

Is a Laboratory Evaluations Required in Every Case Admitting to the Pediatric Emergency Department with Epistaxis?

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Abstract

ABSTRACT Background: Epistaxis is a mostly self-limiting condition common among children and is rarely severe. In this study, it was aimed to evaluate the incidence, demographic characteristics, causes of bleeding and treatment methods of patients who applied to the Pediatric Emergency Department (PED) with epistaxis, and to determine in which cases a laboratory test should be used. Method: Admitted to Gazi University Faculty of Medicine, PED which provides trauma care and is a tertiary hospital, between January 1, 2019 and December 31, 2019, 452 patients aged 0-18 years who presented with epistaxis to any reason or secondary to systemic disease were analyzed retrospectively. Results: The annual incidence was found 1.23%. The median age was 63 months, 258 of the cases (57.1%) were male. It was found that the cases most frequently applied to the hospital in the autumn months (37.6%). Sixty of the patients (13.3%) had a chronic disease and 54 (11.9%) had a history of drug use. Bleeding time was less than 5 minutes in 75.2% and 84.4% of the bleeding was unilateral. Nasal bleeding is local in 73.4%; 4.7% of them developed due to systemic reasons. The most common cause of epistaxis; while they were trauma at the first 10 years of age, they were idiopathic causes after the age of 10 years. In 434 (96%) of the patients, epistaxis spontaneously stopped and there was no need for additional treatment. Conclusion: As a result of this study, it was concluded that laboratory tests should be performed in cases with chronic disease history, bilateral bleeding, active bleeding and nontraumatic epistaxis. The situation that causes epistaxis in the childhood age group should be determined with a good history and physical examination, laboratory tests should not be used in every patient. Key Words: pediatric emergency, epistaxis, laboratory examinations, complete blood count

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Method: Admitted to Gazi University Faculty of Medicine, PED which provides trauma care and is a tertiary hospital, between January 1, 2019 and December 31, 2019, 452 patients aged 0-18 years who presented with epistaxis to any reason or secondary to systemic disease were analyzed retrospectively.

Results: The annual incidence was found 1.23%. The median age was 63 months, 258 of the cases (57.1%) were male. It was found that the cases most frequently applied to the hospital in the autumn months (37.6%).

Sixty of the patients (13.3%) had a chronic disease and 54 (11.9%) had a history of drug use. Bleeding time was less than 5 minutes in 75.2% and 84.4% of the bleeding was unilateral. Nasal bleeding is local in 73.4%; 4.7% of them developed due to systemic reasons. The most common cause of epistaxis; while they were trauma at the first 10 years of age, they were idiopathic causes after the age of 10 years. In 434 (96%) of the patients, epistaxis spontaneously stopped and there was no need for additional treatment.

Conclusion: As a result of this study, it was concluded that laboratory tests should be performed in cases with chronic disease history, bilateral bleeding, active bleeding and nontraumatic epistaxis. The situation that causes epistaxis in the childhood age group should be determined with a good history and physical examination, laboratory tests should not be used in every patient.

Key Words: pediatric emergency, epistaxis, laboratory examinations, complete blood count

What's known?

- Epistaxis is a common problem in the childhood age group.
- There are many studies in the literature evaluating the causes and treatments of epistaxis in children. Most of these include examinations of specialties where patients are referred for further evaluation.
- Most of these patients present to the emergency services due to the need for urgent medical intervention during or immediately after the bleeding, and the number of studies evaluating the cases who applied to the emergency department with epistaxis is very few.

What's new?

The situation that causes epistaxis in the childhood age group should be determined with a good history and physical examination, laboratory tests should not be used in every patient.

As a result of this study, it was concluded that laboratory tests should be performed in cases with chronic disease history, bilateral bleeding, active bleeding and nontraumatic epistaxis.

INTRODUCTION

Epistaxis is a mostly self-limiting condition that is common among children and rarely severe (1). It occurs in 60% of the entire population. Its frequency shows a bimodal distribution; it is more common under 10 and over 50 years old. Thirty percent of children under the age of five, 56% of children in the 6-10 age group, and 64% of those aged 11-15 had at least one epistaxis attack (2). Since spontaneous epistaxis is rare in children under two years of age, underlying coagulation disorders or non-accidental injuries should be considered (3-4).

