

ANTIBIOTICS IN PHLEGMONOUS LARYNGITIS (LARYNGEAL CELLULITIS)

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This paper relates experiences with antibiotics, selected with discrimination, in the treatment of phlegmonous laryngitis. It is also intended to direct attention to the importance for the doctor of mastering indirect (mirror) laryngoscopy. It is unreasonable to expect the general practitioner to be expert in every method of examination in this age of specialization, but he should have at his command certain methods the use of which may be of vital consequence to his patient when an examination is urgent and a specialist is not immediately available. Indirect laryngoscopy is easy to learn and to practise in daily work. If the mirror suggests even only a suspicion of an inflammatory oedema the doctor should proceed at once to consider what further steps are to be taken.

The following are successive cases which I have observed during the last three and a half years.

Case 1

A woman aged 26 had had her tonsils removed some years previously and had never since suffered from a sore throat. Occasionally she had had aural eczema. Ten days before being seen she had a prophylactic tuberculin inoculation which caused a blister on her right arm. For the previous three days she had had a subfebrile temperature and had seen her doctor for sore throat. I was consulted on July 1, 1950, and was told that the patient had increasing pain on swallowing, although not more than a mild pharyngitis could be observed. Her doctor, having noticed hoarseness, as well as swelling and tenderness of the right lymph nodes in the neck, thought that laryngeal examination should be carried out. Before this was done she was given 300,000 units of crystalline penicillin intramuscularly twice during a period of 48 hours.

On examination I found that the patient grimaced grotesquely at every attempt to swallow. There was distinct tenderness on palpation of the right laryngeal area. The submaxillary glands were enlarged and tender. Oral temperature was 100.2° F. (37.9° C.). On laryngoscopic examination much oedema was seen over the right arytenoid cartilage, covering two-thirds of the rima glottidis and of the right vocal cord, which could be seen only by inclining the head to the left shoulder. One would expect severe dyspnoea with such large swelling round the entrance of the larynx, but breathing was quiet and surprisingly easy. The patient was taken into hospital and received another 600,000 units of crystalline penicillin on admission. Next morning there was a slight decrease of the oedema. Hot gargles were applied, with radiant heat to the neck, and 300,000 units of crystalline penicillin was given. There was further reduction of the oedema as the day went on. She was given more of the antibiotic to the total of 2,400,000 units, and was discharged on July 3, when only a small swelling on the upper surface of the right aryepiglottic fold was visible. On July 6 the larynx was considered normal and treatment was discontinued.

Comment.—This case of laryngeal cellulitis, with inflammation beneath the mucosa and involvement of connective tissue and probably of the perichondrium, was seen in an advanced state of obstructive oedema. Danger of dyspnoea and asphyxia was imminent, but shortness of breath was not experienced. The pointing symptoms were severe unilateral aural pain, pain and grimacing on swallowing, extra-

ordinary tenderness of the laryngeal area, and hoarseness. Oral inspection with a mirror revealed nothing relevant. The symptoms were out of proportion to the actual pharyngeal condition. The tuberculin inoculation might have exerted some weakening influence. The cellulitis was cured with the comparatively small amount of 2,400,000 units of crystalline penicillin intramuscularly. This case was one of the few which responded well and quickly to this drug. At the time (1950) it was practically impossible to obtain chlortetracycline ("aureomycin").

Case 2

A man aged 38, suffering from sore throat, called in his doctor on October 18, 1951. The pain increased rapidly and the doctor thought it disproportionate to a mild pharyngitis. Up to the time I saw him, on October 21, the patient had received a total of 2,000,000 units of procaine penicillin intramuscularly on account of his continuous high temperature—up to 103.3° F. (39.6° C.)—difficulty in swallowing, and tenderness of the submaxillary and post-sternocleidomastoid glands on the left side of the neck, and increasing shooting pains in the left ear.

When I saw him the pharyngitis was insignificant. The tonsils had been removed. The suprascapular neck glands were swollen and tender. On mirror inspection the epiglottis was found to be thickened, and a soft whitish membrane covered the vallecula and the lingual tonsil. Pronounced oedema of purplish tinge was seen over the left arytenoid cartilage. There was considerable grimacing and difficulty in swallowing. After a total of 4,400,000 units of procaine penicillin the temperature was down but the oedema had only slightly improved. There was no dyspnoea. Penicillin therapy was discontinued and chlortetracycline was started, 2 g. daily. There was distinct improvement after 4 g. had been given. A very small amount of oedema persisted, the epiglottis was back to normal, and the pain had almost gone. All drugs except gargles were discontinued, and the patient was reported cured on October 26.

