

Hoarseness: The Good, the Bad and the Ugly

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Hoarseness is a common symptom for which patients seek medical attention. Any abnormality of the form or function of the vocal cords can result in hoarseness. While benign, self-limiting processes, such as viral infections, account for the majority of cases, hoarseness is also the earliest symptom of laryngeal cancer. It is important for FPs to be able to recognize features suggestive of malignancy in order to allow for early diagnosis and treatment of this highly curable cancer.

Initial workup

Although the differential diagnosis for hoarseness is extensive (Table 1), a detailed history and physical examination can often determine the etiology and help guide the workup. It is important to differentiate acute (*i.e.*, less than two weeks) or fluctuating hoarseness from chronic, persistent hoarseness, since the latter is more commonly associated with a structural lesion of the larynx, such as:

- a laryngeal nodule,
- polyp, or
- laryngeal cancer.

A history of precipitating factors (Table 2), should be elicited. Heavy voice use will place a patient at risk for the development of benign structural lesions of the larynx, such as laryngeal polyps or nodules. The following may contribute to laryngeal pathology:

- a history of chronic voice clearing,
- cough and
- esophageal reflux.

Leo's case

Leo, 66, presents with a six-week history of hoarseness. His voice has not returned to normal and there has been no inciting event.

History

Leo was a heavy cigarette smoker and a social drinker.

What do you recommend?

Leo is referred to an otolaryngologist and on flexible fiberoptic examination is noted to have a bulky lesion on his right vocal cord that is suspicious for carcinoma. The remainder of his physical examination is normal. It is recommended that Leo undergo a panendoscopy and biopsy under a general anesthesia. This, in turn, confirms that he has laryngeal cancer.

Many of the associated symptoms seen with larynx cancer are non-specific. These can include:

- throat pain,
- dysphagia,
- odynophagia,
- a neck mass and
- stridor.

However, their presence should arouse suspicion of a malignancy, particularly if they are persistent or present in patients with risk factors for malignancy, such as tobacco and alcohol consumption. Past medical history should include the following as they may account for the patient's hoarseness:

- systemic diseases,
- surgical procedures, or
- medications.

Table 1

Differential diagnosis of hoarseness

<p>Infectious</p> <ul style="list-style-type: none"> • Vocal cord nodules • Bacterial tracheitis/laryngitis <p>Chronic irritation and inflammation</p> <ul style="list-style-type: none"> • Vocal cord nodules • Vocal cord polyps • Contact ulcer or granuloma • Reflux laryngitis (gastroesophageal reflux) <p>Neurologic</p> <ul style="list-style-type: none"> • Vocal cord paralysis <ul style="list-style-type: none"> - Tumours (e.g., thyroid, central nervous system, lung, neural) - Stroke - Iatrogenic (e.g., thyroid or thoracic surgery) - Idiopathic - Left atrial enlargement, aneurysm of the aortic arch • Neuromuscular abnormalities <ul style="list-style-type: none"> - Myasthenia gravis - Spasmodic dysphonia • Neurologic disorders <ul style="list-style-type: none"> - Pseudobulbar palsy - Amyotrophic lateral sclerosis 	<p>Trauma</p> <ul style="list-style-type: none"> • External trauma to the laryngeal framework • Intubation injury <p>Laryngeal cysts</p> <ul style="list-style-type: none"> • Ductal and saccular cysts • Laryngoceles <p>Neoplasms</p> <ul style="list-style-type: none"> • Benign <ul style="list-style-type: none"> - Squamous papillomas - Chondroma - Lipoma - Neurofibroma • Malignant <ul style="list-style-type: none"> - Squamous cell carcinoma - Chondrosarcoma - Neuroendocrine tumours <p>Other</p> <ul style="list-style-type: none"> • Hypothyroidism • Autoimmune disorders • Amyloidosis
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Listening to the patient speak can provide insight into the underlying problem (e.g., a hoarse, breathy voice indicates air escape typical of a unilateral vocal cord paralysis, while a rough quality may indicate a lesion on the vocal cord).

A general head and neck exam should be performed with a focus toward visualization of the larynx. Mirror examination is an inexpensive and relatively easy means for FPs to view the larynx.

In patients with chronic hoarseness, a detailed examination with a fiberoptic scope (flexible or rigid) should be performed; this often requires referral to an otolaryngologist. Videostroboscopy, which allows assessment of the mucosal wave of the vocal cords during phonation, can also be

performed. It is an excellent means of detecting subtle abnormalities or early lesions not seen with routine laryngoscopy. The neck should be evaluated for lymphadenopathy or thyroid masses.

Causes of hoarseness

Viral laryngitis

Acute viral laryngitis is one of the most common causes of hoarseness. It is acute in onset and is frequently associated with an upper respiratory tract infection (URTI). On examination, the vocal cords appear erythematous and slightly edematous. Viral laryngitis is a self-limiting process that improves with resolution of the URTI.

Treatment involves voice rest and hydration. Decongestants can further exacerbate hoarseness and should be avoided. Antibiotics are rarely indicated, since bacterial laryngitis is rare.

Non-infectious inflammatory laryngitis

The development of nodules, polyps, or granulomas on the vocal cords can be caused by chronic irritation and inflammation of the vocal cords from:

- smoking,
- coughing,
- throat clearing,
- vocal abuse or misuse and
- environmental toxin exposure.

Nodules

Vocal cord nodules arise in singers, women and children. They commonly occur at the junction of the anterior and middle one-third of both vocal cords. Conservative management with voice rest and speech therapy is usually successful. Surgery is rarely required.