There are many studies in the literature evaluating the causes and treatments of epistaxis in children. Most of these include examinations of specialties where patients are referred for further evaluation (5-8). In other words, most of these patients are referred to these departments due to the need for further evaluation in primary care or emergency services. However, most of these patients present to the emergency services due to the need for urgent medical intervention during or immediately after the bleeding, and the number of studies evaluating the cases who applied to the emergency department with epistaxis is very few (1,9).

Many local such as digital trauma, sinusitis, rhinitis, mucosal dryness caused by nasal polyp or septum deviation, and systemic causes such as drugs, hypertension and coagulopathy are among the causes of epistaxis (6-7). Although determining the etiology is important in planning and following the treatment; etiology varies according to the age of the patient and whether there is active bleeding (5,9). The majority of epistaxis are controlled by simple methods such as spontaneous or local compression. Few of them require advanced treatment methods (9,6).

In our study, we aimed to evaluate the incidence, demographic characteristics, causes of bleeding and treatment methods of patients admitted to the Pediatric Emergency Department (PED) with epistaxis, and to determine in which cases a laboratory test should be used.

METHODS

Four hundred fifty-two patients aged 0-18 who were admitted to Gazi University Faculty of Medicine, PED, which provides trauma care and is a tertiary hospital, between January 1, 2019 and December 31, 2019, with a complaint of epistaxis, were analyzed retrospectively.

Working group

The information of all patients was accessed from patient files and computer system records. Demographic data such as age, gender, history, history and family history of each case, physical examination findings, bleeding time, which side, how and how long, laboratory examinations and imaging methods, clinical consultations, treatment methods were recorded in the study form.

Patients in the 0-18 age group who presented to the PED who presented with epistaxis to any reason or secondary to systemic disease were included in the study.

Patient and Public Involvement

No patient involved.

Ethical approval

The study was approved by the Gazi University Ethics Committee (Date: 21.01.2021 Number: E.11211).

Statistical methods

SPSS version 20 program was used for statistical analysis. Descriptive statistics, chi-square test for intergroup categorical variables, logistic regression analysis was used to evaluate risk factors. Statistical significance level was accepted as $p < 0.05$.

RESULTS

During a year, 36,686 cases were admitted to the PED. The presenting complaint of 452 of these cases was epistaxis. The annual incidence of our study was found 1.23% (123/10000).

The median age was 63 (minimum: 2 - maximum: 216) months and 258 of the cases (57.1%) were male. It was found that the cases most frequently applied to the hospital in autumn months (170, 37.6%). Sixty of the patients (13.3%) had a chronic disease and 54 (11.9%) had a history of drug use. Only four patients had a family history of bleeding diathesis. Bleeding time was less than 5 minutes in 75.2% (286/380). Ninety-eight (22.2%) patients had a previous epistaxis history and 84.4% (255/302) of the bleeding was unilateral.

Epistaxis was due to local in 332 (73.4%) cases, systemic causes in 21 (4.7%) cases. The conditions that cause epistaxis are shown in Table 1. In those with a history of trauma, the most common diagnosis was fall with a rate of 59.6% (185/310).

The distribution of the conditions that cause epistaxis according to the ages of the cases is given in Table 2. In the first 10 age group, epistaxis was most frequently associated with trauma, and secondly, it was found to be due to idiopathic causes. After the age of ten, idiopathic causes were the most common cause of epistaxis. Epistaxis due to systemic causes were not observed under the age of one year.

Physical examination revealed petechiae in four (0.9%) patients and ecchymosis in 28 (6.2%) patients. There was no patient with organomegaly or lymphadenopathy.

Laboratory tests and radiological imaging of the cases are presented in Table 3. Two of the patients whose blood type was requested were from high-energy trauma, one was the patient with a diagnosis of Immune Thrombocytopenic Purpura (ITP) with low hemoglobin.

