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THOS. W. KAY, M. D.,

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THOS. W. KAY, M. D.,

Ex-Surgeon to Johanniter Hospital at Beyrout; Member of American Medical Association; Member of the Ninth International Congress, etc.

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ENUCLEATION OF TUBERCULOUS GLANDS.

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When William Gibson, in 1831, in writing of scrofula, said "the lymphatic glands are undoubtedly more susceptible to the disease than other parts, especially the glands of the neck and mesentery—next to these the lungs and spongy parts of the bones are most apt to suffer,"[1] he was undoubtedly speaking of tubercle, which Rokitansky says occurs, in adults, most frequently in the lungs, and in children in the lymphatic glands.[2] Rindfleisch and Schüppel unhesitatingly assert that scrofulous glands are always tuberculous.[3] Mr. Erichsen does not take so bold stand as that, but he suggests that "the inflammatory products of scrofula form a suitable nidus for the specific virus of tubercle." Perhaps it may be just as well to give here Mr. Erichsen's definitions of scrofula and of tubercle, for they seem to me to be excellent. "Scrofula," says he, "is a constitutional condition predisposing to chronic inflammations of a peculiar type, affecting various parts or tissues." "Tubercle is a growth of a new tissue, also presenting peculiar anatomical and vital changes"[5]—*i. e.*, the one is the vulnerability to, and the other the product of the specific poison.

The clinical aspect of scrofulous glands are well known to all —indolent, nodular, painless tumors, which may be single or multiple, and which, on removal and section, will be found to

1 "Gibson's Surgery," Third ed., Vol. II, p. 199.
2 "Holmes' System of Surgery." Vol. I, p. 163.
3 "Cyc. of Med.." Ziem., Vol. V, p. 641.
4 "Sci. and Art of Surg.," Erichsen, Eighth ed., Vol. I, p. 1017.
5 *Ibid.*, p. 1017.

be pale, soft and friable, with, or without, one or many small nodules, or cavities, filled with a purulent, caseous, or cretaceous substance.

These cavities may be separate, or they may be connected, and in many cases all of the gland substance has given place to a curdy pus, which is contained in a capsule. I have frequently met with glands exhibiting all of these changes, except the cretaceous. The microscope reveals the same structure in these caseous nodules that exists in tubercle—viz.: giant-cells with bacilli, an epitheloid zone, lymphoid corpuscles, and an absence of blood-vessels.[6] [7] Mr. Koch claims that the bacillus tuberculosis is the cause of all kinds of tuberculosis, and that it is always present. In this he is ably supported by Flügge, Klebs and many others.[8] [9] The colonies of micrococci described by Malassez and Vaginal as occurring in some forms of tuberculosis, produced the true bacillus tuberculosis after several cultivations and inoculations.[10]

The bacilli are found chiefly in the giant cells and few or none are found in the centre of the cheesy mass, but since Mr. Koch has produced infection by inoculation from this, it is probable that it contains unstainable spores.[11] Klebs pronounces scrofula and tubercle identical, because inoculation from the lymph glands of the one produces not only single tubercles, which are of little value, but also the whole series of changes found in tuberculosis.[12]

With such evidence as this, and from such unquestionable authorities, one must accept the identity of scrofulous and tuberculous deposits.

The question of heredity is important in this connection.

Tuberculosis may be acquired, according to Savery.[13] Klebs says tuberculosis of the fœtus and suckling are of the greatest rarity, and mentions one reported by Scanzoni in a fœtus still-

6 *Ibid.*, p. 1016.
7 "Die Microorganismen," Flügge, p. 212.
8 *Ibid.*, p. 217.
9 "Allg. Pathol." Klebs, p. 220.
10 "Microbes et Maladies," Schmidt, p. 135.
11 "Die Microorganismen," Flugge, p. 211-214.
12 "Allg. Pathol.," Klebs, p. 225.
13 "Holmes' System of Surgery," Vol. V, p. 169.

