Recurrent epistaxis in children

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Abstract

Question A child came to my clinic complaining of recurrent epistaxis with several episodes occurring every year since he was a toddler. The nosebleeds affect both nostrils, often lasting for an extended period of time and occurring in no apparent seasonal pattern. What interventions are safe and effective for recurrent epistaxis in children, and which patients warrant hematologic testing?

Answer Epistaxis affects more than half of children by the time they are 10 years old, with 9% of children reported to have recurrent episodes. Most cases are of benign origin and will not require further workup. For those seeking intervention, nasal mucosal hydration, such as emollient application, or humidification resolves up to 65% of cases, and many novel interventions have shown promise in their respective initial studies. Standardized bleeding questionnaires have demonstrated usefulness in decision making for further coagulation studies, taking into account historical features including frequency, duration, bleeding site, seasonal correlation, and severity.

Epistaxis has been documented in more than half of children by 10 years of age and accounts for about 1 in 260 emergency department visits in the United States among children younger than 19 years of age.[1,2] While there is no consensus on the duration or frequency of episodes constituting recurrent epistaxis, some studies have defined *recurrent epistaxis* as 5 or more episodes per year.[3] In a cross-sectional study, recurrent epistaxis was reported in 9% of 1218 children aged 11 to 14 years.[4] Recurrent epistaxis can affect a family's quality of life substantially; 28% of children and 44% of caregivers in a study from Ireland reported high stress, most commonly attributed to fear of excessive blood loss or soiling nightwear.[5]

Causes

In up to 90% of cases, childhood recurrent epistaxis is self-limiting and originates from the anterior inferior part of the nasal septum known as Little's area,[6] usually attributed to local trauma from digital manipulation, mucosal drying and crusting, or local inflammation from an upper respiratory infection.[7] However, nonaccidental injury or serious illness must be considered in those presenting with epistaxis in the first 2 years of life.[8]

Among 359 children with epistaxis at an outpatient otolaryngology clinic, only half required further workup (follow-up appointment, flexible nasal endoscopy, or laboratory testing). Otitis media (11%), blunt or digital trauma (10%), allergic rhinitis (6%), sinusitis (5%), and asthma (4%) were the most common medical conditions reported. Of the 123 children who had endoscopy performed, half of cases were found to have no pathology and the rest were benign (adenoid hypertrophy, pharyngeal cobblestoning, enlarged posterior vessels, nasal polyps), with the exception of one worrisome mass. Notably, those with a known coagulopathy were excluded. This study highlights that many cases of childhood recurrent epistaxis do not require diagnostic workup, and of those that do, the underlying cause is usually benign or idiopathic.[9]

Office management

Initial office management of epistaxis should include firm sustained compression to the lower third of the nose for 5 minutes or longer. Recommended interventions for prevention of recurrent bleeding include emollient application (saline gel, petroleum jelly, antibiotic ointment), humidification, topically applied vasoconstrictor agents, and nasal cautery.[10]

Most (56% to 65%) children in trials have reported resolution of bleeding after nasal mucosal hydration.[9,11] However, a Cochrane review of 5 small heterogeneous trials including 468 children reported that none of antiseptic cream, petroleum jelly, or cauterization was statistically significantly better than no treatment.[12] No serious adverse events were associated with any of the treatments, but if nasal cautery is used, 75% silver nitrate is preferable to 95% silver nitrate owing to greater short-term effectiveness at 2 weeks (88% had complete epistaxis resolution vs 65%, respectively), greater tolerability (mean pain score of 1 out of 10 vs 5 out of 10, respectively), and fewer side effects (4% had a visible eschar at 2 weeks vs 29%, respectively).[12]

Since publication of the Cochrane review, novel interventions have emerged among the suite of potential treatments for childhood recurrent epistaxis. A study of 100 children aged 6 to 12 years suggested oral propranolol (1.5 to 2.0 mg/kg daily for up to 1 month) is equally as effective as silver nitrate cautery in preventing recurrent episodes at 6 months' follow-up (86% vs 84% resolution, respectively), with no side effects and lower reported local nasal pain.[13] The usefulness of potassium titanyl phosphate laser therapy in managing recurrent epistaxis resistant to silver nitrate therapy was demonstrated in a trial of 58 participants in England, almost half of whom were younger than 18 years of age.

