

18/MHA06/052

ANA 204

ANSWER

The respiratory tract is the pathway through which much needed oxygen enters the body. It begins at the nostrils of the nose, continuing into the nasal cavity. From here, it passes through the pharynx, larynx, trachea, bronchi, bronchioles and ends in the alveoli. The airway as a whole can be divided into two segments: a conducting segment (from the nostrils to the terminal bronchiole) and a respiratory segment (from the respiratory bronchioles to the alveoli). The upper respiratory system, or upper respiratory tract, consists of the nose and nasal cavity, the pharynx, and the larynx.

Nasal cavity

The nose, as the primary mode of entry of air into the airway, has both respiratory and olfactory functions. In its respiratory capacity, it modifies the air so that gaseous exchange will occur more efficiently in the lungs, while in its olfactory capacity, it detects various odors and transmits those impulses to the brain for interpretation.

It is also equipped with modified hairs, called vibrissae that filter out larger particles from inspired air. The membrane transitions from keratinized stratified squamous epithelium to pseudo stratified columnar ciliated epithelium with goblet cells (also called respiratory epithelium) at a point known as the limen nasi.

The respiratory epithelium covers the floor, medial and lateral walls (just below the superior concha) of the nasal cavity to the choana (posterior boundary of the nasal cavity).

PHARYNX

The epithelia of the pharyngeal portion of the conducting zone changes with respect to each pharyngeal segment. In the nasopharynx, the epithelium is continuous with that of the nasal cavity. The cilia here continues to wharf foreign particles through the pharynx to be swallowed.

In the oropharynx and laryngopharynx, the epithelium transitions to non-keratinized stratified squamous epithelium. This durable epithelium is better suited to accommodate friction associated with swallowing food.

Additionally, lymphatic aggregates (distributed throughout the mucosa) act as a first contact point for the immune system to sort through particles entering the body.

The pharynx is lined by both stratified squamous epithelium and ciliated pseudo stratified epithelium with goblet cells.

LARYNX

The larynx is a complex tubular segment of the respiratory system formed by irregularly shaped plates of hyaline and elastic cartilage. The mucosa form two pairs of folds, false and true vocal cords, which extend into the lumen of the larynx. The laryngeal epithelium corresponding to the mechanically exposed areas consists of stratified squamous non-keratinized epithelium.

Supra-basally in this epithelium, dendritic antigen-presenting Langerhans cells (LCs) can be found. In the rest of the larynx, the epithelium is ciliated columnar pseudo stratified with a rich population of goblet cells. Except in the true vocal cords, lamina propria consists of rather loose connective tissue and contains groups of small, branched tubulo-alveolar glands.

The epiglottis is part of the larynx. It is composed of elastic cartilage. The "Adam's apple" is a nickname for part of the larynx formed by the thyroid cartilage.