

ACUTE PHLEGMONOUS EPIGLOTTIDITIS.*

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Acute phlegmonous epiglottitis is an infectious process involving the submucous structures of the epiglottis and contiguous tissues. In the four cases which came under my observation suppuration accompanied the inflammatory syndrome.

The disease is characterized by a sudden onset with distinct local manifestations. A seemingly normal person experiences a sharp pain in the throat accompanied by painful deglutition and a sense of fullness or obstruction in this region. The act of swallowing soon becomes an effort and the patient is very uncomfortable and distressed. The voice is distinct and guttural. These symptoms rapidly progress and may assume a serious aspect in a few hours.

At times the attack is ushered in with a chill, followed by a rise of temperature. Headache, nausea, and general malaise may accompany the other symptoms. The course of the temperature is not regular. It is highest at the invasion, falls abruptly as the process improves, and again ascends if complications arise. The pulse does not show much irregularity, but is weak and compressible.

On inspection, the pharynx appears normal or slightly congested. Further examination shows an enormously swollen epiglottis. It is dusky red in color, three or four times its natural size, and so obstructs the laryngeal orifice that it is impossible to obtain a clear view of that cavity. In all my patients the edema extended to the ary-epiglottic folds. In two instances this infiltration was so marked as to cause difficulty in breathing. One woman was brought into the Lebanon hospital in the ambulance in a cyanotic condition. In none of the cases was there any history of previous throat infection.

In this affection the edema is usually limited to the oral surface of the epiglottis, and does not extend to the laryngeal side of the cartilage. It rarely reaches the interior of the larynx. There is an anatomical reason for this peculiarity. Schnitzler¹ states that the submucosa of the lingual surface of the epiglottis is loosely attached while that of the laryngeal side is closely connected to the cartilage,

*Read at the Nineteenth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., May, 1913. and at the Meeting of the Laryngological Section of the New York Academy of Medicine, December, 1913.

except in the region of the nodule. Furthermore, the submucous cellular tissue of the epiglottis extends unbroken to the lateral walls of the pharynx and to the base of the tongue; thus accounting for the infiltration at this site in these cases and in infectious diseases of the tonsil and tongue.

While edema of the ventricular band is sometimes present we seldom see a serous extravasation of the true cord because of its closely attached musculature.

Acute edematous diseases of the epiglottis and larynx is rarely seen in children. In a series of 245 cases collected by Sestier,⁶ only twice did the affection occur as a primary lesion.

Our colleague, Clement F. Theisen,² called attention to acute infection of the epiglottis some years ago, in his very instructive report of three cases of angina epiglottidea anterior. The attack came on suddenly, with elevation of temperature and symptoms associated with an acute septic process. In all the cases there was considerable edema of the anterior surface of the epiglottis, and in two of them the ary-epiglottic folds were involved. The subjective symptoms were similar to those I have mentioned. No purulent secretion followed the surgical treatment. Nevertheless, the bacteriological examination of the exudate showed the presence of a mixed infection (staphylococcus and pneumococcus, and streptococcus and pneumococcus). These examinations were made from the secretion taken from the deeper tissues immediately after the infiltrated submucosa had been scarified and were not surface contaminations.

In two of my cases the same micrococci were found in the purulent discharge; therefore such cases should be considered acute primary infections. That this disease is not of recent origin is shown in Theisen's article, where he refers to a case reported by Mainwaring in 1791, showing all the typical symptoms.

The infiltration that follows the invasion of any pathogenic bacteria may be either serous or purulent in character.

In commenting upon the origin of septic infections of the throat, Semon³ calls attention to the conclusions of Dr. Max Jordan's⁴ investigations on the "Etiology of erysipelas." Jordan states: (1) There is no specific pus microbe. Together with the streptococcus and staphylococcus there are a great number of bacteria which will cause suppuration. (2) That pyogenic micrococci can produce all forms of inflammation besides the purulent variety. Semon further says that in these acute septic lesions, though they differ somewhat in their appearance and location, pathologically they are identical and only differ in their virulence. Furthermore, it is absolutely im-

possible to differentiate between the edematous and the purulent types of infection.

