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# LARYNGEAL HEMORRHAGE.

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The name laryngeal hemorrhage is used for a variety of affections which differ widely in regard to cause, nature of the disease, and severity of the symptoms, and have in common only the effusion of blood into some part of the larynx. Investigation will be facilitated by first ascertaining whether the effusion took place on the free surface of the mucous membrane, or into the submucous tissue. Submucous hemorrhages are often grave in character, and in the majority of cases due to some extrinsic cause, trauma, for instance. Surface bleeding arises from a number of causes, of which we may mention foreign bodies, ulcerations subsequent to syphilis, cancer, hæmophilia, further catarrhal conditions, and sometimes from no assignable cause. The name, laryngitis hæmorrhagica, is generally applied on the continent to hemorrhages into the interior of the larynx, which do not originate from any lesion, but are considered an independent malady, generally connected with catarrhal laryngitis. Although it cannot be denied that the extravasation of blood is in many instances a symptom, however rare, of an existing cause, there are undoubtedly cases in which hemorrhages occur without previous disease. Inasmuch as the term laryngeal hemorrhage is applicable to such a variety of different conditions, it seems advisable, in the opinion of the writer, to retain the name laryngitis hæmorrhagica, and to designate by it those effusions of blood on the free surface, or under the epithelium of the mucous membrane, which are of a so-called idiopathic character, and not due to any constitutional disease or traumatic origin.

A case of this nature recently came under my observation. Patient, male, 25 years of age, gave the following history: His sickness began with hoarseness, which gradually increased within one week to complete aphonia, lasting two days. At the same time dyspnœa set in, which was greater in the morning and evening than during the rest of the day. Four

days later, November 23, 1884, thirteen days after the onset, he expectorated blood the first time when walking home to dinner. No unusual exertion or excitement preceded the bleeding, which this time, as well as later, occurred without previous cough, and, with but one exception, at the same hour. The quantity of blood lost was always small, and amounted to about half a teaspoonful. After the second hemorrhage the next day, he sought medical aid.

Patient is a short-set, robust man, of fair intelligence, with muscles well developed, and very little superfluous adipose tissue. He appears to be about five feet seven inches high, weighs 160 pounds, and has a good family record. Five years ago he suffered from malaria for eight months at his home (Galizia), but otherwise was always well. He came to New York City in 1882, and is at present making button-holes. His workshop is well ventilated; his residence, aside from tenement life, healthy.

Physical examination of the chest and other organs revealed nothing abnormal. The laryngoscopical mirror showed symptoms of intense catarrh, reddish-gray discoloration of the vocal cords, and general congestion and turgescence of the mucous membrane, especially of the ventricular bands, which thereby greatly interfered with inspection of the cords. At the junction of the anterior and middle third of the left band was a bleeding spot of the size of a pin's head, from which the blood could be seen oozing after being mopped up with the cotton carrier. Dark coagula were visible along the whole free border, and also below the left cord.

The following day his dyspnœa increased, but he had not expectorated blood since the previous day. The greater part of both ventricular bands was covered with crusts of coagulated blood, which were firmly adherent, and both cords presented the same appearance as the left one did the day before. This picture was the acme of the disease, and henceforth his symptoms became less aggravating. After another slight hemorrhage the next day, only the posterior surface of the epiglottis and the anterior part of the ventricular bands were covered with coagula. He spit blood twice more on the two following days, the last time on the sixth day after the first attack. The dyspnœa and congestion of the mucous membrane gradually decreased, and when he ceased attendance on the tenth day, December 2d, his voice was better, his breathing free, and his general condition good. As there were at no time any threatening symptoms present, the treatment consisted simply in resolvent inhalations and topical applications of perchloride of iron and nitrate of silver alternately. When seen eight weeks later, he was as well and hearty as ever.

