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EPISTAXIS (NASAGAT RAKTPITTA): AN INTEGRATIVE REVIEW OF ETIOLOGY, PATHOGENESIS, CLINICAL FEATURES, AND MANAGEMENT IN AYURVEDA AND MODERN MEDICINE

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ABSTRACT

Epistaxis, or nasal bleeding, is a common emergency in otorhinolaryngology affecting individuals of all ages. While many episodes are mild and self-limiting, recurrent or severe cases can present serious clinical challenges and, in rare situations, become life-threatening. Improvements in diagnostic approaches, therapeutic interventions, and clinical guidelines have refined strategies for managing epistaxis effectively. This review critically examines the causes, pathophysiology, clinical manifestations, and management of epistaxis from both modern medical and Ayurvedic perspectives, providing an integrated framework for clinical application. From a contemporary medical standpoint, epistaxis is categorized as anterior or posterior, depending on the source of bleeding. Anterior epistaxis typically arises from the Kiesselbach plexus, whereas posterior bleeding originates from the Woodruff plexus. Contributing factors include local causes such as trauma, inflammation, anatomical variations, and environmental conditions, as well as systemic disorders like hypertension, coagulopathies, and cardiovascular disease. Seasonal variations,

particularly low humidity in winter, exacerbate mucosal dryness and increase bleeding risk. In Ayurveda, epistaxis corresponds to Nasagat Raktapitta, characterized by spontaneous bleeding from natural orifices without injury. The condition is primarily linked to vitiation of Pitta Dosha, resulting in Rakta Dhatu dushti and its abnormal upward movement, termed Urdhvaga Raktapitta. Predisposing factors include excessive heat exposure, strenuous activity, emotional stress, and consumption of hot, pungent, sour, or salty foods. Ayurvedic management emphasizes a holistic approach, including Nidana parivarjana, lifestyle and dietary modifications, and specific therapeutic interventions to pacify Pitta and stabilize Rakta. This review underscores the conceptual and clinical correlation between modern epistaxis and Nasagat Raktapitta, highlighting the importance of integrating classical Ayurvedic principles with contemporary medical practices for comprehensive and effective patient management.

KEYWORDS: Raktapitta; Epistaxis; Pitta Dosha; Dinacharya; Ritucharya; Epistaxis Management; Nasal Packing; Hereditary Hemorrhagic Telangiectasia

INTRODUCTION

Epistaxis, commonly referred to as a nosebleed, ranks among the most frequent emergencies encountered in otorhinolaryngology, presenting commonly in primary care as well as emergency settings. It can affect individuals across all age groups, and while most episodes are benign and self-limiting, recurrent or severe bleeding may require urgent medical attention and, in rare cases, can be life-threatening. Clinically, epistaxis is categorized into anterior and posterior types based on the site of bleeding. Anterior epistaxis accounts for the majority of cases, whereas posterior epistaxis is less common but generally more severe and often associated with systemic comorbidities.[1]

Around 90% of anterior nosebleeds originate from the Kiesselbach plexus (Little's area) on the anterior nasal septum. This vascular network is formed by the terminal branches of five arteries: anterior and posterior ethmoidal arteries, sphenopalatine artery, greater palatine artery, and superior labial artery.[9,10] Due to its superficial location and fragile mucosa, this area is highly susceptible to trauma, environmental extremes, and desiccation. Posterior epistaxis typically arises from the Woodruff plexus in the posterior or superior nasal cavity and is more commonly observed in elderly patients, individuals with hypertension, coagulation disorders, vascular anomalies, or those receiving anticoagulant therapy.[2]

Epidemiologically, it is estimated that nearly 60% of the population experiences at least one episode of epistaxis in their lifetime, though only a fraction seeks medical attention. The condition shows a bimodal age distribution, being more prevalent in children and older adults, with a slight male predominance. Seasonal variations are also notable, with increased incidence during colder months due to low ambient humidity causing nasal mucosal dryness.[11]

From an Ayurvedic perspective, epistaxis corresponds closely to Nasagat Raktapitta, characterized by spontaneous bleeding from natural orifices without external injury. The condition is primarily linked to Pitta Dosha aggravation, leading to vitiation of Rakta Dhatu and its abnormal upward movement, described as Urdhvaga Raktapitta. Classical Ayurvedic texts highlight the rapid progression and potential severity of Raktapitta, stressing early recognition and prompt management. Although the conceptual frameworks of modern medicine and Ayurveda differ, both emphasize identification of causative factors and timely therapeutic interventions, supporting an integrative approach to comprehensive epistaxis management.[12]