born, where tuberculous deposits were found in the lungs and diaphragm, but the possibility of syphilis could not be excluded.[14] However, an unquestionable case of true tuberculosis has been found in a three-months' cow fœtus.[15] * The fœtuses of animals dying after tuberculous inoculation are always free from the disease. The fact that healthy children may be born of tuberculous mothers is well known. Epstein, of Prag, in two hundred autopsies, made on infants born of tuberculous mothers, but wet-nursed by healthy women, found tubercle in only one case, of a ten-weeks' old infant.[16] The disease then, is rarely inherited, but acquired, the poison, as a rule, entering the system by the respiratory and alimentary passages—chiefly by the former in adults, and the latter in children,[17] [18]though Paget says he has seen scrofulous lymphatic glands in persons over sixty years of age, and in one instance the patient was ninety.[19] After entering the system, the bacillus must find a suitable nidus in order to reproduce properly. and this is not furnished by healthy tissues.[20] The most suitable nidus is probably furnished by the mucuous membranes of scrofulous children who are suffering from catarrh. Here we find a cellular infiltration of the sub-mucous connective tissue, which is very persistent, and so thick that it touches the epithelium.[21] This submucosa is also the first seat of miliary tubercles.[22] The spores, or bacilli, having entered the follicles or the submucosa,[23] are probably carried to the glands by the lymphatics,[24] [25] or by wandering cells which change into epithelioid cells, and which in their turn give place to giant cells.[26] An interesting case is reported by Demme, of an eight-year-old

14 "Allg. Pathol.," Klebs, p. 225.

15 *Ibid*., p. 225.

*Two other cases were reported at the Medico-Chirurgical Society, at Liège, by M M Mulvoz and Browvier—the one in an eight-months', and the other in a six-weeks fœtal calf.

16 *Ibid*., p. 226.

17 Sci. and Art. of Surg.," Erichsen, Eighth ed., Vol. I, p. 1018.

18 "Allg Pathol.," Klebs, p. 220.

19 "Clin. Lects. and Essays," Sir James Paget, London 1875, p. 344.

20 "Sci. and Art of Surg.," Eighth ed., Vol. I, p. 1013-1020.

21 "Cyc. of Med.," Ziem., Vol. V., p. 637.

22 *Ibid*., p. 637.

23 "Allg. Pathol." Klebs, p. 236.

24 "Cyc. of Med." Ziem., Vol. V., p. 636.

25 "Die Microorganismen," Flügge, p. 220.

26 *Ibid*., p. 212.

child who died from meningitis. The child was of healthy parentage, but lived in a tuberculous family, and before the development of meningitis, bacilli were found in the nasal secretion, the nodules and the ulcers accompanying an ozæna.[27] † The rapidity of absorption of the tubercular poison depends much on its physical condition. Intestinal ulceration occurs in those animals fed on caseous glands or tuberculous masses. When filtered, the poison reaches the glands without affecting the mucous membrane, and if it fails to stop in the gland, it passes into the blood and becomes constitutional.[28] The disease may be localized from the swelling and obstruction of the lymphatics, and remain quiescent for a long time, or the tuberculous deposit may be entirely absorbed ; but if it is not, it may at any time be the cause of systemic infection.[30] [31] Clinical facts bear out these statements, the hospital reports of the University College of London, showing pulmonary tuberculosis in 25 per cent. of the deaths occurring in individuals suffering from strumous diseases of different kinds, against 4.4 per cent in deaths from chronic surgical affections.[32] Klebs says it is doubtful if the greater part of pulmonary tuberculosis is primary.[33] It then follows, that it is well to remove all depots from which infection may take place, and Mr. Bryant relates a case in which progressive lung disease was arrested by the removal of a diseased limb.[34] I also recall a case in which an obstinate cough, with expectoration, ceased after I removed an arm at the shoulder-joint for disease of the humerous and scapula. It is not uncommon to find only one gland affected, and it is the rule for glands in only one locality to be diseased. In 155 cases Treves tells us that the cervical glands alone were affected in 131 cases ; those of the cervix and

27 "Allg. Pathol.," Klebs, p. 223.

†At the Eighteenth Congress of German Surgeons, held last April, Cornet reported the result of many experimental inoculations on animals, showing that the tubercle bacilli can traverse any part of the healthy mucous membrane. The glands become tuberculous in every case, but in only two, of long standing, were the lungs or other portions of the body affected.

28 *Ibid.*, p. 220.

29 "Sci. and Art of Surg.," Erichsen, Eighth ed., Vol. I., p. 1013.

30 "Holmes' System of Surgery," Vol. I, p. 163.