From the description it will be seen that this case ranks amongst those of laryngitis hæmorrhagica, as defined above. The literature, as far as accessible to the writer, is not so scant as it is generally supposed, and would assume considerable proportions if all cases observed were published. Semeleder[1] was the first to speak of dark-red vocal cords and a fresh coagulum on the anterior third of the right ventricular band in a man who the day before had violent vomiting after too hearty a meal, and streaks of blood in his expectoration. Another man with the same symptom persisting for three weeks had a small coagulum on the left band.

[1] Semeleder, F., die Laryngoscopie, Wien, Braumueller, 1863, p. 33.

Lewin's[1] patient had croupy cough, and great dyspnœa at intervals. A bloody effusion extended over both vocal cords. A similar condition was present in a lady patient, who also spit blood. Lewin,[2] besides, relates a case which, although not properly belonging to this chapter, is interesting enough to be briefly stated. An American medical student, previously accustomed to vigorous outdoor exercise, devoted himself ardently to his studies. He acquired a cold, followed by tickling in the pharynx, and repeatedly coughed up small quantities of blood. The lungs were declared intact by another physician, but Lewin found the anterior tracheal wall way down covered with bloody mucus, and saw how a small stream of blood appeared at times on the posterior part of the larynx, gradually extending to the upper part of the interarytenoid space. He concluded that the source of the bleeding was in the bronchi, and expressed his fear that it was the forerunner of constitutional disease. A few months later the patient had a severer hemorrhage, and symptoms of incipient phthisis developed.

Navratil's[3] case occurred in winter, when suddenly very cold weather set in. A dark-brown layer covered the cords, which, after removal of the extravasated blood, appeared red and turgescent. Several local applications made it finally disappear.

Mandl[4] saw effusion of blood from the ventriculi Morgagni in an aged lady. Tobold[5] mentions spontaneous bleeding on the border of the epiglottis and surface of the cords in a healthy man, and a bleeding vessel on the right cord in a delicate government clerk, both patients being subject to preceding catarrhal laryngitis. Concentrated solution of alum was the treatment adopted.

Fraenkel's[6] case is the most instructive one on account of the quantity of blood lost, and of the duration of the disease. A woman in the last month of her fourth pregnancy, who had daily vomiting, but otherwise was healthy, complained of hoarseness and dyspnœa, and expectorated blood four days before seeking advice. The mucous membrane of the larynx was considerably swollen, especially on the posterior wall; it was of deep-red color, the vocal cords of blackish redness. Small dark tumors adhered to the cords and were seen below them, hiding the trachea from view. The distress of breathing ceased as soon as small dark blood-crusts were expectorated, and then parenchymatous bleeding from the cords and posterior wall could distinctly be seen. Fraenkel had occasion to ex-

[1] Lewin, J., die Inhalationstherapie, ii. edition, Berlin, Hirschwald, 1865, p. 328.

[2] Lewin, l. c. p. 310.

[3] Navratil, E., Laryngologische Beiträge, Leipzig, Zechel, 1871, p. 18.

[4] Mandl, L., Traité pratique des maladies du larynx, Paris, Baillière, 1872, p. 644.

[5] Tobold, A., Laryngoscopie und Kehlkopfkrankheiten, Berlin, Hirschwald, 1874, p. 142.

[6] Fraenkel, B., Berliner klinische Wochenschrift, No. 2, 1874.

amine the patient during one of her attacks, changing from comparative ease to severe dyspnœa and relief, as soon as the crusts were coughed up. For several days these symptoms recurred every half hour, and four weeks after the first, the patient had the last hemorrhage. The amount of blood lost was once a half, and at another time a whole, cupful. After her confinement the bleeding stopped, but the catarrhal symptoms remained for some time later. It may be stated that the weather was extremely inclement during that season.

Boecker's[1] patient presented similar features—catarrh, sanguineous discharge one week before examination, and the same appearance of the mucous membrane and cords. Dyspnœa was brought on only by forced inhalation; the hemorrhage yielded to treatment after several days. Boecker used inhalations of chloride of sodium, whilst Fraenkel applied nitrate of silver 1 to 15, and 1 to 30. A second case of Boecker—extravasation of blood into the mucous membrane after cauterization of an ulcer—cannot well be classified under our heading.