Comment.—By 1951 the supply situation of chlortetracycline had improved, and the health authorities, being given a reasonable explanation of the gravity of the case, supplied the drug, which proved to be of great benefit to the patient.

Case 3

A scientist aged 50 had suffered from petit mal and grand mal since childhood, but no acute attack had been observed by his own family. In 1949 he had an attack of pneumonia and later suffered from nasal obstruction. Electric cauterization of the left lower turbinate was performed, but on account of the epilepsy no operation was done on his deflected septum. Chronic shortness of breath developed; the nasal mucosa appeared always congested, but there was no sign of suppuration. After a visit to Jerusalem, which involved an ascent of 2,800 feet (850 metres) above sea level, the patient got a sore throat with increasing pain, and visited me on March 8, 1952.

Careful examination of the larynx showed nothing abnormal, but suspicion was aroused by the pain when the area was touched externally. He was put to bed and gargles and compresses were ordered. On mirror examination the following day a reddish oedema was detected over both arytenoid cartilages. Procaine penicillin, 600,000 units, was injected intramuscularly in the morning, and another 300,000 in the evening. On the following day the nasal congestion suddenly improved without any nasal treatment. In the afternoon 250 mg. of chlortetracycline was given. Within six hours the oedema decreased to about half its previous size. Chlortetracycline continued to be given, 250 mg. every six hours. There was continuous improvement and the drug was stopped on March 12, after a total of 2.75 g. had been given.

On the following night I was recalled to find the patient unconscious, with stertorous breathing, in an epileptic fit. Phenobarbitone was given by injection. On March 16, the larynx having returned to normal, he was discharged, but was advised to have his nose treated. On April 23 he

complained of left nasal obstruction, and on April 30, after an x-ray report, 5,000 units of crystalline penicillin in 5 ml. of saline was instilled into the right maxillary sinus, procaine penicillin was given intramuscularly, and an antihistamine drug was also given on account of allergic rhinitis and asthma. Sterno-cardiac pain was experienced and the treatment was discontinued on May 10, being resumed in June with four successive wash-outs without local instillations. The sinus exudate became less purulent, but the nose remained congested, and treatment was discontinued after 4,800,000 units of procaine penicillin had been given. The Caldwell-Luc operation for the right maxillary sinus was advised, but the patient would not agree.

Comment.—In this case the larynx was practically cured after the second day of treatment with a total of 2.75 g. of chlortetracycline. Perhaps this dose was too high, and the epileptic fit may have been due to the amount of drug given, or it may have occurred as a result of the general exhaustion in this painful disease. The patient is still hesitating whether to accept operation.

Case 4

A woman aged 46 who suffered from allergic rhinitis visited me on September 20, 1952, complaining of pains on swallowing. Two weeks previously she had taken sulphaguanidine tablets for some abdominal trouble, and a few days later a sore throat developed. On examination the ear, nose, nasopharynx, and tonsils were normal. The posterior part of the left side of the larynx was tender to external touch. The mirror showed deep-seated infection of the left arytenoid cartilage and dark-red surface oedema. Chlortetracycline, 1 g. daily, was prescribed. On the following day earache and pain and swelling were gone and no inflammation or sign of oedema was seen. Chlortetracycline, 250 mg. 12-hourly, was continued until September 24, and then, although the condition had not entirely cleared up, the patient withdrew from further treatment.

Comment.—This case was one of 11 days' throat discomfort without proper diagnosis. The laryngeal infection responded promptly to chlortetracycline and the patient was restored almost to normal in two days.

Case 5

A married woman aged 37 visited me on January 12, 1953, complaining of a "lump" in her throat, rising and falling on swallowing. She had noticed it for four days. There were also deep pains in the throat and a slight earache. No external tenderness was felt on touching. On mirror inspection the right arytenoid cartilage was red and slightly oedematous, and the intra-arytenoid area was purple, swollen, and thickened. Breathing was free, but speech was hoarse. Chlortetracycline was given, 250 mg. six-hourly. On the following day the patient felt better, but speech was still hoarse; the oedema of the right arytenoid was reduced in size, but the mucous membrane of the larynx was very red. Some hoarseness persisted next day, but the arytenoid and intra-arytenoid area was back to normal and no oedema was seen anywhere. Treatment was discontinued after 2 g. chlortetracycline had been given.