31 "Allg. Pathol.," Klebs, p. 235.

32 "Sci. and Art of Surg.," Erichsen, Eighth ed., Vol. I., p. 1017.

33 "Allg. Pathol.," Klebs, p. 222.

34 "Pract. of Surg.," Bryant, American ed., p. 20.

axilla in 12 ; groin in 6 , axilla in 4 ; cervix and groin in 1 ; and groin and axilla in 1.[35] From the same source, we also learn that of 509 cases of scrofula at Margate Infirmary, only 56 exhibited more than one gross manifestation of the disease.[36] The rule, then, would seem to be for tuberculous deposits to be at first local and within reach of the surgeon. Some years ago, Niemeyer suggested that the danger of pulmonary tuberculosis resulting from cheesy inflammatory deposits might in the future be an indication for the extirpation of lymphatic tumors,[37] and Hueter adopted this plan.[38] Klebs holds the same views on the subject, saying that tuberculous masses, as in scrofulous, lymphatic glands, can often be removed with the best results, and so also all parts which are the seat of local tuberculous deposits.[39]

I have advocated this plan for some years, and have had opportunity of adopting it in many cases, with the best results, during my residence in Syria. The glands removed have varied from the size of a filbert to that of a goose's egg, and have presented all the changes that are found in tuberculous glands. Many of them had suppurated, and in some cases had opened on the surface by long fistulous tracks. Cases of this kind were very difficult to enucleate, and in several cases I had to content myself with laying open the sinuses and scraping out the diseased gland substance by means of a sharp curette. But the capsule of the gland should be removed, if possible, for it is frequently found to be thick and infiltrated with tuberculous deposits.[40] The number of glands removed from one individual has varied from one to twenty, or more, and these were, as a rule, confined to one region of the body, though in many cases corresponding regions of either side were affected. After the skin over the tumors has been divided, most of the work is done with the handle of the scalpel, thereby lessening the danger and hemorrhage. I find a small pair of vulsellum forceps of great service, for by these the gland can be seized, lifted up, and separated

35 "Scrofula and its Gland Diseases, Treves, p. 125.
36 *Ibid.*, p. 57.
37 "Holmes' System of Surgery," Vol. I, p. 173.
38 "Cyc. of Med." Ziem.. Vol. V. p. 641.
39 "Allg. Pathol." Klebs,p. 235.
40 "Sci. and Art of Surg.," Erichsen, Eighth ed., Vol. I, p. 1016.

from the surrounding tissues with little trouble. All bleeding points are immediately clamped with hæmostic forceps and fine gut ligatures applied before the wound is closed. Strict antisepsis is used before, during, and after the operation, a drainage-tube inserted, and dry dressings applied. Healing has been rapid in all cases, and the scars following the use of the knife have caused very little disfiguration. The danger attending the enucleation of nonsuppurating glands is of little moment, but where suppuration has taken place and the capsule is adherent to the surrounding tissues, accidents are sometimes unavoidable. In Case No. XI, while trying to dissect out the capsule of a large suppurating gland, I had the misfortune to open the right internal jugular vein. Ligation above and below the wound was followed by a rise of temperature to 104° F., which fell the next day to normal, and a rapid recovery followed. In case No. IV there was loss of sensation to pain, for a while, in that part of the integument of the left shoulder supplied by the acromial branch of the third and fourth cervical nerves, but this was of short duration. Enlarged glands from mechanical irritation should not be interfered with, nor should scrofulous glands in the early stages of enlargement; but when they are of long standing, and do not yield to general and local treatment, the surgeon should hesitate no longer to interfere.

It is well, both before and after the operation, to put the patient on such constitutional treatment as is best adapted to the case.

The following are brief notes of a few cases on which I have operated:

Case I.—Joseph, aged twenty-eight. Removed one suppurating gland, as large as a walnut, from between the ant. bellies of digastric muscles, April 19th, 1887, and discharged, cured, April 28th.

Case. II.—Mohammed, aged forty-five. Removed one caseous gland, size of hen's egg, from left sup. carot. triang., and three, size of walnuts, from right sup. carot. triang., September 14; also, two, size of walnuts, from right occip. triang., September 29, and discharged, cured, October 5, 1887.

CASE III.—Nicola, aged 40. Removed three enlarged glands, size of walnuts, from right sup. carot., triangle. October 22, and discharged, cured, November 3, 1887.