Hartmann[2] saw bleeding in a member of a singing society, who spit up blood of a florid color and two to three ounces in quantity after a rehearsal, and also the following morning. No unusual strain of the voice or catarrhal symptoms preceded the accident. The blood was oozing from a largely ruptured capillary vessel upon the upper surface about the middle of the left ventricular band, and, trickling down into the glottis, produced paroxysms of dyspnœa, cough, and expectoration. The application of a strong solution of ferric alum to the seat of the hemorrhage readily controlled the bleeding.

Wagner's[3] patient was a physician who had several profuse hemorrhages from the larynx within four months. When first examined he had general hyperæmia of the mucous membrane; the blood came from the left band and ventricle posteriorly. Repeated examinations of the chest gave negative results, and the doctor lived to become an active worker in the profession.

Mackenzie[4] confines himself to saying that he met with a few cases, and that in these the congestion was slight, and that the hemorrhage almost always resulted from some violent expiratory effort, such as coughing or vomiting.

Smith's[5] patient was an actor, who frequently spit blood in the course of fourteen months—less during the day, more during and after the

[1] Boecker, A., Berliner klinische Wochenschrift, No. 15, 1874.

[2] Hartmann, J. H., Transactions of the American Laryngological Association, 1879, p. 275.

[3] Wagner, Clinton, ibid. p. 279.

[4] Mackenzie, Morell, Manual of Diseases of the Throat and Nose, vol. i. London, Churchill, 1880, p. 268.

[5] Smith, A. H., Archives of Laryngology, vol. i., No. 1, 1880, p. 65.

exertion of the evening. The blood was seen coming from the right vocal cord near its attachment to the vocal process of the arytenoid cartilage. A solution of perchloride of iron proved effectual; but, as the patient would not give up his engagement, and as the exciting cause remained, treatment was abandoned.

Effusion of blood under the epithelium of the left cord in its whole length in a woman with pharyngo-laryngitis was seen by Schnitzler,[1] who also observed extravasation in both cords in a girl with diphtheritic paralysis. He besides mentions hemorrhages of the left cords occurring in two lady singers after great vocal exertion, returning in the course of three years, and successfully relieved in two weeks by insufflations of acetate of lead and nitrate of silver.

Bettman[2] describes the case of a widow, who, five days after exposure to a draught, spit at night half a teacupful of blood during a violent cough. The entire laryngeal and tracheal mucous membrane was deep red, the vocal cords hyperæmic, the ventricular bands thickened and almost livid in color. They were covered with fresh and dried blood, and showed two symmetrical bleeding spots on their lateral surfaces. After a similar second attack, an application of fused nitrate of silver and benzoin inhalations stopped the bleeding.

Schaeffer[3] observed sanguinolent expectoration and blood-crusts on the cords, below them, and also in the whole larynx in three female cooks, who, exposed to rapid changes of temperature, had intense laryngitis, with cough and dyspnœa. The fourth patient, a robust servant-girl, showed dried coagula, extending over the whole larynx down to the upper part of the trachea; she was cured within six days by internal administration of iodide of potassium, additional to insufflations of boracic acid and iodoform. Schaeffer ascribes the quicker result in the last case to the iodide of potassium. All four were from 24 to 30 years of age, and had cessation of menses during their sickness; the last one was attacked with the bleeding at the time she ought to have menstruated (vicarious menstruation).