In considering this phase of the disease Theisen² quotes the observations of Welch, who found that when the pneumococcus of the edematogenic variety (*diplococcus lanceolatus*) was injected subcutaneously into the tissues of some of the lower animals, it uniformly produced extensive local subcutaneous edema. He expressed the opinion that the pneumococcus was a factor in the production of the edema in his cases.

That certain regions are primarily attacked is probably due to a break in the continuity of the mucous membrane, thus permitting ready entrance of the pathological factor. When we consider the numerous forms of bacteria constantly present in the cavities of the upper air passages, it is surprising that we do not encounter more cases of these serious infections. The tissue resistance must be very great.

In the cases herewith reported there were no distinct etiological factors to account for the infection of the epiglottis except in one instance. This patient had been in a sanitarium three years before for the treatment of pulmonary tuberculosis, but was discharged in good condition. Three of the patients were females, and the other was a young man. All recovered.

Case 1: This case has been previously reported. A young married woman, 25 years of age, retired in good health. At 7 o'clock the next morning she was suddenly awakened by a sharp pain in the throat, which persisted throughout the day, being much aggravated by swallowing. A feeling of fullness in the throat, with pain in the right ear were also experienced. Severe headaches, pains in the back and limbs, chilliness, nausea and vomiting were accompanying symptoms. The temperature at 3 p. m. of that day was 104°; pulse 90. Nothing abnormal was seen in the pharynx at that time by the attending physician. Twelve hours after the onset, a further examination was made by a laryngologist who found the epiglottis very edematous and partially hiding the laryngeal structures, which, however, were normal in appearance. Local treatment was instituted with free purgation. Ice was applied externally and internally, the larynx was sprayed with adrenalin and cocain solution, and the epiglottis was painted with a 50 per cent solution of argyrol. The edema gradually increased during the night, and an area of induration appeared on the lingual surface of the epiglottis near its base on the right side. The serous infiltration had spread to the adjacent pharyngeal wall, base of the tongue, and aryepiglottic folds. The

next morning at 8 o'clock, I saw the young woman in consultation. She was resting upright in bed, had an anxious expression, and spoke in a guttural voice with considerable difficulty. A constant effort to clear the secretion from the throat was noticed. Respiration was embarrassed and the patient gave the impression of being very ill. She remarked that the lump in the throat felt much larger than on the previous day, and that deglutition was extremely painful and difficult. Dr. Barnert, who was in attendance, stated that the local condition had increased very rapidly and had assumed a serious aspect.

On inspection, I found the pharynx quite normal, but the laryngeal mirror brought to view an enormously swollen epiglottis, dusky red in color. There was an indurated region at the base of the epiglottis more prominent than the neighboring tissues, while the edema extended to the base of the tongue and to both ary-epiglottic folds. There was also some infiltration of the right ventricular band, so that only a portion of the interior of the larynx and the left vocal cord was visible. The latter was not affected. Immediate operation was advised, and on making a deep incision into the indurated area we were much pleased to see about a half dram of foul-smelling pus come out. The epiglottis was further scarified to lessen the edema. Following this treatment, with the continuance of the adrenalin application, ice internally and externally, the local condition improved for several hours. Then a re-accumulation of pus caused a return of the edema at the base of the tongue and ary-epiglottic folds. Dr. Barnert reopened and dilated my original incision with a blunt instrument and gave exit to considerable retained purulent secretion. A leech was applied to each side of the neck and in two hours the patient felt greatly relieved. The temperature returned to normal, but deglutition remained quite painful until a moderate-sized slough came away. In a few days the epiglottis had resumed its normal outline. On the eighth day the patient was discharged from observation, with nothing to show for her alarming experience except a shallow depression at the site of the infection. Examination of the pus showed chains of streptococci and some encapsulated diplococci, probably the pneumococcus.

Case 2: Mrs. P., 26 years old, was brought to Lebanon Hospital in the ambulance during the night of December 15, 1912. Three days prior to admission she felt chilly and a sudden pain in her throat. She soon afterward experienced difficulty with pain in swallowing, also some disturbance in breathing, and a constant desire to clean the throat from secretion. She had an irritating cough.

