



Overview and Treatment of Chronic Laryngitis

Denada Florencia Leona ^{1*}

¹Universitas Andalas, Dr. Mohammad Hatta Limau Manis, Padang, 25163, Indonesia

ABSTRACT

Introduction. Laryngitis is inflammation of the larynx which often cause hoarseness or loss of voice. Chronic laryngitis often occurs in smokers, sufferers gastroesophageal reflux (GERD) and people who often overuse their vocal cords. This article aimed to present overview and management of chronic laryngitis.

Case Presentation. A 58 year-old man came to the hospital clinic with complaints of hoarseness and frequent dry coughs since 3 months. Previously, the patient had experienced a similar complaint about 6 months ago, but the complaint improved by itself. He was a heavy smoker. He also had GERD and worked as a teacher.

Conclusion. The clinical manifestations of laryngitis depend greatly on several factors such as the cause, the extent of tissue edema, the region of the larynx that is primarily involved and the patient's age.

Keywords: Chronic Laryngitis, Smoking, GERD, Vocal Cord, Overuse

1. Introduction

The larynx is the lowest part of the upper airway. The larynx functions for protection, coughing, respiration, circulation, swallowing, emotions and phonation. The larynx can experience abnormalities in the form of congenital abnormalities, inflammation, benign tumors and vocal cord paralysis. Inflammation of the larynx can be acute laryngitis or chronic laryngitis.^{1,2} Acute laryngitis is a common disease in children, laryngitis has a rapid onset and usually resolves on its own. If laryngitis lasts more than 3 weeks, it is called chronic laryngitis.² Acute inflammation of the larynx is generally a continuation of rhinopharyngitis (common cold). In acute laryngitis this can cause airway obstruction, whereas in adults it is not as fast as in children.² Meanwhile, chronic laryngitis is often caused by chronic sinusitis, severe septal deviation, nasal polyps or chronic bronchitis. It may also be caused by misuse of the voice (vocal abuse), such as shouting or habitually speaking loudly.²

Laryngitis can be classified as acute laryngitis. Acute laryngitis is an acute inflammation of the larynx, which can be caused by viruses and bacteria. Complaints last <3 weeks and are generally caused by influenza virus infections (types A and B), parainfluenza (types 1,2,3), rhinovirus and adenovirus. Other causes are Haemophilus influenzae, Branhamella catarrhalis, Streptococcus pyogenes, Staphylococcus aureus, and Streptococcus pneumoniae.³ Secondly, Laryngitis can be classified also as chronic laryngitis if occur after recurrent acute laryngitis, and can also result from chronic sinusitis, severe septal deviation, nasal polyps, chronic bronchitis, laryngopharyngeal reflux, smoking, constant exposure to irritants, and excessive alcohol consumption. Signs of chronic laryngitis are insignificant throat pain, hoarseness, and edema in the larynx. It may also be caused by misuse of the voice (vocal abuse) such as shouting or speaking loudly.³

The etiology of laryngitis is excessive voice use, GERD, environmental pollution, exposure to hazardous materials, or infectious materials that lead to upper respiratory tract infections. This infectious material is more often a virus but can also be bacterial. Rarely, inflammation of the larynx is caused by autoimmune conditions such as rheumatoid arthritis, recurrent chondritis, Wegener's granulomatosis, or sarcoidosis.² Viruses that often cause laryngitis include parainfluenza viruses types 1 to 3 (75% of cases), influenza viruses types A and B, respiratory syncytial virus (RSV). Viruses that rarely cause laryngitis include adenovirus, rhinovirus, coxsackievirus, coronavirus, enterovirus, herpes simplex virus, reovirus, morbilli virus (measles), mumps virus.⁴

Bacteria, although rare, can also cause acute laryngitis, including Haemophilus influenzae type B, Staphylococcus aureus, Corynebacterium diphtheriae, Streptococcus group A, Moraxellacatarrhalis, Escherichia coli, Klebsiella sp., Pseudomonas sp., Chlamydia trachomatis, Mycoplasma pneumoniae, Bordetellapertussis, and very rarely Coccidioides and Cryptococcus. C. diphtheriae must be suspected as the causative germ, especially if the child has not been immunized, because C. diphtheriae can cause membranous obstructive laryngitis.² Apart from viruses and bacteria, laryngitis can also be caused by fungi, including Candida albicans, Aspergillus, Histoplasmosis and Blastomyces which can cause laryngitis as a complication of systemic infection.²

