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14.1 Symptomatology of Pharynx

Pharyngeal symptoms are mainly caused by diseases of the pharynx and its adjacent organs, and may also be a local manifestation of systemic diseases. The main causes are sore throat, dysphagia, abnormal voice and reflux of diet.

1. Pharyngalgia

Pharyngeal pain is one of the most common symptoms, which can be caused by pharyngeal diseases or diseases of adjacent organs, or accompanying symptoms of systemic diseases. Acute and chronic inflammation of pharyngeal mucosa and lymphoid tissue, pharyngeal ulcer, pharyngeal trauma (foreign body, abrasion, and scald), specific infection (tuberculosis, diphtheria), malignant tumors, excessive styloid process, and some systemic diseases (leukemia, mononucleosis) can cause pharyngalgia, but the degree of pain varies. Acute inflammation, suppurative infection of pharyngeal space and laryngopharyngeal cancer are the main causes of severe pain. Pain can radiate to the ear and is reluctant to swallow food because of pain.

There are two kinds of cases in clinic: spontaneous pharyngalgia and secondary pharyngalgia. The former occurs when there is no movement in the quiet state of the pharynx, which is usually confined to a part of the pharynx and is mostly caused by pharyngeal diseases, while the latter is caused by various activities of the pharynx, such as stimulation of swallowing, eating or tongue depressors. For example, acute and chronic inflammation of pharyngeal mucosa and lymphatic tissue, pharyngeal

trauma, ulcer, foreign body, specific infection (tuberculosis, diphtheria), malignant tumors, long styloid process, carotid sheathing, cervical fibrohistitis, rheumatic lesions of pharyngeal muscles, and some systemic diseases (leukemia, AIDS) all have pharyngalgia in varying degrees.

2. Pharyngeal Paraesthesia

It includes the unusual symptoms at pharynx, such as foreign body, obstruction, attachment, itching and other sensory abnormalities in the larynx and pharynx, which are common in organic lesions of the pharynx and surrounding tissues, such as chronic inflammation, pharyngeal keratosis, tonsil hypertrophy, uvula prolongation, tumors, reflux esophagitis, epiglottic cyst (Fig. 14.1); functional factors are mostly related to psychological

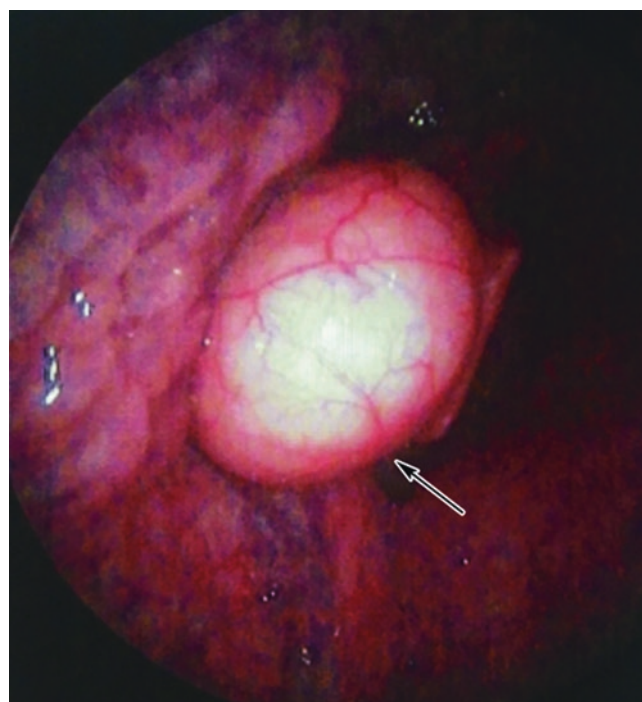


Fig. 14.1 Epiglottic abscess (arrow)

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factors such as fear and anxiety. It can be caused by endocrine dysfunction.

3. Dysphagia

It means the difficulty of normal swallowing function. The degree of difficulty swallowing could be briefly classified into three degrees: slight, moderate and severe. The light degree: patients can't freely swallow, choke while taking hard food, however they can tolerate a normal diet.

The patient with moderate degree can only take the semiliquid food; the patient with severe degree can take only liquid foods or can completely take in nothing.