These symptoms gradually became aggravated until she was brought to the hospital.

On her arrival, the house-surgeon found the patient cyanosed and dyspnoeic. In a muffled voice she complained of great distress and obstruction in her throat. Her general appearance indicated a grave condition. The throat was immediately examined but nothing abnormal was found in the pharynx except a marked pallor of the mucous membrane of the soft palate and pharyngeal wall. The epiglottis was edematous and greatly enlarged. The edema involved the ary-epiglottic folds on both sides, and only a restricted view of the interior of the larynx could be obtained, which did not seem to be involved. The temperature was 102°; respiration 28; pulse 94. Examination of the chest showed tactile and vocal fremitus slightly increased with some dullness on right side. Voice and breath-sounds could be heard distinctly, both anteriorly and posteriorly at the same side. No active symptoms were noted. Palliative treatment consisted of free purgation, adrenalin spray, 1-3000, with ice internally and externally. Tracheotomy instruments were kept at hand, as the woman's condition demanded that all possible precautions be observed. The symptoms subsided during the next few hours, and when I saw her the next day the face was but little cyanosed, though phonation and respiration were decidedly affected. She was fairly comfortable in an upright position. Deglutition was very difficult and painful, and only accomplished after considerable effort which brought on short paroxysms of coughing. The pharynx revealed nothing of especial moment excepting the pallor previously mentioned. The appearance of the epiglottis suggested a small sausage. It was bluish-red and almost entirely obstructed the superior opening of the larynx. No distinct picture of the interior could be seen. The edema was very decided in both ary-epiglottic folds; the arytenoids were very prominent, but showed the translucent nature of the infiltration.

Under cocain anesthesia, the epiglottis was incised, but only after several deep incisions did I locate the pus-cavity. In this instance also a considerable amount of foul-smelling pus was discharged. The ary-epiglottic region was incised to further drainage. The after-treatment consisted of half-hourly applications of cold 25 per cent ichthyol-glycerin mixture. Ice was applied to the neck and was given to the patient between treatments. Ten grains of urotropin in solution were administered every four hours for its antiseptic effect. Fluid diet was continued until the local condition permitted solid food. In twenty-four hours there was sufficient

improvement to lengthen the interval between the ichthyol applications. No attempt was made to disturb the patient during sleep so long as the respiration was not too labored. This method of treatment was continued until the subsidence of the local trouble. No further complications developed and the patient left the hospital at the end of eleven days, in good condition. The temperature never rose above 102°, and gradually dropped to normal. Examination of the purulent discharge showed a streptococcus infection. No tubercle bacilli were found, and I consider that this was an acute infectious process independent of her pulmonary condition. This patient also received two doses of streptococcic vaccine (P. D. & Co.) 40 millions each.

Case 3: R. K., female, 22 years of age, single, admitted to Lebanon Hospital February 9, 1913. Never had any previous serious ailments. A few days prior to admission she felt a sudden pain in the throat, accompanied by painful and difficult swallowing and some interference with breathing. These symptoms gradually progressed until it was necessary to enter the hospital. Physical examination was negative; temperature 101°, pulse 104, respiration 28. The pharynx was slightly congested, but the epiglottis was decidedly swollen, dusky red, with the edema extending to the left ary-epiglottic fold. She could swallow only fluids, with considerable effort, and also complained of a lump in her throat. She was given the usual local treatment (ichthyol and ice). When I examined her on the following day the same state of affairs existed, but the patient stated that she felt better than when admitted and had a fair night. After the parts had been cocainized, a small yellowish focus about 3 mm. in extent was seen at the base of the epiglottis on the left side near the root of the tongue. This was incised and a few drops of pus observed. The epiglottis and ary-epiglottic fold on the same side was also scarified. The ichthyol-glycerin and ice treatments were continued as before, with increasing intervals, as the local picture improved. No further trouble appeared, and the woman left the hospital at the end of nine days in good condition. The interior of the larynx was not affected. Unfortunately, no bacteriological examination was reported. Urotropin was administered in this case. This was a milder type of the disease under consideration.