Stepanow[4] alludes to the case of a phthisical girl with bloody sputa, swelling of the bands, and coagula below the cords, and then gives the history of two patients, who, according to him, with those of Fraenkel, Boecker, and perhaps Lewin alone, can be called true cases of laryngitis hæmorrhagica. The first was that of a female hospital nurse, who caught a severe cold, became aphonic, and spit a tablespoonful of blood in bed on the third day. The bleeding was always of the same quantity, and occurred either daily or every other day. When examined on the tenth

[1] Schnitzler, I., Wiener medizinische Presse, No. 38, 1880.
[2] Bettman, J., Chicago Medical Journal and Examiner, August, 1882.
[3] Schaeffer, M., Deutsche medicinische Wochenschrift, No. 2, 1883.
[4] Stepanow, J. M., Monatschrift für Ohrenheilkunde, etc., No. 1, 1884.

day the cords were pale red; dark, thick coagula were visible along the whole length of their lower surface, coalescent at the anterior angle. Pigments of nitrate of silver made the coagula disappear after four or five days, but several relapses occurred, one after applying electricity on account of diminished tension of the cords, another during a paroxysm of cough after topical treatment. After a little over three weeks the bleeding stopped, and two weeks later the catarrhal laryngitis also disappeared. The other patient Stepanow saw only once; she had similar symptoms, expectorated blood generally in the morning after a severe cough, and was sick over one month. It is not quite evident why Stepanow claims the name laryngitis hæmorrhagica for his two cases with those mentioned above, and quoted by him exclusively. He lays stress on the influence of sex (female), the longer duration of the disease, on the mildness of catarrhal symptoms in some instances, as in his own case, which, by the way, had hoarseness and aphonia before bleeding, and on the origin of the hemorrhage from the vocal cords.

If the term laryngitis hæmorrhagica has to be narrowed down to such limits, our synopsis of the literature will show that some cases even surpass Stepanow's observation, partly in duration, partly in quantity of blood expectorated, and therefore deserve the same title.

Ingalls[1] calls his case one of submucous infiltration of blood in the left vocal cord, but, as it resembles that of Schnitzler's so much, it is included here. The patient, a merchant, complained of sudden hoarseness and discomfort in the larynx one morning, and on examination the left cord was found of a brownish-red hue, about twice its normal size. Iodoform powder and cold compresses had considerably improved the color and size of the cord when seen two days later.

With a view of ascertaining to some degree the proportion of cases published to those observed, fifty-seven circular letters were addressed to laryngologists in different States. It was also deemed desirable to learn the opinion of the profession on the possible relationship between laryngeal hemorrhage and subsequent pulmonary phthisis. To these inquiries twenty-five answers were received, which are herewith thankfully acknowledged. Twelve observers had not met with cases, and of the remaining thirteen affirmative answers, eight gave special data. Two of these are recorded (Smith, Ingalls); the other six (Knight, of Boston, Seiler, Tauber, Lefferts, Morgan, Simrock) gave details of twenty-two cases of hemorrhages on the surface of the mucous membrane in different parts of the larynx, exclusive of those due to traumatic or dyscrasic agencies. Only three of these patients had subsequent phthisis, one six, another eight months after the laryngeal bleeding. The general tenor of the replies was, that hemorrhage from the larynx can be regarded as a precursor of phthisis in exceptional cases only. The data furnished further tend to sus-

[1] Ingalls, E. F., Journal of the American Medical Association, No. 15, 1884.

tain the assertion made in this paper, that many, if not the majority, of cases are not published, and that they are by no means so rare an occurrence as generally supposed.

