

Laryngitis (Chronic and acute)

What is laryngitis?

Laryngitis is a condition where there is inflammation of the larynx. Laryngitis which persists beyond three weeks is defined as chronic ^[1] .

- Acute laryngitis is commonly due to infection but there are rarer causes. The basic pathophysiology is inflammation of the mucosa lining the vocal folds and larynx. If infection is involved, white cells aggregate to remove infectious material from the area. Oedema of the laryngeal lining increases the amount of pressure required to produce sound, resulting in dysphonia or aphonia. Changes to the structure of the larynx may also result in a lower register of speech.
- Chronic laryngitis can be due to a variety of different causes, including [gastro-oesophageal reflux disease \(GORD\)](#), allergy, trauma and autoimmune disease. Depending on the cause, there may be laryngeal spasm, hyperaemia, oedema, inflammation and various changes to the morphology of the laryngeal mucosal cells.

Epidemiology

Accurate figures regarding acute laryngitis are not available, as the condition often goes unreported. The Royal College of General Practitioners reported an average incidence of 5.3 cases of laryngitis and tracheitis per 100,000 patients (all ages) per week in 2018 .

Chronic laryngitis is a complex condition which is similarly under-reported and often goes unrecognised. Yearly incidence has been reported in one study as 3.47 per 1,000; lifetime incidence is said to be up to 21% ^[2] ^[3] . Women are affected more than men.

Laryngitis causes^[1]

Acute laryngitis

Infection is the most common cause of acute laryngitis, with viral infection accounting for the majority of cases:

- Viral infection:
 - Rhinoviruses
 - Adenoviruses
 - Influenza viruses
 - Parainfluenza viruses
 - Herpes viruses
 - HIV
 - Coxsackievirus
- Bacterial infection – may co-exist with viral infection:
 - *Haemophilus influenzae*.
 - *Streptococcus pneumoniae*.
 - *Staphylococcus aureus*.
 - Group B beta-haemolytic streptococci.
 - *Moraxella catarrhalis*.
 - *Klebsiella pneumoniae*.
 - Less commonly in the developed world, mycobacterial and syphilitic infection.
- Fungal Infection:
 - *Candidiasis*.
 - Immunosuppression and the use of steroid inhalers are risk factors.

- Trauma:
 - Trauma due to voice misuse - screaming, yelling, loud singing.
 - Trauma due to excessive voice use - more common in certain professions such as teachers, actors and singers.
 - Coughing.
 - Penetrating or blunt external force.
 - Habitual throat clearing.

Chronic laryngitis

- Allergy - [allergic rhinitis](#), [asthma](#).
- Laryngopharyngeal reflux.
- Trauma (as above).
- Smoking^[4] .
- Autoimmune disease - chronic laryngitis may be a feature of systemic disease in conditions such as [rheumatoid arthritis](#), [systemic lupus erythematosus](#), [amyloidosis](#), pemphigoid.
- Sarcoidosis.
- Medication such as^[5] :
 - Angiotensin-converting enzyme (ACE) inhibitors by causing cough.
 - Inhaled steroids by promoting fungal infection.
 - Antihistamines, anticholinergics and diuretics - all by resulting in drying of the mucosa.
 - Bisphosphonates by causing a chemical laryngitis.
 - Danazol and testosterone.

History^[1]

Acute laryngitis

Typical symptoms:

- Hoarseness or a breathy voice.
- Pain or discomfort anteriorly in the neck.

Symptoms which may occur:

- Symptoms of upper respiratory tract infection (cough, rhinitis).
- Dysphagia.
- Globus pharyngeus (feeling of a lump in the throat).
- Continual throat clearing.
- Myalgia.
- Fever.
- Fatigue and malaise.

