanwhile, the positive proof as to the infectiousness of tuberculosis, obtained by subcutaneous inoculation in animals, was supplemented by evidence brought to light by inhalation and ingestion of tuberculous material. Schweninger,⁷ in 1866, at first failed to infect dogs by inhalations of phthisical sputum, but later—1886—he succeeded; and Lippl,⁸ in 1877, produced pulmonary tubercles in rabbits by insufflation of fluid sputum from man through a tracheal fistula. Tappeiner,⁹ in a series of experiments which lasted from 1877 to 1888, demonstrated beyond doubt the infectiousness of phthisical sputum by inhalation experiments, his results being confirmed also by Bertheau¹⁰ in 1880. Tappeiner, in 1880, had failed to infect rabbits by exposing them to the breath of coughing consumptives, and concluded that the infection must be conveyed, if at all, by dried sputum arising as dust, and not by the breath of the patient. The danger of this mode of infection received practical confirmation when his servant, whom he had warned to protect himself from inhaling the dust of the room in which the animals were confined, developed pulmonary tuberculosis and died of it. Giboux,¹¹ in 1882, however, succeeded in infecting rabbits by making consumptives cough in the boxes in which these animals were confined, and thus demonstrated, long before Flüge's classical experiments, the dangers of sprayed particles of sputum from phthisical patients.

Feeding experiments also added irrefutable evidence of the infectious nature of tuberculous material, as well as bringing many facts to support the hitherto unsuspected identity of the *Perlsucht* disease of cattle and human tubercle, by proving that both produced tuberculous disease in animals when taken into the stomach.

4. Marcet, William: The Inoculation of Animals as a Means of Diagnosis in Tuberculous Phthisis, Med.-chir. Tr., London, 1867, p. 437.

5. Klebs, E.: Ueber Entstehung der Tuberkulose und ihre Verbreitung im Körper, Virchows Arch. f. path. Anat., 1868, xlv.

6. Damsche: Die Impfbarkeit der Tuberkulose als diagnostisches Hilfsmittel bei Urogenitalerkrankungen, Deutsch. Arch. f. klin. Med., 1882, xxxi, 78 ff.

7. Schweninger, E.: Ueber künstlicher Erzeugung der Tuberkulose, Gesammelte Arbeiten von Dr. E. Schweninger, Berlin, 1886, I, 242.

8. Lippl: Amtl. Ber. d. 50. Versamml. deutsch. Naturforsch. u. Aerzte, 1877, p. 268.

9. Tappeiner: Amtl. Ber. d. 50. Versamml. deutsch. Naturforsch. u. Aerzte, 1877, p. 269. Wien. med. Presse, 1877, No. 43.

10. Bertheau, H.: Zur Lehre von der Inhalationstuberkulose, Deutsch. Arch. f. klin. Med., 1880, xxvi, 523.

11. Giboux: Inoculabilité de la tuberculose par la respiration des phthisiques, Compt. rend. 1882, xciv, 1391. Centrabl. f. d. med. Wissensch., 1882, p. 716.

* This article is one of a series issued in pamphlet form by the Council on Defense of Medical Research of the American Medical Association for circulation among the public. Six of these pamphlets are now ready, taking up the questions of ethics, diagnosis, cancer, vaccination, etc. See advertising page 8, in this issue.

1. Sylvius: Opera Med. Traj. ad Rhenum, 1695.
2. Klencke: Untersuchungen und Erfahrung im Gebiete der Anatomie, Physiologie, Mikrologie und wissenschaftlichen Medizin, Leipzig, 1843, I, Abschnitt 11: Mikropisch-pathologische Beobachtungen über die Natur des Contagium, Paragraph 24. See also II, Abschnitt 1, Par. 16.

3. Villemin, J. A.: Cause et nature de la tuberculose (first memoir), 1865. Etudes sur la tuberculose, 1868.