OBJECTIVES

The objectives of this review are:

1. To explore the etiology and causative factors of epistaxis and establish its correlation with Nasagat Raktapitta.
2. To review the epidemiological trends and demographic distribution of epistaxis.
3. To examine the pathophysiology of epistaxis from both modern medical and Ayurvedic perspectives.
4. To outline clinical examination protocols and diagnostic approaches for identifying the source and cause of nasal bleeding.
5. To differentiate between anterior and posterior epistaxis based on clinical presentation, severity, and associated risk factors.

Materials and Methods

A thorough review of classical Ayurvedic literature was undertaken, including the **Brihattrayi** texts (*Charaka Samhita, Sushruta Samhita, Astanga Hridaya*) and **Laghutrayi** texts (*Madhava Nidana, Sharangadhara Samhita, Bhavaprakasha*), along with their authoritative commentaries. Contemporary research publications, including peer-

reviewed journals, dissertations, and articles accessed via platforms such as **Shodhganga, Shodhgangotri** were also analyzed to provide an integrative perspective.

Raktapitta: Conceptual Overview

Raktapitta, as described in classical Ayurvedic literature, is a hemorrhagic disorder characterized by the spontaneous expulsion of vitiated blood through natural orifices in the absence of external injury. This condition arises primarily due to the aggravation of **Pitta Dosha**, which vitiates **Rakta Dhatu**, altering its color, consistency, and odor, and resulting in pathological bleeding. Ayurvedic texts emphasize that the interaction and vitiation of Pitta with Rakta form the core pathological mechanism of Raktapitta. Given its rapid onset and potential severity, Raktapitta is classified as a **Mahagada**(major disease) requiring timely diagnosis and intervention.[1,4]

Etiology of Raktapitta (Ayurvedic Perspective)

Raktapitta develops when aggravated Pitta, precipitated by etiological factors such as excessive intake of **pungent, sour, salty, and hot foods**, exposure to high temperatures, alcohol consumption, strenuous physical activity, and psychological stress, invades Rakta Dhatu. As Rakta is the principal site of Pitta, their pathological interaction exacerbates Pitta's heat and liquidity, causing the liquid component of Rakta to spread abnormally through the body channels and manifest as spontaneous bleeding. When the upward pathway is primarily involved, the disorder is referred to as **Urdhvaga Raktapitta**, which clinically correlates with **epistaxis or nasal bleeding.**[1,2,3]

Major Factors Influencing Raktapitta

1. **Grishma Ritu (Summer Season)**

- **Ushnata (heat):** Promotes vasodilatation and Pitta aggravation, vitiating Rakta.
- **Vata Sanchaya:** Increased movement within channels facilitates bleeding.
- **Hinbala:** Reduced bodily strength renders mucosa fragile.
- **Mandagni:** Decreased digestive fire affects metabolic processes.

2. **Balyavastha (Childhood)**

- Naturally reduced strength (**Hinbala**)
- Fragile tissues (**Sukumarata**)
- Excessive physical activity leading to Vata aggravation

3. **Vriddhavastha (Old Age)**

- Hinbala due to degenerative changes
- Increased Vata (**Vata Vriddhi**)
- Mucosal dryness (**Rukshata**) predisposing to bleeding

4. **Rukshata (Dryness)**

- Dry climatic conditions, particularly in winter, desiccate nasal mucosa and precipitate bleeding.

Additional contributing factors include extreme seasonal conditions, dietary habits (hot, spicy, sour, salty, pungent foods), excessive exertion, emotional stress, and inadequate rest. Collectively, these factors aggravate Pitta, which vitiates Rakta, leading to bleeding through various orifices.

Etiology of Epistaxis (Modern Perspective)

Epistaxis is a multifactorial condition, broadly classified into **local, systemic, environmental, medication-induced, hereditary, and idiopathic** causes.