Chronic laryngitis

By definition, any patient with symptoms of acute laryngitis persisting for longer than three weeks should be deemed to have chronic laryngitis. In such patients, the following additional information should be sought:

- Personal history:
 - Duration of symptoms, any relieving or aggravating factors.
 - Symptoms suggestive of ill health – lung cancer, thyroid disease.
 - Occupational history, especially exposure to irritant substances or temperature change.
 - Voice abuse.
 - Symptoms suggestive of gastro-oesophageal reflux disease (GORD) – eg, heartburn, chest pain, otalgia, cough, wheezing, globus, throat clearing.
 - History of asthma – this can sometimes be confused with vocal cord dysfunction; history is of throat rather than chest discomfort, often with additional atypical symptoms (voice difficulty, laryngeal stridor, wheeze worse in inspiration).
 - History of allergy.
 - Immunocompromised patients – consider candidal involvement.
- Medication history:
 - Medications causing local drying or mucosal injury, as above.
 - Drugs increasing the tendency to develop GORD by decreasing the tone of the lower oesophageal sphincter – calcium-channel blockers, nitrates, beta-blockers, progesterone.
 - Immunosuppressant therapy – consider candida.
 - Inhalation treatments – thermal baths.
- Surgical history:
 - History of intubation – recurrent laryngeal damage, particularly likely in thoracic and abdominal surgery.
 - Surgery leading to anatomical alterations predisposing to GORD (again, thoracic and abdominal).

- Neck trauma.
- Ingestion of caustic substances.
- Travel history (for the possibility of parasitological infections).
- Family history:
 - Autoimmune diseases (eg, amyloidosis, systemic lupus erythematosus, granulomatosis with polyangiitis, rheumatoid arthritis).
 - Similar condition in other family members - consider exposure to environmental pollutants.
 - Contagious disease - eg, tuberculosis.
- Social history:
 - Smoking, recreational abuse, alcohol intake.
 - Lifestyle increasing the risk of infectious disease (eg, sexually unsafe practices, history of syphilis).
 - Diet - consumption of foods likely to lower oesophageal tone and increase the likelihood of GORD (eg, chocolate, caffeine).

Examination

Unless the clinician is experienced in the technique of indirect laryngoscopy (indirect examination of the larynx, using a laryngeal mirror), examination in the limited context of primary care is generally unhelpful, other than to exclude other conditions such as pharyngitis. Patients whose symptoms persist for more than three weeks should have indirect laryngoscopy.

Examination may give some indication to the underlying cause. Signs to look out for include:

- Masses in the neck.
- Lymphadenopathy.
- Signs of systemic autoimmune disease - rashes, joint deformity.

- Signs of possible bacterial infection such as persistent fever, purulent sputum, signs in the chest.
- Signs of epiglottitis.
- Stridor and signs of impending airway obstruction.
- Signs of specific causative organisms, such as oral thrush, or herpetic vesicles.

Laryngitis red flags^[1]

Consider a suspected cancer pathway referral (for an appointment within two weeks) for laryngeal cancer in people aged 45 and over with^[6] :

- Persistent unexplained hoarseness; **or**
- An unexplained lump in the neck.

Assessment of airway patency is vital, and stridor would prompt emergency referral.

Other factors which should prompt urgent referral include:

- Recent surgery to the neck (consider recurrent laryngeal nerve injury).
- Recent radiotherapy to the neck.
- Recent endotracheal intubation.
- History of smoking.
- Weight loss.
- Professional voice user (professional singer, actor/actress, teacher).
- Otolgia.
- Dysphagia (difficulty swallowing) or odynophagia (pain on swallowing).
- Signs of serious systemic illness.

Differential diagnosis

See also the separate article [Hoarseness](#).

Acute laryngitis

- Early chronic laryngitis.
- Spasmodic dysphonia.

Chronic laryngitis

- Nodules, polyps and cysts affecting the vocal cords.
- Malignancy - laryngeal cancer, lymphoma, thyroid cancer, lung cancer.
- Chondronecrosis of the larynx.
- Glottic or subglottic stenosis.
- Iatrogenic vocal cord scar.
- Medication side-effect - eg, antipsychotics can cause laryngeal dystonia, warfarin increases the risk of haematoma, drying effect of anticholinergics, etc.
- Vascular lesions of the vocal cords.
- Laryngeal nerve palsy.
- Idiopathic ulcerative laryngitis (prolonged ulceration of the mid-membranous vocal folds, cause unknown)^[7] .

Investigations

Acute laryngitis

- Investigations are rarely helpful in primary care. A swab for microbiological analysis may be contributory if excessive exudate is present.

- Clinicians with the skill to perform indirect laryngoscopy will typically find redness and small dilated vasculature on the inflamed vocal folds.

Chronic laryngitis

Investigations will depend on the clinical picture. Most will be done in secondary care, as referral for laryngoscopy will have been made.