Comment.—It seems that the infection of the deeper layers beneath the mucosa was seen on the first day of development, the oedema being only slight, and the red colour of the mucous membrane governed the picture.

Case 6

A woman aged 27 consulted me on January 13, 1953, complaining of intermittent sore throat for about three weeks. Later she had felt a stabbing pain on swallowing and she had bilateral earache. Her ears, pharynx, and tonsils appeared normal. She grimaced when attempting to swallow. Speech and breathing were free. On laryngoscopic examination the right arytenoid cartilage showed dark-red gloom and was covered by an oedema stretching into the hypopharynx and towards the posterior cricoid lamina. Rest in bed and the usual treatment was prescribed,

with chlortetracycline (1 g.). For an unknown reason she was given permission to purchase chloramphenicol instead of the prescribed chlortetracycline, and I advised her to take it, although I had no personal experience of its working. Two days later the pain had subsided and the oedema, though persistent, had slightly decreased. After a further two days of chloramphenicol she still complained of some sore throat and oedema was still seen. Treatment was continued, and after a further two days the pain disappeared, the general condition was satisfactory, and the rima glottidis free, though the mucosa of the deep hypopharynx still showed some oedema. The patient had had 1 g. of chlortetracycline plus 4 g. of chloramphenicol. She resumed her work as a teacher and withdrew from further observation.

Comment.—The administration of chloramphenicol was not as effective as that of chlortetracycline in the other cases.

Case 7

A woman aged 34 visited me on October 30, 1953, with a complaint of severe sore throat and a temperature of 101.7° F. (38.7° C.). The pains were continuous; she had earache when attempting to swallow. There was only moderate external tenderness. Speech and breathing were free. Her ears, mouth, and palatal tonsils were normal. Indirect laryngoscopy showed a much thickened epiglottis, with a little pus between it and the base of the tongue. The usual local treatment was given, with intragluteal procaine penicillin injections, a total of 1,600,000 units during the next two days. Two days later she felt worse, external tenderness was more pronounced, and oedema of the left arytenoid cartilage was visible, with swelling of the whole area. Chlortetracycline (250 mg. six-hourly) was given. Two days later she said that she had a bitter taste in her mouth as if "an abscess had burst" and she had experienced relief immediately. No abscess or pus was seen and no fluctuation was felt. The next day the left arytenoid was back to normal, though the epiglottis was still thickened and there was mild pain on swallowing. On November 6 she was cured. A total of 4.75 g. of chlortetracycline had been given. She was discharged from observation three days later.

Comment.—In this case an undetected abscess probably burst during the course of the disease. Recovery was uneventful.

Case 8

A man aged 32 visited me on January 26, 1954, with left earache and pain on masticating or swallowing. The oral temperature was found to be 101.9° F. (38.8° C.). The ears were normal, the left mandibular joint moved freely without crepitation and was not painful, but there was obvious pain when the mouth was opened widely. There was an enlarged and soft submaxillary gland as well as tenderness. The floor of the mouth appeared pale and normal, but palpation and pressure towards the left tonsil hurt the patient extremely. The left tonsil, though normal in colour, was more swollen than the right. Laryngoscopically there was no oedema of the epiglottis. I could not be sure about the condition of the left arytenoid cartilage; there was much mucus and foam in the left pyriform sinus. Local treatment and 400,000 units of procaine penicillin intramuscularly was administered daily. By January 29 the general condition had improved but there was still pain on swallowing and some cough. On January 31 the picture was clearer after a total of 2,400,000 units of procaine penicillin had been given. Both arytenoids were now of equal size, there was no oedema or external tenderness, and the temperature was normal. On February 2 he was discharged as cured.

Comment.—In this case cellulitis was suspected from the beginning but could not be precisely diagnosed. Only the slight oedema of the left arytenoid fold was visible. After penicillin injections it became clear that a deep-seated infection was established at the beginning, with involvement of the left arytenoid cartilage, the main seat of infiltration

being near and around the cricoid lamina. The source of infection was probably in the left tonsil, which was swollen and had led to the secondary swelling of the left submaxillary gland.