Local Causes

- Digital trauma (nose picking), nasal septal deviation, facial or nasal trauma
- Chronic use of nasal cannula or inflammatory conditions (e.g., chronic sinusitis, granulomatous diseases)
- Structural abnormalities (septal perforation), tumors, and vascular malformations

Systemic Causes

- Hypertension, liver disease, alcoholism, thrombocytopenia, leukemia
- Coagulopathies (hemophilia, von Willebrand disease)
- Genetic disorders such as **Hereditary Hemorrhagic Telangiectasia (HHT)**

Environmental Factors

- Dry climate, especially winter
- Allergic rhinitis or other conditions predisposing to mucosal fragility

Medication-Induced Causes

- NSAIDs, anticoagulants, platelet aggregation inhibitors
- Topical nasal steroid sprays and certain supplements (e.g., vitamin E, ginkgo, ginseng)

- Illicit drugs, particularly cocaine

Idiopathic Causes

- In some patients, no identifiable cause is detected, and the condition is labeled as **idiopathic epistaxis**
- Rare conditions like **Eales disease** may also contribute

Pathophysiology of Epistaxis

Epistaxis occurs due to the rupture of blood vessels within the nasal mucosa, either spontaneously or secondary to trauma, inflammation, systemic disorders, medications, or malignancy. Elevated blood pressure or anticoagulant therapy may prolong bleeding.

- **Anterior epistaxis** predominantly arises from the **Kiesselbach plexus**, where the causative vessel can often be identified.
- **Posterior epistaxis** originates from deeper vessels, such as the **Woodruff plexus** or terminal branches of the **sphenopalatine and posterior ethmoidal arteries**. These cases are typically more severe, challenging to control, and may lead to bleeding into the nasopharynx, increasing the risk of aspiration and airway compromise.

Classification of Raktapitta

Based on Marga (Pathway)

- Urdhvaga Raktapitta – bleeding through upper pathways (nose, mouth)
- Adhoga Raktapitta – bleeding through lower pathways

Based on Dosha Involvement

- Vataja Raktapitta – blood appears thin, frothy, and dark
- Pittaja Raktapitta – blood is bright red, yellowish, blackish, or smoky
- Kaphaja Raktapitta – blood is thick, pale, slimy, and unctuous
- Sansargaja – involvement of two Doshas
- Sannipataja – involvement of all three Doshas, presenting with mixed features

Site and Location of Raktapitta

- Primary sites of Rakta circulation: Yakrit (liver) and Plihan (spleen)
- Vitiation at these sites can lead to systemic manifestations, including nasal bleeding

In modern medical literature, bleeding disorders were reviewed and broadly classified according to:

1. **Nature of bleeding:** internal or external
2. **Source of bleeding:** arterial, venous, or capillary
3. **Severity:** mild, moderate, or severe
4. **Timing of bleeding:** primary, secondary, or reactionary

Differential Diagnosis

- Nasal and nasopharyngeal tumors
- Disseminated intravascular coagulation
- Inherited bleeding disorders: hemophilia, von Willebrand disease
- Inflammatory conditions: rhinitis
- Foreign bodies in the nasal cavity
- Drug-induced bleeding: anticoagulants, NSAIDs
- Proper clinical evaluation and investigations are essential for accurate diagnosis

Prognosis (Ayurvedic Perspective)

- Depends on Dosha involvement, pathway (Marga), digestive strength (Agni), age, and general health
- Single Dosha involvement and upper pathway bleeding – generally curable
- Two Doshas and lower pathway involvement – manageable/palliative
- All three Doshas involved, both pathways affected, diminished Agni, elderly or debilitated patient – may be incurable
- Clinically corresponds to external hemorrhagic conditions: epistaxis, hematemesis, hemoptysis
- Epistaxis is the most commonly observed manifestation

Management of Epistaxis

Management of epistaxis begins with a careful initial assessment, including inspection of the nasal cavity using a nasal speculum to identify the bleeding source. While most episodes can be controlled with simple first-aid measures at home, persistent or severe bleeding requires medical intervention. Anterior nasal packing is commonly employed as a first-line procedure in cases of continued bleeding. Antifibrinolytic agents, such as tranexamic acid, are often used to stabilize clots and reduce ongoing hemorrhage.[9,13]