CASE IV.—Fatmeh, aged twenty-eight. Removed four suppurating glands, size of almonds, from left occip. triang.,and one, size of walnut, from left submax. triang., December 30, 1887; also, one large suppurating mass from left subclav. triang., besides laying open and scraping out two sinuses in left sup. carot. triang., March 21, and discharged, cured, April 12, 1888.

CASE V.—Hajar, aged forty-five. Removed two suppurating glands, size of walnuts, and one enlarged gland, size of almond, from right sup. carot. triang., December 9, 1887; also, one, size of almond, from left submax. triang,, January 4, 1888. Discharged, cured, January 23.

CASE VI.—Fatmeh, aged twelve. Removed, through a seven-inch incision, a chain of enlarged and caseous glands, varying from size of filbert to that of hen's egg, from right occipt. and right subclav. triangles, February 17; also, six caseous glands, size of walnuts, from left occipt. triang., May 6, and discharged, cured, May 22.

CASE VII.—Ismail, aged thirty-five. Removed one suppurating gland, size of hen's egg, from left sup. carot. triang., February 28; also, three caseous glands, size of filberts, from left submax, triang., March 13, and discharged, cured, on March 24th.

CASE VIII.—Zakieh, aged twelve. Removed a long chain of enlarged and caseous glands, from size of filbert to that of almond, from left occipt. triang., February 29; also, six caseous glands, size of almonds, from right occipt. triang., and one from right sup. carot. tring., March 13. Discharged, cured, March 29th.

CASE IX.—Bendali, aged twenty-one. Removed two caseous glands, size of almonds, from right submax. triang.; one, size of walnut, from right subclav. triang.; and three, size of almonds, from right inf. carot. triang., April 3. Discharged, nearly cured, April 8.

CASE X.—Ameneh, aged ten. Removed three caseous glands, size of walnuts, from left submax. triang., and five, size of almonds, from left occipt. triang., April 4 ; also, five from right axillary space, April 21. Discharged, cured, May 3.

CASE XI.—Mansur, aged twenty-eight. Removed cystic gland, size of goose's egg, from sup. part of right sup. carot. triang., April 5. In removing, opened the int. jugular vein. Ligated above and below wound. Used antiseptics and drainage, as in all cases, and discharged, cured, April 19.

CASE XII.—Girius, aged thirty. Removed enlarged gland, size of walnut, from between ant. bellies of digastrics in April, and discharged, cured, in three days.

CASE XIII.—Labeeby, aged twenty-three. Removed, for native doctor, a mass of suppurating, cystic and caseous glands, size of fist, from right axilla, in May, and two weeks later a similar mass from the left axilla. She was discharged, cured, ten days later.

CASE XIV.—Zakieh, aged thirteen. Removed seven enlarged glands, size of almonds, from right sup. carot. triang. and right submax triang.; and five, size of almonds, from left sup. carot triang., April 11. Discharged, cured, April 20.

Case XV.—Raschid, aged seven. Removed two suppurating glands from right occipt. ; one caseous, size of walnut, from left sup. carot. ; two enlarged, size of almonds, from right submax., and one caseous, size of almond, from left submax. triangles, April 27. Discharged, cured, May 7.

CASE XVI.—Abdu, aged ten, Removed one caseous gland, size of walnut, and one suppurating mass from sup. carot. triang., April 24. Discharged, cured, May 7.

CASE XVII.—Shehadeh, aged eight. Removed three enlarged glands, size of walnuts, from above left int. condyle, of humerus May 27. Discharged, cured, June 13.

CASE XVIII.—Sahdeen, aged twenty. Removed three caseous glands, size of almonds, from right sup. carot. triang., and two enlarged, size of filberts, from right occipt. triang., March 28. Discharged, cured, April 5.

CASE XIX.—Asmeh, aged fifteen. Removed one caseous gland, size of walnut, from right axilla, and scraped out four suppurating masses from left occipt., and one from left subclav. triangles, May 29. Discharged, cured, June 21.

CASE XX.—Ibrahim, aged eight. Removed four caseous glands, size of walnuts, from left sup. carot. triang., and two enlarged, size of almonds, from left occipt. triang., June 22. Discharged, cured, July 16.