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Epistaxis in childhood

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SUMMARY

Nose-bleeds are very common in children. In the ages 0-5 years 30% and in the ages 6-10 years 56% of all children have had at least one nose-bleeding. In most cases the bleeding stops spontaneously. The number of children consulting an ENT-specialist due to epistaxis per 1000 children per year is 0.5 in the ages 0-5 years and 1.6 in the 6-10 year age group.

Upper inspiratory tract infections are probably one of the most common causes of nose-bleeds. In the age group 0-10 years 62% of children treated for epistaxis had had an infection during the week before the nose-bleeds started.

Bleeding disorders sometimes predispose to nose-bleeds in childhood. The prevalence of inherited disorders is probably very low in the population. Acetylsalicylic acid and viral infections can both impair the platelet function. Epistaxis is common in these acquired disorders.

About two-third of the nose-bleeds start without any obvious cause. Trauma, like a blow on the nose, is only responsible for two per cent of all nose-bleeds. In 27% the bleeding starts after trauma to the structures of the nasal cavities such as blowing the nose, nose-picking, sneezing and puncture of sinus.

In childhood 91% of the bleedings were localized in the nasal septum, while at ages above 40 years only 68% were localized here.

The local treatment is usually the same in children and adults. It is important to be as gentle as possible to the nasal mucosa in children.

The most important general measure is reassurance by a calm and kind doctor, who can set the child's mind at rest. To prevent recurrent bleeding, antifibrinolytic drugs have been used.

PREVALENCE OF EPISTAXIS

To obtain information about the prevalence of nose-bleeds in childhood a population study has to be performed. Some years ago I studied a population

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Table 1. Number of subjects and patients in the study groups

	age-group				
	0-5	6-10	11-15	16-20	⩾ 21 years
Randomly selected population sample	22	25	22	23	320
Patients treated for epistaxis	27	66	66	105	872

sample as well as patients treated for epistaxis (Petruson, 1974). These two study groups have now been reanalyzed by age-group (Table 1). Nose-bleeds are very common in children, and with increasing age more and more children have had at least one nose-bleeding (Table 2).

Table 2. The incidence of epistaxis in a population sample

	age-group				
	0-5	6-10	11-15	16-20	⩾ 21 years
Epistaxis at least once during life	30	56	64	70	60 %
Treated at least once	0	0	0	0	7 %

It is also interesting to note that although the incidence is high the bleeding obviously stops spontaneously during childhood in most cases. The number of individuals consulting an ENT specialist due to epistaxis per 1000 inhabitants per year is highest in the ages 16-20 years and above 60 years (Table 3). It is twice as high at ages between 6 and 15 years as in the 21-39-year age-group and the lowest frequency is observed in children between 0 and 5 years.

Table 3. The number of subjects consulting an ENT specialist due to epistaxis per 1000 inhabitants per year in different age-groups

	age-group						
	0-5	6-10	11-15	16-20	21-39	40-59	⩾ 60 years
Incidence	0.5	1.6	1.8	2.4	0.8	1.3	2.8

HABITUAL BLEEDERS

The highest proportion of habitual bleeders is found in the age-group 11-20 years (Table 4). About one hundred out of every thousand youngsters have several episodes of epistaxis every year, but only two of them per year have to be treated by an ENT specialist.

We have only scanty information about those individuals with habitual nose-bleeds who have never consulted an ENT specialist.

Table 4. The proportion of habitual bleeders in different age-groups

	age-group		
	0-10	11-20	⩾ 21 years
Population sample	4	11	3%
Patients treated for epistaxis	43	33	16%

UPPER RESPIRATORY TRACT INFECTIONS

Upper inspiratory tract infections are probably one of the most common causes of nose-bleeds, especially in childhood (Table 5). An infection in the nasal mucosa makes it more vulnerable.

Table 5. The incidence of upper respiratory tract infections during the week before the epistaxis started

	age-group		
	0-10	11-20	⩾ 21 years
Percent of patients	62	70	44%

In the age-group 0-10 years, 62% of the patients had had an infection during the week before the epistaxis started. In the same age-group in the population sample, 11% had observed an association between upper respiratory tract infections and nose-bleeds (Table 6).

Table 6. Percentage of patients noting an association between upper respiratory tract infections and epistaxis in the population sample

	0-10	11-20	⩾ 21 years
	age-group		
Percent of subjects	11	18	10

BLEEDING DISORDERS

Bleeding disorders sometimes predispose to nose-bleeds in childhood. The prevalance of these disorders is probably very low in the population. As some of the disorders are inherited, it is advisable to question the patient about heridity for epistaxis.