Although not coming strictly within the scope of this article, there are laryngeal hemorrhages which are of sufficient interest to the laryngologist to deserve mention, and some of these will be briefly enumerated. Schroetter[1] and Schnitzler saw extravasation of blood in the larynx and trachea in morbus maculosis Werlhofii; and Rethi[2] describes two similar cases, one of which he attributes to hæmophilia. Electricity seems to have been the cause of a relapse in Stepanow's case; and Schroetter saw an effusion of blood on the cord under endolaryngeal application of the same agent. The latter also records the change of the left cord to an intensely red swelling after applying a two per cent. solution of nitrate of silver to the larynx of a gracile lady. Bettman (*l. c.*) writes of a gush of blood coming from a longitudinal cleft of a papillomatous excrescence on the posterior laryngeal wall in a man suspected of phthisis; and Schaeffer (*l. c.*) saw a blood coagulum covering a fissure of the mucous membrane of the incisura inter-arytenoidea in a girl with catarrhal laryngitis (cases of Stoerk's fissura mucosa, Virchow's *Archiv*, vol. lx. p. 274). Instances of hemorrhages brought on by foreign bodies or ulcers in the larynx are of no uncommon occurrence. Of the former, Gross[3] says: after swallowing foreign bodies, the patient throws up blood sometimes. The quantity is usually very small; now and then however it amounts to several ounces. (See also Hartman, *l. c.*) Gibb[4] had a lady patient afflicted with laryngitis from syphilitic dyscrasia. She spit blood of bright florid color three times on the day she was examined. There was no cough, but a breach of surface of very intensely red color in the mucous membrane above the left ventricle. Tuerk[5] relates the death of a patient from an erosion of the arteria lingualis, caused by a large syphilitic ulcer at the right extremity of the hyoid bone.

Submucous hemorrhages into the larynx and the adjacent parts deserve the interest of the specialist as well as of the general practitioner the more, as they are liable to cause sudden death under symptoms of acute œdema glottidis. The proper use of the laryngoscope at the right time is of the utmost importance, and will go far to save the patient's life. The causes are manifold, and cannot well be schematized. Pfeufer[6] lost a

[1] Schroetter, L., Jahresbericht der Klinik für Laryngoscopie. Wien, Braumueller, 1871, pp. 3 und 4.

[2] Rethi, L., Wiener medizinische Presse, Nos. 36 und 37, 1884.

[3] Gross, S. D., A Practical Treatise on Foreign Bodies in the Air-Passages. Philadelphia, Blanchard & Lea, 1854, p. 79.

[4] Gibb, Geo. D., on Diseases of the Throat and Windpipe. London, Churchill & Sons, 1864, p. 264.

[5] Tuerk, L., Klinik der Krankheiten des Kehlkopfs und der Luftröhre. Wien, Braumueller, 1866, p. 402.

[6] Pfeufer, L., Larynxapoplexie, Zeitschrift für rationelle Medizin, III. Band, 1845. p. 143 (not neue Folge III. Band, as generally erroneously quoted).

patient who had acquired severe stomatitis by excessive use of mercurial ointment, on account of parasites. On the third day after his reception into the hospital, symptoms of laryngeal stenosis set in, and he died from suffocation five hours afterwards. The post-mortem revealed a submucous effusion of blood of one square inch extension below the right ventricle. Ruehle[1] remarks that similar effusions have been observed in scurvy, and Immermann[2] says that the mucous membrane of the bronchi and larynx in this disease almost always shows extended and numerous ecchymoses, and is covered with bloody mucus. Poisoning with phosphorus produces like conditions, according to Gottstein.[3]

Bogros[4] relates two cases of hemorrhagic variola with exitus lethalis, both of which had sanguineous infiltration of the ary-epiglottic folds. In one of them they attained the thickness of two centimetres, and completely occluded the aditus laryngis. The glosso-epiglottic folds presented the same aspect, and interfered thereby with the mobility of the epiglottis. Suicidal attempts also contribute their share to this subject. Probably the oldest two on record are by Bobillier.[5] A workman cut himself with a razor, and inflicted a horizontal wound about six centimetres long between the hyoid bone and the thyroid cartilage. After it was dressed he felt well till the fifth day, when symptoms of laryngeal stenosis appeared, to which the patient succumbed. The post-mortem showed severance of the upper and anterior part of the thyroid cartilage and of the hyo-thyroid membrane, bloody infiltration of the right ary-epiglottic fold, and œdema of the laryngeal aperture. The second patient was a soldier who set a triangular wound of an inch and a half in length on the right side of the throat, which did not bleed until after four hours. A tampon stopped the bleeding towards the surface, but a soft bluish tumor formed on the left lower maxilla, and although the bandage was removed again, the patient died from suffocation. Dissection showed that the wound did not penetrate into the larynx, but that the entire cellular tissue of the anterior part of the throat was filled with blood, and the infiltration of the mucous membrane of the arytenoid cartilage was so great that the entrance to the larynx was obstructed. Another case belonging to this category is described by Otto[6] under the title : Hæmatoma of the Aryepiglottic Fold. It occurred in an insane man who cut himself in the throat with a pocket-knife, which wound was followed by a

[1] Ruehle, H., die Kehlkopfkrankheiten, Berlin, Hirschwald, 1861, p. 172.