Parainfluenza virus, which is the most common cause of laryngitis, enters by inhalation and infects cells of the local ciliated airway epithelium, characterized by edema of the lamina propria, submucosa and adventitia, followed by cellular infiltration with histocytes, lymphocytes, plasma cells and

polymorphonuclear leukocytes. (PMN). There is swelling and redness of the involved airways, mostly found on the lateral walls of the trachea below the vocal cords. Because the subglottic trachea is surrounded by the cricoid cartilage, swelling occurs in the lumen of the internal airway, making it narrow, even to the point of just a gap. The protective membrane of the vocal cords is usually red and swollen. The lower peak in patients with laryngitis originates from irregular thickening along the entire length of the vocal folds. Some authors believe that the vocal folds are hardened rather than thickened. Conservative treatment as mentioned previously is usually sufficient to overcome laryngeal inflammation and restore vocal fold vibrational activity.⁵

Chronic laryngitis is an inflammatory process that shows inflammation of the laryngeal mucosa that lasts for a long time. In chronic laryngitis the inflammatory process can continue even though the causative factor is no longer present. The inflammatory process will cause damage to the ciliated epithelium of the larynx, especially on the back wall of the larynx. This will cause interference in the discharge of secretions from the tracheobronchial tract. If this happens, the secretions will remain on the posterior wall of the larynx and around the vocal cords causing a coughing reaction. The presence of secretions in the vocal cord area can cause laryngospasm. Significant changes can also occur in the epithelium of the vocal cords in the form of hyperkeratosis, dyskeratosis, parakeratosis and acanthosis.⁵

Laryngitis is characterized by a hoarse voice, accompanied by reduced or absent vocal pitch (aphonia), barking cough, and inspiratory stridor. Fever up to 39-40 can also occur, although in some children this may not occur. These symptoms are characterized by being worse at night, and often recur with decreasing intensity for several days and resolve completely within a week. Restlessness and crying greatly worsen the symptoms. The child may choose to sit or be held upright. In older children the disease is not as severe. Other family members may experience mild respiratory tract disease. Most patients only have symptoms of stridor and mild shortness of breath before they begin to recover. These symptoms are often accompanied by symptoms such as runny nose, stuffy nose, cough and painful swallowing. In most patients these symptoms appear 1 to 3 days before symptoms of airway obstruction occur.²

On physical examination, a hoarse voice, coryza, an inflamed pharynx and increased respiratory frequency and heart rate can be found, accompanied by nostril breathing, suprasternal, infrasternal and intercostal retractions and continuous stridor, and the child can gasp for air. hunger). If there is total obstruction of the airway, hypoxia and low oxygen saturation will result. If hypoxia occurs, the child will become restless and unable to rest, or may experience decreased consciousness or cyanosis. The child's restlessness and crying can exacerbate stridor due to the dynamic compression of the obstructed airway. On auscultation, respiratory sounds can be normal without additional sounds except the propagation of stridor. Occasionally there may be wheezing indicating severe constriction, bronchitis, or possibly pre-existing asthma.⁶

Apart from that, you can also find a dry cough which over time is accompanied by thick phlegm, common cold symptoms such as sneezing, sore throat and difficulty swallowing, nasal congestion, headache, cough and fever, influenza symptoms such as sneezing, , throat pain that makes it difficult to swallow, nasal congestion, headache, cough, a very significant increase in temperature, namely more than 38 degrees Celsius, and a feeling of weakness, weakness accompanied by pain throughout the body.⁶

Laryngoscopy often reveals diffuse redness of the larynx along with dilated blood vessels of the vocal cords, sometimes paleness, accompanied by watery edema of the subglottic tissue. Sometimes spots of secretions can also be found. The movement of the vocal cords can be found to be asymmetrical and not periodic.⁶

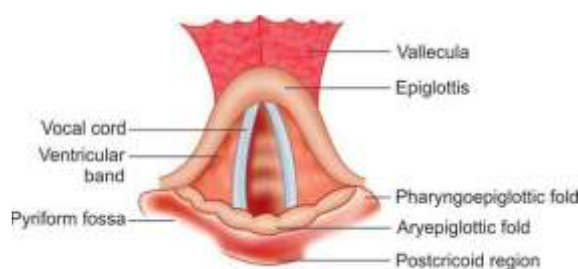


Figure 1 and 2. Indirect Laryngoscopy

The differential diagnosis of acute laryngitis includes pharyngitis, bronchiolitis, bronchitis, pneumonia, tumor of the larynx, and common cold. Differential diagnosis of chronic laryngitis: contact Granulomas; glottic stenosis; Iatrogenic Vocal Fold Scar; subglottic stenosis; vocal sulcus; vocal cord vascular lesions; vocal cord cyst. In Contact granulomas are formed as a result of trauma to the laryngeal tissue. The lesion that forms is reddish tissue near the arytenoid cartilages behind the larynx. This is different from nodules on the vocal cords which are usually in the form of hypertrophic callus. The symptoms that arise are usually that the patient feels that there is a foreign object in the throat, the pain is like being stabbed and can radiate to the ear.⁵ Iatrogenic vocal fold scars occur due to blunt trauma to the larynx or more often due to iatrogenic injury after incision or removal of lesions on the vocal folds.⁵ In subglottic stenosis there is narrowing of the airway starting from the subglottis to the top of the trachea which causes dysphonia.^{5,6} This article aimed to present overview and management of chronic laryngitis.