One of the most common of these uncommon disorders is probably von Willebrand's disease (Letson and Birck, 1973). These patients are very sensitive to acetylsalicylic acid (Quick, 1967) and usually bleed frequently from the nose.

In some youngsters with recurrent epistaxis thrombocytopenia has been observed (Saraya and Kacker, 1966).
Maurer and Rühl (1965) studied 16 children with epistaxis after viral infections. They were between 4 and 14 years old. Ten of the children had impaired platelet function and six had signs of haemorraghic diathesis. After 8-12 weeks all the tests of haemostasis gave normal findings again. The bleeding disorders were probably caused by the viral infection. Patients with low coagulation factor VII had from early childhood a tendency to suffer from nose-bleeding, especially in connection with infections (Egeberg, 1970).
The teleangiectases in patients with Osler's disease appear at the age of 25-40 years (Gastpar, 1969). Bleeding from the nasal mucosa in these patients starts, however, before the age of 10 years in 10 per cent of cases (Stecker and Lake, 1965). When Harrison (1964) studied 20 patients with Osler's disease he found that 19 had a history of frequent nose-bleeds before the age of 21 years, and in 10 of them the nose-bleeds started in childhood.

RELEASING FACTORS

About two-thirds of the nose-bleeds start without any obvious cause, when the patient is lying in bed, sitting in a chair, washing his hands, eating etcetera (Petruson, 1974).
In between 10 and 32% of cases the bleeding starts after trauma to the structures of the nasal cavities, such as blowing the nose, nose-picking, sneezing, puncture of a sinus or a blow on the nose (Table 7).

Table 7. Releasing factors. Trauma to the structures of the nasal cavities, such as blowing the nose, nose-picking, sneezing and a blow on the nose

Author	number of pts			Distinct trauma by blow on the nose
Tibbels	250	outpatients	32%	—
Juselius	1724	outpatients	—	3%
Petruson	1007	outpatients	29%	2%
Petruson	111	hospitalized	22%	4%
Hara	1404	hospitalized	14%	8%
Hallberg	212	hospitalized	10%	—

When the different age-groups are studied one finds that trauma to the nasal structures is more common at ages between 11 and 40 years than in the other age-groups (Table 8).
Trauma, like a blow on the nose, is only responsible for two per cent of all nose-bleeds.

Table 8. Trauma to nasal structures in different age-groups

	age-group					
	0-5	6-10	11-15	16-20	21-39	40 years
Trauma to nasal structure	11%	27%	38%	40%	42%	24%
Blow on the nose	—	5%	3%	1%	3%	2%

Since the nasal framework in children is mainly cartilaginous a direct trauma may result in an incomplete fracture or dislocation of the nasal cartilages. In these cases it is also possible to observe septal haematoma or haematoma of the nasal dorsum. Early recognition, incision of the haematomas and drainage by suction are essential (Hinderer, 1971).

BLEEDING SOURCE

A bleeding source in the nasal septum is more common in young patients than in older patients (Table 9). In the age-groups up to 19 years, 91% of the bleedings were localized in the nasal septum, while at ages above 40 years only 68% were localized here. In the different age-groups below 21 years there was no difference between the frequencies of different localisation of the bleeding source (Table 9).

Table 9. Localization of the bleeding source

	age-group						
	0-5	6-10	11-15	16-20 years	0-19	20-39	⩾40 years
Nasal septum	89	88	92	90	91	76	68
Floor and lateral parts	4	3	6	3	4	10	15
Not visible	7	9	2	7	5	14	17

LOCAL THERAPY

Children are included in most studies on epistaxis but are not studied separately. Children and adults have probably been treated in the same way. In some studies the treatment of children is discussed especially or case-reports on children are given. The purpose of the local treatment may be to:

1. *Facilitate blood clotting*

Spongostan and Surgicel are performed matrices in which blood clotting is facilitated. Both are absorbable and have been utilized in the treatment of epistaxis in children (Petruson, 1974; Tibbels, 1963).

2. *Inhibit fibrinolysis*
With antifibrinolytic drugs it is possible to inhibit a too rapid breakdown of fibrin and thus also recurrence of bleeding. Cyklocapron (Petruson, 1974) and PAMBA (Hoffman and Mey, 1967) have been used successfully in children.