When the consultation rates to other clinics are examined; It was found that consultations were made the Otorhinolaryngology (ENT) clinic at a rate of 16.2% (73) from the PED and 9.3% (42) elective; Hematology-Oncology clinic at a rate of 2.4% (11) from the emergency department and 1.8% (8) elective.

Three hundred and twenty-four (71.6%) of the cases did not do anything before the hospital to stop the bleeding, 103 (22.8%) had done nasal packing and 21 (4.6%) compression. In 434 (96%) of the patients, epistaxis spontaneously stopped and there was no need for additional treatment. Active bleeding were present in 14 (3.7%) patients at the time of admission to the PED. In the PED, patients with active epistaxis received 5 (1.1%) compression, 8 (1.8%) adrenaline cotton, 5 (1.1%) tranexamic acid and 2 (0.4%) 75% silver nitrate cautery treatment was applied.

It was found that complete blood count (CBC) was more frequent in patients above the age of one and between the ages of 10-15, patients with no history of trauma, chronic disease history and bilateral bleeding, presenting with active bleeding and nasal bleeding due to systemic causes (Table 4). When evaluated with logistic regression analysis, it was found that the absence of only a history of trauma among these factors increased the rate of CBC examination 11.8 times (CI 95% 2.767-50.440).

DISCUSSION

Epistaxis is a common problem in the childhood age group. In 60% of the population, at least one epistaxis is seen until the age of 10. In most of the cases, the bleeding originates from the Kiesselbach plexus and causes anterior bleeding. Since the amount of bleeding is often low and self-limiting, it does not require hospitalization (2,10).

The true prevalence of epistaxis is largely unknown as most cases do not require medical attention and are therefore not reported. It has been reported that 0.46% of pediatric and adult emergency room visits between 1992 and 2001 had epistaxis and 6% of them were hospitalized (11). In our study, the annual incidence was found 1.23%. We think that this higher rate is due to the fact that our number of trauma (68.5%) is much higher than in this study (17%). In other studies, they reported the rate of referrals associated with epistaxis to be between 1% and 8% for both adult and pediatric patients admitted to the emergency department (12-13).

Epistaxis in the pediatric population can vary in age, gender and seasonal variation. The superiority of men (57.1%) in our study was consistent with the literature (1,2,5-7,10-11). Average age of patients with epistaxis; it was found 7.54 years in the studies of Shay et al. (1), 8.8 years in the studies of Davies et al. (10), and 10.1 years in the studies of Send et al. (6). The mean age in our study was 5.25 years and the reason for its lower than the literature was attributed to the higher number of patients under 1 year of age due to trauma. Seasonal differences stand out in each study. It is thought that regional climate and environmental factors also affect this situation (2,5). While it was frequently reported in the spring and summer months in one study (1), it was reported to be more common in the winter months in the other study (14). In our study, epistaxis was observed most frequently in autumn (37.6%).

In patients presenting with epistaxis, the location of the bleeding, the duration of the bleeding and its recurrent nature should be questioned in detail in the history taken. One study in the literature reported that 82.2% of the cases were unilateral (6), another study reported that 68.2% of the cases were unilateral (15). Bleeding times were reported to be shorter than 5 minutes in 60% of the cases in one study (10), and it was reported to last less than 30 minutes in 87.54% of the cases in the other study (16). In a study by Asma et al. (7) evaluating 150 cases, it was found that 39.3% of the epistaxis recurred. In our study, similar to the literature, most of the bleeding was unilateral, the bleeding time was less than 5 minutes, and approximately one fifth of the cases had a history of previous epistaxis.