- **Laboratory tests:**
 - FBC with differential to exclude infection.
 - Sputum culture for bacteria, fungi and viruses.
 - Laryngeal mucosal swab for microbiological analysis.
 - Serology for autoimmune markers.
 - Tests for syphilis and tuberculosis if clinically indicated^[8] .
 - Detection of retrograde flow of stomach acid using a probe is sometimes required. This is tested via a single probe or dual probe pH testing. Pathological reflux is considered present when 0.1% of the study time has a pH of less than 4.0. Radiological imaging has not been shown to increase the sensitivity of diagnosis^[9] .
- **Endoscopic visualisation:**
 - Indirect or direct laryngoscopy.
 - Videostroboscopy - unit consists of a stroboscopic unit (light source and microphone), a video camera, an endoscope and a video recorder. Useful in diagnosing vocal cysts, polyps and nodules^[10] .

- **Imaging:**
 - Lateral X-ray of the neck - may show supraglottic or retropharyngeal swelling, or soft tissue density in subglottic airway.
 - CXR.
 - CT and MRI scanning may be appropriate where pathology outside the larynx is suspected.
 - Barium swallow study, double-contrast upper gastrointestinal series and manometry - may be considered to exclude GORD. The best method of diagnosis for reflux in this situation remains controversial and is currently a target for research studies.

Laryngitis treatment^[1]

Acute laryngitis

- Most cases are mild and self-limiting.
- 'Vocal hygiene' describes a group of self-help measures including:
 - Resting your voice.
 - Avoidance of smoking and alcohol (both irritants, and alcohol causes dehydration).
 - Humidification - promotes moisture of the upper airway, helping to clear secretions and exudate.
 - Hydration - chewing sugar-free gum and/or increasing fluid intake (250 ml per hour awake).
 - Reducing caffeine (as it causes dehydration, reflux and snoring).
- Antibiotics have a limited place in the initial management of acute laryngitis. A Cochrane review found no significant difference in clinical outcome in adult patients given penicillin V or erythromycin compared with placebo^[11].
- Antibiotics may be helpful in patients who have persistent fever (for more than 48 hours), purulent sputum, associated distant disease or other problems such as immune system deficiency.

Chronic laryngitis

- Voice hygiene methods as described above.
- Voice therapy - exercises with the help of a speech therapist may be of benefit in some cases. This modifies voice use to reduce trauma to the larynx.
- Treat the underlying condition where possible - eg, GORD may need appropriate lifestyle advice and a trial of proton pump inhibitors. (There should be an awareness that a significant number do not respond and of the side-effects and risks of long-term treatment.) Nissen fundoplication can also be advocated to reduce symptoms if conservative measures fail^[9].

Complications

- Acute laryngitis - complications are rare, as the disease is usually self-limiting. Damage to the vocal cords is possible in patients who try to overcompensate for the dysphonia.
- Chronic laryngitis - the main complications are voice loss, obstruction of the airways and chronic cough. Laryngeal stenosis may develop occasionally. Rarely, in severe infections such as those with herpes viruses, laryngeal erosion and necrosis may occur^[1].

Laryngitis prognosis

In acute laryngitis, the prognosis is usually excellent. With chronic laryngitis the prognosis depends on the underlying condition.

Laryngitis prevention

There are no particular preventative measures for acute laryngitis, although avoidance of irritant factors such as cigarette smoke may be helpful. In chronic laryngitis:

- Irritant factors should be avoided - especially active or passive smoking.
- Patients on inhaled steroids should be advised regarding appropriate use - eg, dose reduction, twice-daily dosing, mouth rinsing and use of spacers.

- Lifestyle advice should be given to patients at risk of GORD.

Further reading

- [Stachler RJ, Francis DO, Schwartz SR, et al](#); Clinical Practice Guideline: Hoarseness (Dysphonia) (Update). Otolaryngol Head Neck Surg. 2018 Mar;158(1_suppl):S1-S42. doi: 10.1177/0194599817751030.
- [Hu HC, Chang SY, Wang CH, et al](#); Deep Learning Application for Vocal Fold Disease Prediction Through Voice Recognition: Preliminary Development Study. J Med Internet Res. 2021 Jun 8;23(6):e25247. doi: 10.2196/25247.

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