Factors that cause dysphasia are as follows:

(a) Dysfunction

Patients with severe dysfunctional sore throat such as; acute suppurative tonsillitis, peritonsillar abscess, retropharyngeal abscess, acute epiglottitis and epiglottitis abscess, often suffer from dysphagia due to pain, and the degree varies with severity of pain. Some congenital malformations such as posterior nasal atresia and cleft palate, difficulty to swallow after birth.

(b) Obstruction

Obstructive pharyngeal or esophageal strictures, tumors, or foreign bodies hinder the descent of food, especially solid food, which is difficult to swallow, but liquid diet can still pass. Introesophageal obstruction such as congenital webbed esophagus, congenital esophageal stenosis, esophageal scar stenosis, esophageal foreign body, retrocervical cancer, hypopharyngeal diverticulum, extraesophageal compression such as cervical vertebral bone hyperplasia, thyroid tumors, extensive cervical lymph node metastases, mediastinal tumors, etc.

(c) Neuro Paralysis

Neuroplegic pharyngeal muscle paralysis caused by central lesions or peripheral neuritis causes dysphagia, especially when taking liquid. Such as bilateral pyramidal tract lesions, pseudobulbar palsy, extrapyramidal system damage, encephalitis, poliomyelitis, syringomyelia, cerebral hemorrhage and cerebral embolism, etc.

Children with sudden dysphagia, esophageal foreign bodies should consider. Esophageal cancer should be considered first when dysphagia occurs in middle aged and older patients and gradually aggravate. It maybe scars stenosis, dysphagia caused by emotional excitement and recurrence. Complicated symptoms also Achalasia should be considered. Complicated symptoms also have diagnostic significance, such as dysphagia with hiccups lesions, should consider at the end of the esophageal lesions, such as cancer, diaphragmatic hernia or achalasia, situation

where hoarseness occurs first then there is pre-existing dysphagia, the recurrent laryngeal nerve and hypopharyngeal may be involved in laryngeal lesions. Tracheoesophageal fistula should be considered if there is a cough caused by drinking water. Postswallowing reflux, which causes cough, may be due to achalasia or food reflux in hypopharyngeal esophageal diverticulum.

4. Abnormal Sounds

The pharyngeal cavity is the common vocal cavity, and the tongue is an important organ to assist vocalization. It is closely related to the clarity and quality of voice. If there is rotation and pathological changes, the voice is ambiguous (speech clarity is extremely poor) or the sound quality characteristics are different from the original (tone color change), or the produced during sleep is not appropriate (snoring), collectively referred to as abnormal sound.

Lightness of speech and change of timbre (i.e. sound quality). When the lip, teeth, tongue and palate are defective, it is difficult or impossible to pronounce certain sounds, which leads to inarticulate speech. The patients with cleft palate and palate paralysis can not close the nasopharynx and have open nasal sounds, while the patients with adenoid hypertrophy, posterior nasal polyp, hypertrophic rhinitis and nasopharyngeal tumors have occlusive nasal sounds when the resonant cavity is obstructed. There are space-occupying lesions (abscesses or tumors) in the pharyngeal cavity. The pronunciation lacks resonance. When speaking, it is like there is content in the mouth, the words are unclear, and the crying of children is usually like that of ducks sounds.

5. Dietary Reflux

When the diet can not smoothly enter the esophagus through the pharynx and reflux to the mouth, nasopharynx and nasal cavity, it is called dietary reflux. Mostly seen in the following diseases:

(a) Pharynx

Pharyngopharyngeal muscle paralysis, retropharyngeal abscess, peritonsillar abscess, cleft palate, laryngopharyngeal tumors, etc.

(b) Esophagus

Esophageal deformity, diverticulum, stricture, dilatation, reflux esophagitis, etc.

(c) Stomach

Gastrointestinal neurosis, gastritis, gastric cancer and gastric dilatation etc.

(d) Other Diseases

Other diseases, such as endocrine disorders, brain dysfunction, hypothyroidism, primary chronic adrenal cortical dysfunction, nutritional deficiency, acid-base imbalance, can also cause gastrointestinal dysfunction and reflux.