[2] Immermann, H., in Ziemssen's Handbuch der speciellen Pathologie und Therapie, Leipzig, Vogel, 1876, Band XIII. part 2, p. 608.

[3] Gottstein, J., Krankheiten des Kehlkolpfs, etc., Wien, Toeplitz und Deutike, 1884.

[4] Bogros, M., Bulletin de la Société anatomique de Paris, 1847, p. 141 ; also in Sestier's Traité de l'angine laryngée œdémateuse, Paris, 1852, pp. 63 and 114.

[5] Bobillier, M., Recueil de memoirs de médecine, de chirurgie et de pharmacie militaire, tom. viii. 1820, pp. 140, 143 ; also in Sestier l. c. pp. 137, 138.

[6] Otto, A., Deutsches Archiv für klinische Medizin, vol. xxvii. 1880, p. 580.

brisk hemorrhage on the outside only. Feeling otherwise perfectly well, 17 hours later severe stridor suddenly set in, the patient rose in bed, and before the bandage could be loosened died within three minutes. At the post-mortem no injury of the larynx was found, but, after being taken out, two large black-red tumors appeared lying over the entrance to the larynx, representing the enormously swollen ary-epiglottic folds. The description and two good drawings show that these tumors commenced on both sides of the base of the tongue, growing thicker when forming the glosso-epiglottic folds, and extending downward to the posterior surface of the arytenoid cartilages. The right tumor was three centimetres thick and covered the upper part of the cricoid cartilage, whilst the left one had a thickness of two centimetres. Each one had an extension up and downwards; the latter was visible only after dissecting and drawing apart of the larynx. The left branch was smaller, and ended one centimetre above the ventricle; the right embraced the whole length of the right ventricular band, and ended in the ventricle, thereby completely occluding the cavum laryngis, when the latter was adjusted again. The remarkable feature of the case was that each of the two blood tumors was separate, and had no communication with the other. Of this fact Otto acknowledges himself unable to give a satisfactory explanation.

Lefferts[1] had a girl under treatment who carried a hat-block in her arms; in falling the block was caught between the right side of the neck and the curbstone. During night the respiration became labored, and next morning the right aryepiglottic fold was seen filled and enormously distended by effused blood, giving it a dark bluish-red appearance. The blood became readily absorbed, and after a few days all signs of the previous condition had disappeared.

Sommerbrodt[2] saw darkened suggillations in both cords, and a large one in the right ventricular band in a pregnant woman with acute laryngitis. He further gives the history of a girl who had the sensation of something sticking in her throat two hours after eating. The laryngoscope showed a black round mass of cherry stone size in the middle part of the posterior laryngeal wall. It was soft to the touch of the probe, and when lanced proved to be a submucous effusion of blood in the inter-arytenoid region. The same author[3] relates as a curiosity a case of hemorrhage into an unusually large cyst of the epiglottis after its puncture.

These examples of submucous hemorrhages, to which more could be readily added, may serve to illustrate sufficiently their difference in cause, character, and symptoms from hemorrhages on the free surface, and to show the propriety of giving the latter a distinctive name when not arising from some extrinsic cause.

[1] Lefferts, G. W., New York Medical Journal, vol. xxvi., August, 1877, p. 207.
[2] Sommerbrodt, J., Berliner klinische Wochenschrift, No. 13, 1878.
[3] Same, Breslauer ærztliche Zeitschrift, 1881, pp. 109–111.