3. *Produce an inflamatory reaction*
Different kinds of cauterisation have been used in children. Call (1969) recommends a silver nitrate bead. Hallberg (1952) preferred to examine small children under general anaesthesia and electrocoagulate the bleeding points. Chromic acid was used by Petruson (1974).

4. *Arrest the blood-flow to the injured vessel*
Posterior nasal haemorrhage in a 7-year-old boy was treated after injection of 2% Lidocaine through the greater palatine foramen into the pterygopalatine fossa to block the sphenopalatine arteries (Padrnos, 1968).
After nasal fractures in children the nose-bleeds are treated with an appropriate nasal packing (Goode and Spooner, 1972).
When the bleeding after a nasal fracture was not arrested with tampons, ligation of the anterior ethmoidal artery was effective in two children described by Weddell et al. (1945).
Most of the children with epistaxis attending our clinic have been treated with chromic acid cauterisation (Table 10).

Table 10. Local treatment of epistaxis

	age-group		
	0-10	11-20	⩾ 21 years
No. therapy	8%	3%	7%
Spongostan and Cyklokapron	2	6	17
Chromic acid cauterisation	90	90	63
Tampons	0	1	13

To sum up, I believe it is important to be as gentle as possible to the nasal mucosa in children. In those cases in which the bleeding is profuse, treatment with Spongostan and Cyklocapron is advisable. When chromic acid cauterisation is used, only the ruptured vessel must be touched and the acid must not be neutralized with anything but saline. Electrical cauterisation is dangerous in inexperienced hands. After nasal fractures tampons sometimes have to be used.

PREVENTION OF RECURRENT NOSE-BLEEDS

Children with frequent epistaxis during upper respiratory tract infections have been helped when given ordinary nose drops (e.g. Xylomethazolin, Oxymethazolin).

It is also important to remember that acetylsalicylic acid impairs platelet function and gives a prolonged bleeding time. This drug should not be given to children with recurrent epistaxis. Paracetamol is more suitable for pain and fever in these patients.

Submucous elevation is described by Ogura and Senturia (1949) as a highly satisfactory procedure for controlling recurrent anterior septal bleeding.

In 39 children with recurrent epistaxis due to large visible vessels on the anterior septum, Pinsker and Handcroft (1971) cut the vessels to the cartilage at various sites. This treatment gave several scars in the nasal mucosa and 93% of the patients were improved.

Septal dermoplasty has been utilized in two children with von Willebrand's disease and one with Osler's disease (Letson and Birck, 1973). All three had required numerous blood transfusions owing to severe and repeated epistaxis.

GENERAL TREATMENT

The most important general measure is reassurance by a calm and kind doctor, who can set the child's mind at rest. To prevent recurrent bleeding, antifibrinolytic drugs have been used (Petruson, 1974; Hoffman and Mey, 1967).

ZUSAMMENFASSUNG

Epistaxis bei Kindern ist häufig. Im Alter von 0-5 Jahren haben 30% und im Alter von 6-10 Jahren 56% aller Kinder mindestens einmal Nasenbluten gehabt. Meist hört das Bluten spontan auf. Einen HNO-Arzt suchen wegen Epistaxis 0,5% von den 0-5 jährigen und 1,6% von den 6-10 jährigen auf. Infekte der oberen Luftwegen sind die häuftigsten Ursachen des Nasenblutens. Bei den 0-10 jährigen hatten 62% der Kinder in der Woche vor dem Nasenbluten eine Infektion.

Hämorrhagische Diathese prädestiniert manchmal zum Nasenbluten in der Kindheit. Dabei sind vererbare Blutungsübel relativ selten. Acetylsalizylat und Virusinfekte können die Thrombozytenfunktion schädigen und führen daher häufig zur Epistaxis. Zwei Drittel aller Nasenbluten beginnen ohne sichtbare Ursache. Eine Verletzung wie ein Schlag auf die Nase führt nur bei 2% aller Nasenbluter zu Epistaxis. Bei 27% findet man das traumatische Nasenbluten nach dem Schneuzen, Manipulieren, Niesen und Punktion der Kieferhöhle.

Beim Kind kommen 91% der Blutungen vom Nasenseptum, während bei über 40 jährigen nur 68% hier ihren Ursprung nehmen. Der schonende

Umgang mit der Nasenschleimhaut des Kindes ist bei der Behandlung der Epistaxis das Wichtigste. Meist hilft schon ein beruhigender und freundlicher Arzt. Bei rezidivierendem Nasenbluten werden anitifibrinolytische Mittel erforderlich.

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