14.2 Examination Method of Pharynx

14.2.1 General Examination

1. Pharyngeal Inspection

The pharyngeal examinee is sitting with mouth open and breathing calmly. The examiner lifted the lips and cheeks with tongue depressor to observe whether there are bleeding, ulcers and masses on the teeth, gingiva, hard palate, tongue and floor of mouth. Then he held the tongue depressor and gently depressed the front 2/3 of tongue to observe the morphology of oropharynx; the color and luster of mucosa, whether there are congestion, secretions, pseudomembranes, ulcers and neoplasms; whether the soft palate was symmetrical and its activity; whether there is lymphatic follicles on the posterior pharyngeal wall and whether there are Swollen tonsil; tonsil size and palatoglossal arch, palatopharyngeal arch situation, if the palatoglossal arch is pulled open with a hook, it will be better to see the true situation of tonsil; use tongue depressor to squeeze palatoglossal arch, check whether there is cheese-like substance or pus overflow in crypt.

2. Pharyngeal Palpation

The pharyngeal palpation patient is sitting, head slightly forward, the examiner stands on the right side of the examinee; the right hand wears gloves or finger gloves, with the index finger from the right corner of the mouth extended into the pharynx for examination. Palpation is suitable for the diagnosis of pharyngeal masses, to determine the location, size, surface characteristics, and hardness, mobility of the lesions, to check for fluctuations, tenderness and the relationship with the neck. Palpation can also be used to diagnose styloid process lengthening and determine adenoid size in children. However, in case of suspected pharyngeal abscess, palpation should be used carefully to avoid the

risk of suffocation due to rupture of abscess and aspiration by mistake.

3. Cervical Palpation

Cervical palpation because of the close relationship between the pharynx and the neck, cervical lymph node enlargement often indicates the existence of some pharyngeal diseases, so the neck should be carefully examined. At the time of examination, the patient sits with his arms drooping and his head slightly low. The examiner stands behind the examinee and palpates them sequentially with two fingertips. They should be done on both sides at the same time for comparison. The upper, middle and anterior cervical lymph nodes of deep cervical lymph nodes were examined along the anterior margin of sternocleidomastoid muscle to the sternum, and the posterior cervical triangle and supraclavicular lymph nodes were examined. Examination included swelling and mass, size, hardness, mobility, tenderness, adhesion and pulsation of the mass.

4. Indirect Nasopharyngoscopy Examination

Indirect nasopharyngeal endoscopy examines the examinee sitting, mouth opening moderately, pharyngeal reflex sensitive person, using tetracaine for surface anesthesia before examination. Press the tongue plate on the left hand, press down the front 2/3 of the tongue, expose the back wall of the pharynx, and hold the nasopharyngoscope warming but not scalding on the right hand. The mirror is facing upward, extending from the mouth corner into the mouth, and placed between the soft palate and the back wall of the pharynx (Fig. 14.2). Do not touch the surrounding tissues, so as to avoid obstructing the examination due to pharyngeal reflex. Adjust the angle of the mirror, the back of the soft palate, the back edge of the nasal septum There are also eustachian tube pillow, eustachian tube oropharynx, pharyngeal recess and adenoids (Fig. 14.3). During examination, attention should be paid

