

# *Epistaxis in Children*

*Julio Heinichen M.*

Epistaxis is a frequent emergency at the pediatrician's and otolaryngologist's office.

## **Incidence**

It rarely occurs in children who are still suckling, and it increases gradually until it reaches a peak at the ages of around 7 to 13 years. Thereafter it diminishes markedly until old age, when it increases again due to systemic vascular alterations. Anterior nasal bleeding that has its origin in the anterior portion of the nasal septum (mainly in Little's area or the plexus of Kesselbach) is most frequent, comprising 80% of nosebleeds. It generally does not require hospitalization since it can be controlled rather easily using ambulatory procedures (chemical cauterization, electrocoagulation, or anterior obstruction with gauze or other materials). Severe epistaxis, however, requires urgent care for its control, to avoid a hemodynamic imbalance with consequent hypovolemic shock or even death.

According to Montgomery, epistaxis is better classified according to its location:

## **anterior or posterior.**

Anterior bleeding occurs in the plexus of Kesselbach or in Little's area, and it can originate in a branch of the anterior ethmoidal artery, a septal branch of the superior labial artery, a septal branch of the maxillary artery, and/or a nasal branch of the greater palatine artery.

Posterior bleeding can occur from anterior or posterior ethmoidal arteries, the septal artery, and/or the posterior lateral nasal artery, the last being branches of the maxillary artery.

According to its **etiological bases**, epistaxis can be divided in four groups, in agreement with Younkers and colleagues:

(A) local causes; (B) causes associated with neoplastic processes; (C) causes associated with hematologic alterations; (D) other causes. Local causes (A) include nasal allergy, intranasal medications, trauma by digital manipulation, and reactions to the presence of a foreign body. In epistaxis associated with neoplasias (B), angiofibroma and malignant tumors stand out. Epistaxes associated with hematologic alterations (C) include those in leukemia, anemia, purpura, polycythemia, hemophilia, lymphoma, and Hodgkin disease. Other causes (D) may include hypertension, familial teleangiectasia, hepatic disturbances, abrupt

differences in atmospheric pressure, psychopathic behaviors, special anticoagulant medications, and chronic use of nasal topical corticoids.

### **Local causes**

#### **Etiopathogenic considerations.**

Spontaneous (or idiopathic) causes and digital trauma are the most common causes of nasal hemorrhage in childhood and most of the time are benign. First, it is necessary to separate this type of nasal hemorrhage from an urgency or emergency. Mothers normally feel much stressed about nasal bleeding and immediately look for the doctor. Reassurance must be provided, affirming that nothing complex is being treated, and doctors should immediately proceed to evaluate the child. Most of the time the bleeding originates in a vein or artery without any previous alteration, which is why the term “spontaneous” is used.

**Digital trauma and spontaneous hemorrhage are the most common causes of epistaxis in children.** Although very superficial, the injury in the mucous membrane occurs in a very vascular area (area of Kisselbach), and it becomes worrisome for the mother because it is repetitive and each removal of a hematic scab causes new hemorrhage.

#### **Foreign body**

In cases of children with nasal hemorrhage presenting local inflammatory signs and fetid secretions, the foreign body must be removed. Nasal foreign bodies are substances, generally inert, small enough to be introduced into the nose, most of the time voluntarily. These children generally present unilateral rhinorrhea that gradually becomes purulent and fetid. Pain in the nose and local irritation are symptoms that are present immediately at the beginning of such a situation. Depending on the type of foreign body and the duration of it in the nose, epistaxis can happen.

In male children and adolescents with a history of intense and frequent nasal bleeding, juvenile **angiofibroma** can be suspected. This is a benign tumor that can originate in the pterygomaxillary cavity and can cause violent hemorrhages, especially if it has not yet been diagnosed. In certain acute **diseases** like measles, mononucleosis, influenza, and whooping cough, there is a diminution of vascular resistance and an increase in fragility of the hair, often resulting in nasal bleeding.

#### **Treatment of nasal hemorrhage**

Control of the hemorrhage must be related to the cause of bleeding and its anatomical location. Unfortunately, in some situations the doctor does not know the cause and is unable to identify its location. In these circumstances emergency therapy must be empirical, using obstructions as first steps to stop the hemorrhage. Knowing the location of the bleeding point greatly facilitates therapeutic direction, and in these cases it is basic to know whether it is anterior or posterior, so that efforts can be directed to the injured area. Very frequently in facing deep nasal bleeding, identification of the place where the hemorrhage occurs becomes quite difficult. Examination of the nasal cavity through an anterior rhinoscopic procedure with suitable illumination and/or use of a rigid 30° telescope, with the aid of a powerful aspirator to remove blood and clots, becomes necessary.

**Nasal obstruction**

Most of the time, bleeding in children is septal, venous (retrocolumellar), or in the zone of Kisselbach, of arterial origin. The blockage should be removed immediately to identify the bleeding vessel and be able to cauterize it with chemical agents (trichloroacetic acid or silver nitrate, 80-100% concentration), or simply to “protect” it with neomycin, that is today the most recommended procedure. We must not forget to consider specially the treatment of children with allergic rhinitis, since nasal trauma is often caused by their own nasal pruritus.

It is not frequent to need anterior and/or posterior nasal obstruction in children. As was mentioned before, most nasal bleeding in childhood can be controlled without obstruction, but it may be needed in exceptional cases. There are a great variety of materials for anterior and posterior obstruction: gases with lubricants, cotton, expansible sterile compresses (Merocel®), and simple rubber balls (several types, filled with air, liquid, tissues, or sponge). When nasal bleeding is so intense that anterior obstruction becomes useless, it must then be decided whether to use posterior obstruction in association with the anterior obstruction.

**Surgical treatment**

Has its indications for those cases that do not respond to preventive treatment or in cases where bleeding is recurrent after the initial procedure. Surgical treatment may prove to be more effective in improving topographic diagnosis.

**Recommended readings**

1. El Simily O. Endonasal endoscopy and posterior epistaxis. *Rhinology* 31:119-20, 1993.
2. Silverblatt BL. Epistaxis – evaluation of surgical care. *Laryngoscope* 65:431-46, 1955.
3. Younkens et al. Etiology and management of epistaxis. *Ent J* 60:453-6, 1981.
4. Stamm A et al. Microsurgery in severe posterior epistaxis. *Rhinology* 23:321-32, 1985.
5. Abelson TA. Epistaxis. In: Paparella MM, Shumrick DA, Gluckman JL, Meyerhoff WL. *Otolaryngology*. 3 ed. Philadelphia: Saunders, 1991. p.1931-1841.