Polyps

Vocal cord polyps are sessile or pedunculated, smooth masses, which may be single or multiple, but are most often unilateral. They result from vocal abuse or smoking. In severe cases, particularly in heavy smokers, the entire mucosa of both vocal cords becomes edematous and polypoid. Speech therapy and management of the underlying cause may be attempted, but surgical excision is frequently required.

Gastroesophageal reflux

Hoarseness can also be a symptom of gastroesophageal reflux and may be present even in the

Table 2

Precipitating factors to be elicited on history

- Upper respiratory tract infection
- Screaming or singing
- Larynx trauma (*i.e.*, getting hit in the neck)
- Surgery (*i.e.*, thyroid or thoracic surgery)
- Gastroesophageal reflux disease
- Occupation
- Noxious fume inhalation
- Stroke

absence of classic reflux symptoms. It is often worse in the morning after lying supine during the night. The classic finding on endoscopy is erythema and edema of the mucosa between and overlying the arytenoids. Reflux laryngitis responds well to aggressive anti-reflux therapy.

Vocal cord paralysis

Unilateral vocal cord paralysis (UVCP) results from injury to the ipsilateral recurrent laryngeal nerve (RLN) or vagus nerve. Patients present with a breathy voice due to an incomplete glottic closure and potentially, with symptoms of aspiration. Symptom severity varies. Common causes of

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UVCP include iatrogenic injury following thyroid or thoracic surgery and neoplasms that invade or compress the vagus or RLN. In a number of cases, no identifiable cause is found after an extensive work-up. Observation is initially indicated for patients with UVCP and an intact nerve, as function will often recover in six months to 12 months. In patients who do not recover, medicalization of the vocal cord can be performed, allowing for the apposition of the cords on adduction and marked improvement of the voice.

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Neurologic disorders

Hoarseness may also be an early symptom of neurologic and neuromuscular disorders. Spasmodic dysphonia is a neuromuscular disorder of the larynx in which excessive involuntary adduction of the vocal cords during phonation results in a strained or broken voice. Management involves speech therapy and possibly botulinum toxin injections. Other neurologic disorders that may present with hoarseness include:

- myasthenia gravis,
- amyotrophic lateral sclerosis and
- pseudobulbar palsy.

Larynx cancer

Laryngeal cancer typically presents with hoarseness. It occurs most commonly in men aged 45 years to

Frequently Asked Questions

1. When should I be concerned enough to refer a patient with hoarseness?

Referral should be made when hoarseness is present for more than two weeks and should be considered when you are unable to visualize the larynx on mirror examination, in patients with risk factors for laryngeal cancer and when patients fail to respond to conservative management.

2. To whom should I refer my patient?

Referral can be made to any otolaryngologist. Referral to a speech pathologist can be made after a diagnosis is obtained.

3. Can reflux, without a history of heartburn, cause hoarseness?

Yes, mild hoarseness can be caused with acid reflux. It is frequently associated with a sensation of a foreign body in the throat and may not be associated with classic heartburn symptoms.

75 years. Over 90% of laryngeal cancers are of the squamous cell type and tend to be well-differentiated and slow growing. Laryngeal cancers occur on the vocal cords (glottic cancer) in the majority of cases, but also can arise above the vocal cords (supraglottic cancer) and very rarely below the vocal cords (subglottic cancer). The major risk factors for laryngeal cancer are cigarette smoking and excessive alcohol consumption. Benign neoplasms of the larynx in adults are rare.

Presentation

Glottic cancers present early with hoarseness and typically do not have nodal metastases due to the sparse lymphatic network of the vocal cords. Supraglottic cancers tend to present late with:

- hoarseness,
- dysphagia,

- odynophagia,
- otalgia,
- respiratory distress and
- nodal metastases.

On laryngoscopy, carcinomas appear as either exophytic or ulcerative lesions and may cause changes in vocal cord mobility. Precancerous lesions, such as dysplasia and carcinoma *in-situ*, which also present with hoarseness, appear as areas of leukoplakia (white patches) along the vocal cord. Diagnosis is made on biopsy in the operating room under general anesthesia.

Treatment

Treatment depends upon the stage of the tumour, as determined by physical examination and imaging. The goals of treatment are to achieve cure while preserving voice and swallowing function. Precancerous lesions are treated with microsurgical excision or close follow-up. For early-stage larynx cancers (*i.e.*, those limited to the larynx without vocal cord paralysis), radiation and surgery have similar success rates. Radiation is the most common method of treatment since it preserves the best quality of voice. However, in selected patients, transoral laser surgery is a potential option that achieves good voice results and spares the morbidity associated with radiation. Advanced-stage larynx cancers (tumours that extend outside of the larynx, or have vocal cord paralysis) are managed with:

- radiation,
- concomitant chemoradiation, or
- a total laryngectomy.

Voice and speech rehabilitation are integral in helping the patient maintain communicative abilities post-treatment.

Take-home message

- Hoarseness, due to viral laryngitis, usually improves within two weeks
- Patients with persistent hoarseness or risk factors for larynx cancer should be referred early for further evaluation
- Larynx cancer is curable if diagnosed and treated early

Conclusion

While the majority of patients presenting with hoarseness have causes that are benign and self-limiting, hoarseness may also be an early symptom of serious disease, such as:

- laryngeal cancer,
- autoimmune disorders and
- neuromuscular disorders.

Laryngeal cancer, when diagnosed early, can be treated without significant morbidity and mortality. Therefore, patients with persistent or recurrent hoarseness should undergo laryngoscopy to determine if they require a referral to an otolaryngologist. 