2. Case Presentation

A 58 year-old man came to the hospital clinic with complaints of hoarseness and frequent dry coughs since 3 months. Previously, the patient had experienced a similar complaint about 6 months ago, but the complaint improved by itself. The patient's throat had also felt sore and dried for the past 2 months. The patient also frequently cleared his throat and if the cough was not accompanied by secretions. The patient also complained of a cold. Currently the patient did not complain of fever. The patient denied any history of taking medication for more than 6 months or coughing up phlegm for more than 2 weeks. The patient also suffered from GERD (Gastroesophageal Reflux Disease), often recurred \pm once a week and felt fluid rising from the stomach to the throat and tasted sour. The patient had a habit of smoking 1-2 packs/day and has started smoking since high school. The patient admitted that he had never received treatment before for the cough.

History of asthma, diabetes mellitus, hypertension and Asthma was denied by the patient. There were no family members of the patient who experienced the same complaints as the patient. There were no family members of the patient who had a history of asthma, diabetes mellitus, hypertension and allergies. The patient worked as a teacher and in his daily life often speaks to teach. On physical examination, a hyperemic pharynx was found. Then the arytenoid plica was found to be hyperemic and edematous, the anterior plica was found to be hyperemic and the vocal folds were also hyperemic, but not edematous. The patient was then diagnosed with chronic laryngitis, with a differential diagnosis of laryngeal carcinoma or tuberculous laryngitis. The patient was then planned for a supporting examination, namely an AP neck x-ray to reveal swelling of the subglottic tissue (Steeple sign). Laboratory examinations were also planned if accompanied by secondary infection, leukocytes may increase. Patients received medical treatment in the form of antibiotics; Amoxicilin 3 x 500 mg tablets, and Ambroxol 3 x 30 mg tablets. Furthermore, non-pharmacology treatment was also given in the form of vocal rest to treat inflammation in the nose, pharynx and bronchi if these were the causative factors. Antibiotics will be given if there were signs of infection and expectorants, and the patient must stop smoking. The patient was also given education by encouraging the patient not to talk too much, encouraging the patient to stay away from trigger factors such as smoking, providing nutritious food to increase the body's endurance and speed up the healing process. Check with the ENT clinic if the medication did not work.

3. Discussion

A 58 year old man came to the hospital clinic with main complaints of hoarseness and frequent dry coughs since 3 months ago. Previously, the patient had experienced a similar complaint about 6 months ago, but the complaint improved by itself. The patient's throat had also felt sore and dried for the past 2 months. The patient also frequently cleared his throat and if the cough was not accompanied by secretions. The patient also complained of a cold. Currently the patient did not complain of fever. The patient denied any history of taking medication for more than 6 months or coughing up phlegm for more than 2 weeks. The patient also suffered from GERD (Gastroesophageal Reflux Disease), often recurred \pm once a week and felt fluid rising from the stomach to the throat and tasted sour. The patient had a habit of smoking 1-2 packs/day and has started smoking since high school. The patient admitted that he had never received treatment before for the cough.

The diagnosis of chronic laryngitis can be made through history taking, physical examination and supporting examinations. Management is given according to the underlying etiology. Usually caused by irritation from cigarette smoke, so patients are asked to stop smoking and avoid cigarette smoke around them. Prognosis can be determined based on the stage or severity of the disease, early diagnosis, and appropriate management. In this patient's case the possible diagnosis was Non-Specific chronic laryngitis. Based on the literature, treatment depends on the cause of laryngitis and symptoms. The best treatment for chronic laryngitis resulting from common causes, such as viruses or irritation substances (e.g smoke, stomach acid and etc), is to relax the voice as much as possible and stop try to clear the throat. If the cause is an inhaled substance, then avoid the substance that causes the irritation. Inhaling warm steam from a basin filled with hot water may help. For chronic laryngitis which is also associated with other conditions such as burning sensation in the pit of the stomach, smoking or alcoholism should be stopped.^{2,8}

Supporting examinations to confirm the diagnosis of laryngitis are :^{2,9}

1. AP neck x-ray: swelling of the subglottic tissue (Steeple sign) may be seen.



Figure 17. Steple sign

2. Laboratory examination: blood picture can be normal. If accompanied by secondary infection, mild leukocytosis and lymphocytosis.
3. Culture examination: if exudate is found in the oropharynx or vocal folds, it can be done to determine the cause of infection.