Review of Literature

Koerner (1914) regards dyspnoea and pain on swallowing as the principal and most frequent complaint in laryngeal perichondritis. Denker and Bruenings (1921) state that temperature and distressing pain usually appear in the course of acute laryngeal perichondritis, lancinating into the ears when swallowing. I have stated (Rosenbaum, 1930) that pain in swallowing, earache, and tenderness on palpation are always present; also shortness of breath, but this last remark is certainly wrong. Dyspnoea can be, but is not necessarily, present. Wessely (1944) proposed "prontosil" (sulphonamide) therapy in cases of phlegmonous laryngitis. The Chevalier Jacksons (1942) distinguish between oedematous septic laryngitis and laryngeal perichondritis, defining the former as an aggressive inflammatory condition in which the submucous and deeper tissues are involved, while regarding the latter as possibly a secondary and late development of the septic type of inflammation. They state that the oedema secondary to perichondritis is pale, as compared with the intense red usually seen in septic laryngitis. They enumerate as symptoms of phlegmonous laryngitis, hoarseness, some fever, complete aphagia, offensive breath, and croupy voice in cases of subglottic involvement. These authors give a general picture of acute perichondritis as that of an acute watery or acute red oedema. The Jacksons (1945) also declare that the colour of the swollen tissue in perichondritis varies. That is also my opinion. Simultaneous changes occur in the character of the disease, the colour of the oedema and inflammation, and in the symptoms; but the colour of the oedema should be of no great importance to the practitioner.

Summary and Conclusion

Eight cases (three males and five females) of phlegmonous laryngitis were observed in the course of three and a half years. Israel is a very small country and far more cases of this kind might be expected amongst larger communities. If the cases come within a general practitioner's observation and are not cared for properly at the very beginning the results may be disastrous. I would suggest that the disease be called "laryngeal cellulitis" or "phlegmonous laryngitis." Laryngeal perichondritis may be a sequel, and a rapid invasion through an almost unharmed mucosa may result in a very early perichondritis without the expected preceding laryngeal cellulitis. Severe pain on swallowing, when accompanied by grimacing and earache, may be caused by some deep-seated condition of the larynx. Aural pains were present in all my cases. No "septic mouth" or offensive breath was observed. Two of the patients had had their tonsils removed some years previously. In one case an overlooked maxillary sinusitis might have been the cause of the laryngeal infection. Hoarseness was observed in two cases. Overflow of mucus into the larynx caused cough in two cases, but did not appear as a significant diagnostic sign. Dyspnoea was not observed in any of the cases.

After the physician has considered the symptoms, palpation of the larynx should be the next step. If digital exploration reveals local tenderness, glands, or swellings, deep laryngeal infection may be suspected. Five of my cases showed external tenderness; the others did not. Therefore external palpation may lead one astray. The final diagnosis is dependent on mirror examination. Once the physician has the knack of handling the laryngeal mirror he will be able to observe in the reflected image the changes due to the use of modern drugs.

Five of my cases improved in one day after chlortetracycline had been given; one case needed a total of 2 g., the others needed doses of from 2.5 to 4.75 g. The use of chloramphenicol in one case, together with a small amount of chlortetracycline, seemed less effective. Penicillin alone was given in Case 1 and Case 8, in the latter because the diagnosis was uncertain; I believe the six-day treatment could have been shortened with chlortetracycline. Case 1 responded quickly to penicillin although this patient was in quite a serious condition. She was cured within four days with only 2,400,000 units. Three other cases did not respond satisfactorily to penicillin injections of between 1,200,000 and 4,400,000 units, but treatment in these cases was continued successfully with chlortetracycline.

It may be concluded that violent submucous invasion of the connective tissue and the deeper layers of the larynx result in an oedema of the various cartilaginous parts. Although symptoms may point towards the right diagnosis, mirror inspection of the larynx is absolutely urgent. Once diagnosis has been established, chlortetracycline in doses of 250 mg. six-hourly appears to be the treatment of choice.

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ANAEMIA OF NEWBORN FOLLOWING ANTERIOR PLACENTA PRAEVA

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Foetal anaemia following incision of the placenta in caesarean section has been recognized for over 70 years. Leopold (1888) stated: "I warn against the practice of cutting through the placenta at caesarean section or boring through it with the finger. It results in considerable loss of blood and endangers the life of the child. . . . It is better to insert the hand between the uterine walls and the placenta, push the latter aside, rupture the membrane and grasp the child by the nearest limb." Kelly (1891), after performing his first four classical caesarean sections, stated: "The placenta should not be incised for fear of bleeding the infant." Siddall and West (1952) reviewed 65 babies delivered by classical or lower-segment caesarean section, in all of whom they carried out haemoglobin and red blood counts. All but one of the seven anaemic babies in their series had been delivered by the lower-segment operation, which was carried out for placenta praevia in three instances. In another five of their series the placenta was incised, with no foetal anaemia.