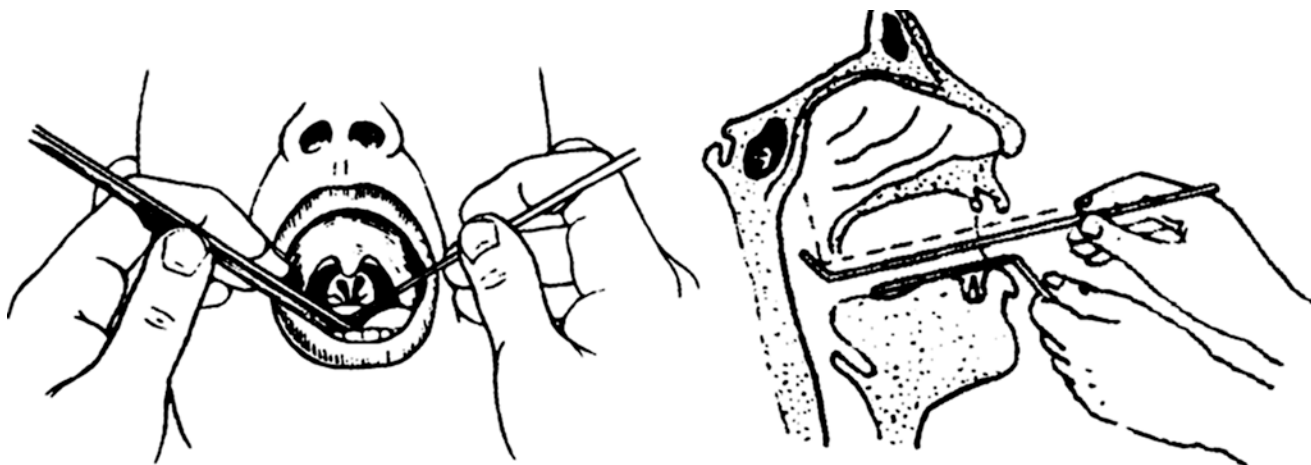


Fig. 14.2 Indirect nasopharyngeal scope examination method

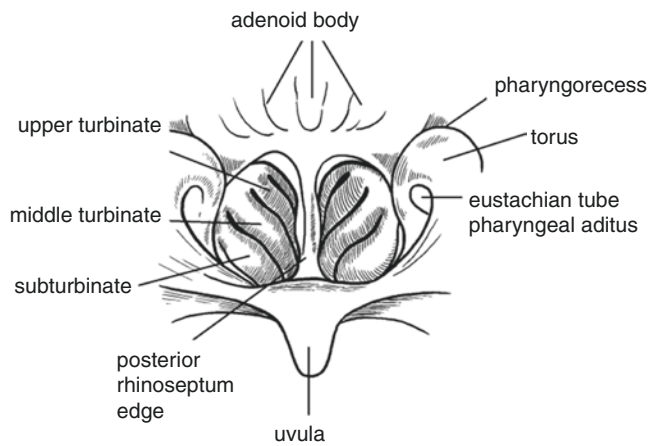


Fig. 14.3 Common imaging under indirect nasopharyngeal scopy

to the presence or absence of congestion, roughness, bleeding, ulceration, protuberance and new organisms in nasopharyngeal mucosa.

5. Indirect Laryngoscope

Indirect laryngoscope is the most common and convenient method of laryngopharyngeal examination in clinic. For patients with sensitive pharyngeal reflex, high tongue root and poor epiglottis elevation, the examination of laryngopharyngeal exposure is not good.

14.2.2 Endoscopy

1. Rigid Endoscopy

The nasoendoscopy tube is thin. After contraction anesthesia of nasal mucosa, endoscopy is placed into the nasopharynx through the nasal base, and the tube is rotated to observe each part of the nasopharynx. The nasoendoscope tube is thicker through the mouth. It is placed in the oropharynx through the soft palate. The window at the end of the endoscope tube is made to look up at the nasopharynx.

2. Fibrous (Electronic) Endoscopy

Fiber Endoscopy is a flexible endoscope, which can be flexible and rotative. After being introduced into the nasal cavity, it can change the angle at will and observe the whole nasopharynx with higher accuracy. Before examination, nasal endocrine should be cleaned and 1% tetracaine should be used for nasal cavity and nasopharyngeal mucosal surface anesthesia.

14.2.3 Imaging

1. X-Ray Examination

X-ray examination mainly includes lateral examination and skull base examination. Because of the limited resolution, it is basically replaced by CT scan.

Contrast examination mainly includes laryngopharyngeal (pyriform recess) angiography, which is the preferred examination method for lesions of pyriform recess. Subjects swallowed 150–200%(W/V) barium suspension for double contrast radiography. Positive, lateral and left-right oblique radiographs were taken during filling and resting periods respectively. The morphology of epiglottic valley, pyriform recess and esophageal entrance was observed. In order to better display the above structure, we can also do an improved Valsalva action, that is, after taking barium, let the examinee pinch his nose, close his mouth and hold his breath forcefully, blow up his cheek and throat, and take positive and lateral films. CT and MRI can also show the anatomical structure well, but the display function is not as good as that of angiography.