Case 4: G. D., male, 26 years old, came to the throat department of the Lebanon Hospital Dispensary in the afternoon of April 22. He complained of a fullness in his throat, painful and difficult swallowing. His symptoms had started two days before, but he

thought it was a simple sore throat, and used a gargle of peroxid of hydrogen. He recalled that he had felt chilly at the beginning of the attack.

As I was visiting in the Hospital at the time, the young man was brought to me for prompt surgical treatment. His temperature was 100.8°. On examination, I found an enormously swollen epiglottis, with an edema of the base of the tongue reaching half way to the free surface of the epiglottis. Some purulent discharge was seen along the right side of the lingual attachment of the epiglottis. Both ary-epiglottic folds were edematous. A restricted view of the larynx showed no involvement of the interior. Under cocain anesthesia, a liberal incision was carried into the infiltrated mass at the base of the tongue and epiglottis, and a considerable quantity of pus was discharged. The incision was followed by free bleeding. The opening was dilated by means of a laryngeal applicator to insure complete drainage, and several scarifications were made into the edematous epiglottis and arytenoid region. In spite of emphatic protest and explanation of the danger of sudden suffocation, the patient assumed all responsibility, and walked to his home a few blocks from the hospital. The ichthyol-glycerin mixture was prescribed to be applied in the usual way, together with ice applications and active purgation. Fluid diet was also enjoined.

The following afternoon, April 23, 1913, the young man reappeared at the hospital, greeted me smilingly, stated that he felt much better, but objected to the taste of that black medicine. There was a decided improvement in the local process. The abscess-cavity was still draining, and the edema had diminished considerably. A good view of the larynx could now be obtained and showed no involvement. The ichthyol-glycerin treatment was continued at greater intervals, and the patient instructed to return for further observation. His temperature at this visit was normal.

Not having seen the case again I infer that his throat needed no further attention. The bacteriological examination showed a staphylococcus infection.

At my initial examination, I was surprised to find so little disturbance in this patient's breathing, in the presence of so much edema and swelling. This case seems to corroborate the statement of Gougenheim "that the respiratory difficulty is due to the immobility of the crico-arytenoid articulation, and not to aspiration of the swollen ary-epiglottic folds."

To emphasize the serious nature of acute infectious disease of the epiglottis and larynx, I have only to direct your attention to the

four fatal cases mentioned by Theisen in his interesting paper, and to the five similar results in a series of fourteen cases which Semon^a reports in his classic paper.

We must bear in mind that alarming symptoms appear suddenly but may subside in a few hours under active treatment. When local measures fail to bring about the desired results the question of tracheotomy arises. Moure states that in these cases intubation is a serious, difficult and dangerous operation, and that tracheotomy is the method of choice. Semon remarks that we must be very careful in adding further shock in these desperate cases. Seven of his patients operated upon by tracheotomy did not recover.

Some of the complications that have appeared during the course of septic infections of the upper air passages, are: pleurisy, pericarditis, endocarditis, pneumonia, peritonitis, and meningitis.

SUMMARY: Acute infectious epiglottitis suddenly appears without warning. Its progress is rapid and its symptoms are characteristic. It is seldom seen in children.

Though the four cases herewith reported were primary manifestations, this disease may appear secondary to infective conditions of the teeth, tonsils, pharynx, or tongue.

The ichthyol-glycerin treatment has proved very beneficial following the surgical intervention. The stock or autogenous vaccines should be considered in the treatment of these cases.

That this is not a rare condition, is proved by the fact that my three last cases were seen within a period of five months in the same institution.

BIBLIOGRAPHY.

1. SCHNITZLER: Klinischer Atlas der Laryngologie.
2. THIESEN: Section on Laryngology and Otology, Am. Med. Ass'n., 1900.
3. SEMON: Forschungen und Erfahrungen, No. 2, 1880-1900.
4. LANGENBECK: *Archiv fur Chirurgie*.
5. LEDERMAN: Septic infections of Mouth and Throat, *THE LARYNGOSCOPE*, June, 1911.
6. MACKENZIE: Diseases of the Pharynx, Larynx and Trachea.
58 East Seventy-fifth Street.