There was a 74% resolution rate at 2 months' follow-up after a single treatment, with no complications.[14] A recent trial with 134 participants (60% younger than 16 years of age) with recurrent epistaxis affecting both nostrils reported statistically significant improvement (defined as 1 or no posttreatment episodes) at 3 months' follow-up with no serious complications after receiving bilateral 75% silver nitrate cautery treatment.[15] Last, a trial from China reported endoscopic microwave ablation to be a promising treatment, with no recurrent bleeding or severe adverse events at 6 months' follow-up among all 85 children receiving the intervention in the study.[16] The microwave ablation technique is a single procedure with hemostasis within 10 to 20 seconds across 2 to 4 total ablations.[16] Seven procedures were interrupted, 2 because the child was afraid of the endoscope and the device's antenna, and 5 owing to intraoperative pain.[16]

Testing for hematologic disorders

The prevalence of hematologic disorders among children with recurrent epistaxis has been reported to be as high as 33% according to a study of 178 children presenting to a pediatric hematology clinic in New York,[17] although an underlying systemic cause is often found in less than 10% of children.[12] Von Willebrand disease is the most common inherited bleeding disorder,[4] with more than half of children with the condition reporting epistaxis as a symptom.[18] In a prospective study of 20 children aged 3 to 15 years with 10 or more nosebleeds per year, 6 (30%) children had abnormal results on 1 or more coagulation screening tests.[3] Two were diagnosed with von Willebrand disease, 1 with liver disease, and 1 with a primary platelet aggregation abnormality; 2 were lost to follow-up.[3] Participants were excluded if they had any other bleeding symptoms or a positive family history of a coagulopathy, demonstrating that mild bleeding disorders might present with recurrent epistaxis as the only symptom.[3]

Two studies have identified historical features that might predict the need for hematologic testing.[19,20] In one study, Katsanis et al from Ontario developed the 10-point Epistaxis Scoring System based on the frequency, duration, amount, history-to-age ratio, and site of recurrent epistaxis. Among the 36 children in the study, those categorized as having severe epistaxis (score of 7 or greater) were statistically significantly more likely to have other bleeding symptoms, a family history of bleeding, or iron deficiency, or to have undergone nasal cauterization.[19] Both children later diagnosed with von Willebrand disease were in the severe epistaxis group.[19] A larger study of 122 children with recurrent epistaxis used the Pediatric Bleeding Questionnaire to identify several key features more commonly reported in those with a coagulopathy (n = 66) compared with healthy children (n = 56), which included medical attention for a past episode (packing, cauterization, etc), more than 5 episodes per year, duration longer than 10 minutes, bleeding occurring from both nostrils, and lack of seasonal correlation.[20] Standardized bleeding assessments such as the Epistaxis Scoring System and the Pediatric Bleeding Questionnaire are useful in determining which children might require bloodwork to investigate for hematologic disorders.[19,20]

Rare considerations

Two rare but serious causes must be considered for referral to an otolaryngologist. Juvenile nasopharyngeal angiofibroma is a highly vascular, benign tumour that presents among teenage males as unilateral epistaxis, facial swelling, pain, or nasal obstruction.[21] Among all 45 patients with juvenile nasopharyngeal angiofibroma in Denmark over a 22-year period, all were male with a median age of 15 years.[22] Hereditary hemorrhagic telangiectasia should be considered in children presenting with spontaneous recurrent epistaxis; telangiectases of the mouth, face, or hands; visceral arteriovenous malformations; or those with a first-degree relative with hereditary hemorrhagic telangiectasia.[23]

Conclusion

Epistaxis is common in childhood and is reported to be recurrent in almost 1 in 10 children. Most cases are benign and will resolve with nasal mucosal hydration techniques. Novel interventions including propranolol, potassium titanyl phosphate laser therapy, bilateral nasal cautery, and microwave ablation have shown promise, but more research is needed on their long-term effectiveness and safety. Hematologic disorders should be considered among children with recurrent epistaxis, and standardized bleeding questionnaires eliciting historical clues such as frequency, duration, bleeding site, and seasonal correlation are valuable in identifying these cases.

Competing interests
None declared

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