2. CT Scan

CT scan includes plain scan and enhanced scan. The nasopharynx is closely related to the skull base, so the examination of the nasopharynx should include the skull base. The soft tissue window and the bone window should be observed simultaneously to understand the skull base and other bone structures. Because the pharyngeal structure is soft tissue, the lesions are closely related to the parapharyngeal space and cervical vessels, therefore, pharyngeal examination should be enhanced scanning, which is helpful to the localization and characterization of the lesions and the relationship with the surrounding structures, and can identify the vessels and lymph nodes.

During pharyngeal CT scan, patients must be told to breathe slowly and calmly, not to swallow and speak, in order to avoid artifacts.

The specific scanning methods of nasopharynx, oropharynx and laryngopharynx are as follows.

(a) Nasopharyngeal CT Scan

- Cross Section

The patient is put in supine and the auditory canthus line should be perpendicular to the scanning table. The scanning range would be from sphenoid body to hard palate plane. The thickness and spacing were 5 mm. The scanning conditions were 130 kV and 160 mA. To understand the condition of cervical lymph nodes, the hyoid plane should scanned downward with 10 mm thickness and space.

Enhanced scanning should be performed by intravenous injection of 80-100 mL iodine contrast agent at a rate of 2-3 mL/s. Continuous scanning should be started after injection of 50 mL.

- Coronary Scanning

Patients lie on their back, head droop, and backward, so that the line of auditory canthus is parallel to the plane as far as possible (the angle of the frame can be adjusted properly). The scanning range is from the

front edge of the flange to the front edge of the first cervical spine. The thickness and interval of the lamina are all 5 mm. Since the wide application of multi-slice spiral CT, coronal scanning has gradually been replaced by coronal reconstruction of cross-sectional scanning.

(b) Oropharyngeal CT Scan

- Cross sectional scanning

Posture and nasopharynx scanning, scanning range from hard palate to upper edge of epiglottic cartilage, thickness and interval are 5 mm. To understand the lymph node status, 10 mm thickness and interval were scanned downward to the lower edge of the third cervical spine.

- Coronary

Same as the nasopharynx.

(c) Laryngopharyngeal CT Scan

- Cross section

Patients in supine position, mandible elevation, first take lateral positioning film of head and neck, scanning plane parallel to vocal cord, if the direction of vocal cord can not be determined, scanning plane can be consistent with the central cervical interval; scanning range from the upper edge of epiglottis of hyoid bone to the lower part of glottis (i.e. below the lower edge of cricoid cartilage), equivalent to the upper edge of the third cervical vertebra to the lower edge of the sixth cervical vertebra; slice thickness and interval are all 5 mm.

- Coronary

Coronal scanning: Coronal images can be obtained by coronal reconstruction through cross-sectional scanning.

3. MRI

Magnetic resonance imaging (MRI) is another significant progress in imaging after CT in the 1980s. It has excellent tissue resolution, multi-directional imaging ability and various imaging sequences. It can display normal pharyngeal anatomy and lesions more clearly and comprehensively than CT. MRI images can clearly show the mucosal part and deep structure of nasopharynx. Therefore, MRI is not only helpful to detect superficial lesions, but also helpful to estimate the depth of invasion of lesions. Fat showed high signal on T1 and T2 weighted images. The parapharyngeal space of nasopharynx was surrounded by adipose tissue. The disappearance or displacement of fat tissue suggested the existence of lesions and could judge the location of lesions, which is much more sensitive than CT.

Spin echo sequence is often selected for pharyngeal imaging. Coil selection head, neck coil. The cross-section is the basic direction, and the sagittal or coronal plane is supplemented. Spin echo sequence is often used in pharyngeal imaging. T1 weighted imaging uses repetition time (TR): 400–700 ms, echo time (TE) 15–30 ms, T2 weighted imaging TR: 2000–4000 ms, TE: 60 ms, 90 ms or 120 ms. Layer thickness is 3–5 mm, matrix 256 * 256 or higher FOV (field of view) 18–44 cm as required. In order to reduce the artifacts of breathing movement, patients should be advised to avoid swallowing during scanning, and saturated bands should be applied to the upper, lower or front of the scanning range according to different scanning directions. The parameters of enhanced scan are the same as those of plain scan.

4. Nuclear Medicine Imaging

PET-CT can be used for staging malignant tumors.