Recent clinical guidelines recommend a structured approach emphasizing early identification of bleeding severity. Sustained compression of the lower third of the nose is advised, with

nasal packing applied if bleeding cannot be controlled. Resorbable packing is preferred for patients on anticoagulants or with bleeding disorders. Education on nasal pack care, removal timing, warning signs, and follow-up is essential. In recurrent, unilateral, or refractory cases, anterior rhinoscopy and nasal endoscopy help accurately localize the bleeding site. Surgical or endovascular procedures, such as arterial ligation or embolization, are reserved for uncontrolled or recurrent epistaxis. Patients suspected of telangiectasias should be evaluated for Hereditary Hemorrhagic Telangiectasia. Documentation of outcomes within 30 days post-intervention is recommended.[19]

Clinical Management Options

Topical agents such as tranexamic acid may be applied before nasal packing to reduce discomfort. Topical vasoconstrictors like oxymetazoline or epinephrine can be used as adjuncts to compression therapy. Chemical cauterization using silver nitrate or electrocautery is effective for localized bleeding points. If conservative and cauterization methods fail, nasal packing with gauze, nasal tampons, balloon devices, or posterior packing techniques may be necessary. Posterior epistaxis often requires hospitalization due to severity, pain, and aspiration risk. Surgical options, including arterial ligation and endoscopic interventions, are preferred over prolonged packing in refractory cases.[11]

Advanced and Interventional Approaches

Severe or recurrent epistaxis often requires a multidisciplinary approach involving primary care physicians, emergency physicians, and otorhinolaryngologists. Endoscopic ligation of the sphenopalatine artery has shown higher success rates compared to traditional posterior packing. When surgical intervention fails or is contraindicated, endovascular embolization is a valuable option. Recent studies highlight the role of ethmoidal arteries, particularly Stamm's S-point, as a source of severe refractory epistaxis. Targeted endoscopic cauterization improves outcomes.[16]

Ayurvedic Management of Raktapitta

Raktapitta is described in Ayurvedic classics as an acute, rapidly spreading disorder, often compared to a forest fire due to its sudden onset and aggressive nature. Management focuses on both preventive and therapeutic measures

1. **Dietary Modifications:** Patients are advised to follow a diet that is soft, sweet, cold, and bitter in nature. Pungent, sour, salty, and hot foods should be avoided. Adequate hydration and cooling foods help pacify Pitta.

2. Lifestyle Measures: Avoidance of excessive heat exposure, strenuous activity, stress, and emotional disturbances is emphasized. Seasonal considerations (Ritucharya) guide preventive strategies.

3. Therapeutic Interventions

- **Abhyanga (medicated oil massage):** Soothes Pitta and strengthens tissues.
- **Parisheka (medicated water affusion):** Cooling effect on the affected region to control bleeding.
- **Snana (therapeutic bath) and Sparsha (cool touch):** Reduce Pitta aggravation and provide systemic cooling.
- **Vamana (therapeutic emesis) or Virechana (therapeutic purgation):** Used selectively based on the patient's constitution, severity, and direction of bleeding.

4. Local Applications: Herbal pastes or oils may be applied intranasally to promote hemostasis. Ayurvedic formulations containing ingredients such as Yastimadhu, Haridra, and Amalaki are traditionally used to stabilize Rakta and pacify Pitta.

Ayurvedic management emphasizes early intervention, holistic care, and restoration of Dosha balance alongside supportive measures to prevent recurrence. Integration of Ayurvedic principles with modern emergency care can enhance patient outcomes, particularly in recurrent or mild-to-moderate cases.

DISCUSSION

The Ayurvedic concept of Raktapitta provides a comprehensive framework for understanding hemorrhagic disorders such as epistaxis. It emphasizes the interplay of doshas, particularly Pitta, and highlights the influence of dietary habits, lifestyle, and seasonal changes on bleeding tendencies. The condition underscores the significance of preventive strategies, including proper diet (ahara), daily routine (dinacharya), and seasonal regimen (ritucharya), to maintain dosha balance and prevent recurrence. Ayurvedic management focuses on pacifying Pitta and stabilizing Rakta through a combination of dietary regulation, lifestyle modification, and administration of specific herbal formulations, thereby addressing both causative and symptomatic aspects of the disorder.

CONCLUSION

Raktapitta offers profound insights into the Ayurvedic understanding of bleeding disorders, providing conceptual and practical guidance for conditions like epistaxis. An integrative approach that combines classical Ayurvedic principles with contemporary medical management can enhance patient outcomes, ensure comprehensive care, and reduce the risk of recurrence. Further clinical and experimental studies are necessary to scientifically validate traditional therapies and optimize their incorporation into modern practice.

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