In a study conducted in 2016 in which 216 cases between the ages of 2 and 18 were investigated, it was reported that the most common cause of epistaxis was trauma, the second most common cause was bleeding diathesis between the ages of 2-5 and idiopathic in other age groups (2). In a study, it was reported that 24.7% of patients without any history of trauma had a history of chronic disease and that the most common cause of epistaxis was due to local factors and among them, the most common infection was (15). In another study, they reported that the most common cause was idiopathic. In addition, 98.88% of these patients had no chronic disease and 96.09% did not have a history of drug use (16). In our study, local factors were determined as the most common cause in accordance with the literature, and systemic causes were found

to be rare. In the first 10 age group, the most common cause was trauma, and the second most common cause was idiopathic. After the age of ten, idiopathic causes were the most common causes. There was no spontaneous epistaxis under one year of age and no systemic cause was found. In all age groups, there was no patient who presented with isolated epistaxis and was diagnosed with bleeding disorder. Only two patients who presented with epistaxis and had petechiae on physical examination were diagnosed with ITP. This situation actually reveals the importance of physical examination. In addition, 86.7% of our patients did not have a chronic disease and 88.1% did not have a history of drug use. Since our hospital is a center where trauma is examined, the majority of our number belonged to this group and most of them were different from the literature.

The location, severity and clinical condition of the patient are as important as the etiology of the bleeding in planning the treatment. The majority of epistaxis are controlled by simple methods such as spontaneous or local compression. Few of them require advanced treatment methods such as coagulation with silver nitrate and bipolar electrodes, nasal packing, surgical options, and embolization. The most effective treatment is compression (6,9). Nasal mucosal hydration and nasal care are sufficient to treat most patients. Recovery was reported with nasal mucosal hydration in 77% in the study by Elden et al. (8) and 65.2% in the study by Patel et al. (5). Again, in this study, 14 (10.4%) patients were treated with silver nitrate cautery, and it was reported that the patients who underwent cauterization were at an older age and had longer symptom durations (5). In our study, active bleeding were present in 14 (3.7%) patients at the time of admission to the PED. Similar to the literature, most patients (96%) did not require treatment. Similar to our study, in a study where the most common etiological cause was trauma, observation alone (e.g. nasal mucosal hydration, use of topical decongestants, topical antibiotics and foreign body removal in selected cases) was sufficient in treatment in 61% of traumatic patients, while in 55.8% of the inflammatory group and it was reported that in 66.7% of the blood dyscrasia group, nasal packing was needed to control epistaxis (2).

History, physical examination, if necessary, laboratory examinations and radiological imaging should be performed in the evaluation of epistaxis. Research is not required in the majority of cases. Complete blood count (CBC) and coagulation screening are not routinely required unless there is a history of significant bleeding. When a systemic disease is considered in the etiology, an evaluation selected for diagnosis should be planned. It should be kept in mind that coagulation factors do not provide information about vascular integrity, function of platelets, Von Willebrand factor or fibrinolysis (3,8). They emphasized that although 74.9% of laboratory tests were performed in a study conducted in 2014, clinical judgment is important in the selection of patients for laboratory examination and that it can be considered in selected cases such as patients who continue to bleed despite nasal lubricants (5). In our study, no laboratory examination was performed in most patients (73.9%). In a study, it was reported that 13 (21.6%) of a total of 60 patients, 6 of whom had a history of bleeding disease, had a CBC examination. Similar to the literature, CBC was evaluated in a small number of cases (26.1%). However, due to the uncomfortable personalities of doctors, especially pediatricians, and to avoid any disease, cause at least one CBC test to be performed.

Limitations of the study;

The retrospective nature of the study was one of our limitations. In addition, the number of our trauma patients was very high due to the fact that our hospital was a trauma center and cared for a large number of trauma patients. Patients with idiopathic diagnosis were more. Because data recording was limited, patients who were not followed-up were included in the idiopathic group. Perhaps it actually caused Upper Respiratory Tract Infection (URTI) patients to escape within this group.

CONCLUSION

As a result of this study, it was concluded that laboratory tests should be performed especially in cases with chronic disease history, bilateral bleeding, active bleeding and nontraumatic epistaxis. The situation that causes epistaxis in the childhood age group should be determined with a good history and physical examination, laboratory tests should not be used in every patient.

Contributors ODG and STG conceived the study. STG and EC provided data. AAÇ conducted the

statistical analysis. STG conducted the literature search and drafted the initial manuscript. All authors contributed to the data interpretation and critically reviewed the manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval The study was approved by the Gazi University Ethics Committee (Date: 21.01.2021 Number: E.11211).

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