To prevent dryness or irritation of the vocal cords, the first thing to do is stop smoking, and avoid cigarette smoke by not becoming an indirect smoker. Cigarettes will dry out the throat and cause irritation to the vocal cords. Drink lots of water because fluids will help keep the mucus in the throat from getting too much and it will be easy to clean. Limit the use of alcohol and caffeine to prevent a dry throat. If the patient experience laryngitis, avoid the two substances mentioned above. Next, don't clear your throat too hard by coughing or else. Clearing your throat will not have a good effect, because clearing your throat will cause abnormal vibrations in the vocal cords and increase swelling. Clearing your throat will also cause your throat to produce more mucus and feel more irritated, making you want to clear your throat again.^{2,8}

Differential Diagnosis of Chronic Laryngitis can be Contact Granuloma; glottic stenosis; Iatrogenic Vocal Fold Scars; subglottic stenosis; vocal sulcus; vascular lesions of the vocal cords; and vocal cord cyst. Contact granulomas are formed as a result of trauma to the laryngeal tissue. The lesion that forms is reddish tissue near the arytenoid cartilages behind the larynx. This is different from nodules on the vocal cords which are usually hypertrophic calluses. The symptoms that arise are usually that the patient feels that there is a foreign object in the throat, the pain is like being stabbed and can radiate to the ear.¹⁰ In some cases of laryngitis caused by infection, the infection can spread to other parts of the respiratory tract.^{2,10} In luetic laryngitis, if spontaneous healing occurs, laryngeal stenosis can occur due to scar tissue formation.^{2,11}

4. Conclusion

The clinical manifestations of laryngitis depend greatly on several factors such as the cause, the extent of tissue edema, the region of the larynx that is primarily involved and the patient's age. Patients usually come with various complaints such as discomfort in the throat, coughing, changes in voice quality, dysphagia, odynophagia, coughing, difficulty breathing and also stridor. The diagnosis of chronic laryngitis is made through history taking, physical examination and supporting examinations. Management is given according to the underlying etiology. Usually caused by irritation from cigarette smoke, so patients are asked to stop smoking and avoid cigarette smoke around them. Prognosis can be determined based on the stage or severity of the disease, early diagnosis, and appropriate management.

References

1. Hermani B, Hutauruk SM. Disfonia. Dalam Buku Ajar Ilmu Kesehatan THT Kepala dan Leher, ed. 7. Jakarta: Badan Penerbit Fakultas Kedokteran Universitas Indonesia, 2012; hal: 209-214.
2. Hermani B, Abdurrachman H, Cahyono A. Kelainan Laring. Dalam Buku Ajar Ilmu Kesehatan THT Kepala dan Leher, ed. 7. Jakarta: Badan Penerbit Fakultas Kedokteran Universitas Indonesia, 2012; hal: 215-220.
3. Panduan Praktik Klinis Bagi Dokter di Fasilitas Pelayanan Kesehatan Primer. Jakarta: Ikatan Dokter Indonesia, 2014.
4. Shah RK. Acute Laryngitis. Diunduh pada tanggal 21 November 2017 dari : <https://emedicine.medscape.com/article/864671-overview#a1>
5. Dhillon RS, East CA. Ear, Nose, and Throat and Head and Neck Surgery. 2nd Edition. Churcill Livingstone, 2000.
6. Soepardi EA, Hadjat F, Iskandar N. Penatalaksanaan Penyakit dan Kelainan Telinga Hidung Tenggorok. Jakarta : Gaya Baru Fakultas Kedokteran UI, 2003.
7. Cohen JI. Anatomi dan Fisiologi Laring. Dalam Boeis: Buku Ajar Penyakit THT, ed. 6. Jakarta: EGC, 1997; hal: 369-377.
8. Harms, Roger W, et al. 2012. Laringitis. Available at: <http://www.mayoclinic.com/health/laryngitis/DS00366/DSECTION>. Access at : November 21th, 2017
9. Adam GL, Boies LR, Higler PA. Boies Buku Ajar Pentakit THT. 6th Ed. Jakarta: EGC, 1999.

-
10. Nerves of the larynx. Diunduh pada tanggal 21 November 2017 dari : <http://www.nlm.nih.gov/medlineplus/ency/imagepages/19721.htm>
 11. Ballenger JJ. Penyakit Telinga, Hidung, Tenggorok, Kepala dan Leher, Jilid 1. Alih Bahasa : Staf Ahli Bag. THT FKUI. Jakarta : Bina Rupa Aksara, 2010.