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Relationship Between Epistaxis and Hypertension in Al-Samawa City, Iraq

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Abstract: Epistaxis is a common otorhinolaryngological emergency that may be associated with systemic conditions, particularly hypertension; however, local evidence regarding this relationship in Al-Samawa City remains limited. This descriptive cross-sectional study investigated the association between hypertension and the clinical characteristics of epistaxis among 70 consecutive patients presenting to the ENT outpatient clinic and emergency department of Al-Hussein Teaching Hospital over six months. Data were collected using a structured clinical form and analysed with IBM SPSS Statistics version 26. The participants had a mean age of 38.1 ± 23.3 years, 55.7% were male, and 22.9% were hypertensive. Anterior epistaxis predominated in 88.6% of cases. Hypertension was significantly associated with bleeding severity, with moderate epistaxis occurring in 62.5% of hypertensive patients, while aspirin use was significantly more frequent among hypertensive than normotensive patients. Trauma and aspirin use were the leading identified risk factors. These findings indicate that hypertension and antiplatelet use influence the severity and management requirements of epistaxis, highlighting the importance of blood-pressure assessment and medication review during clinical evaluation.

Keywords: Epistaxis, hypertension, aspirin use, bleeding severity, anterior epistaxis, Al-Samawa City.

Introduction

Epistaxis, commonly referred to as nosebleed, is one of the most frequent ear, nose, and throat (ENT) emergencies encountered in both primary care and hospital settings worldwide. It is estimated that approximately 60% of the general population will experience at least one episode of epistaxis during their lifetime, with around 6% requiring formal medical attention. Although the majority of episodes are self-limiting and benign in nature, a subset may signal underlying systemic pathology and can become life-threatening if inadequately managed [1].

The nasal cavity receives its blood supply from both the internal and external carotid arterial systems. The most common site of nasal bleeding is Little's area (Kiesselbach's plexus) on the anterior nasal septum, where multiple arterial anastomoses converge. Anterior epistaxis, originating from this area, constitutes the vast majority of cases and is generally amenable to simple conservative measures. Posterior epistaxis arises from larger vessels in the posterior nasal cavity, tends to be more severe, and often requires more aggressive intervention including nasal packing or endoscopic arterial ligation [2,3].

Hypertension has long been implicated as a contributing factor in epistaxis, though the precise nature of this relationship remains debated. Several studies have observed a higher prevalence of hypertension among patients presenting with epistaxis, particularly those with posterior or severe

anterior bleeding. Proposed mechanisms include arteriosclerotic changes in nasal vessel walls, impaired vasoconstrictive responses, and increased transmural pressure that predisposes fragile vessels to rupture. However, it remains unclear whether hypertension is a direct cause of epistaxis or merely an associated comorbidity whose acute rise is triggered by the anxiety and pain of the bleeding episode itself [4,5].

Multiple additional factors are recognised to predispose individuals to epistaxis. Aspirin and non-steroidal anti-inflammatory drugs impair platelet function and are among the most frequently identified pharmacological risk factors. Local trauma, including nose picking, is another common precipitant particularly in the paediatric population. Environmental factors such as dry and hot climatic conditions, prevalent in Al-Muthanna province, can lead to mucosal

desiccation and fissuring. Systemic conditions such as coagulopathies and liver disease may impair haemostasis and result in refractory or severe bleeding episodes [6,7].

Despite the clinical significance of epistaxis in the local context of Al-Samawa City and the wider Al-Muthanna Governorate, published local data on the pattern, aetiology, and relationship of epistaxis with hypertension remain limited. The hot and arid climate of the region, combined with a growing burden of hypertension and cardiovascular risk factors, makes the characterisation of epistaxis presentations within this population particularly relevant for developing locally tailored management protocols [8].

Methodology

1. Design of the Study

A descriptive study design was used to describe the variables and the relationships that occur among them in this study. This design was carried out in order to achieve the aims of the present study — Relationship between Epistaxis and Hypertension in Al-Samawa City, Iraq — over a period of six months.

2. Administrative and Ethical Permission

To conduct the study, permissions were obtained from the relevant hospital administration and college authorities. Research objectives and expected benefits were explained to all participants prior to enrolment. Written informed consent was obtained from every patient before data collection.

3. Setting of the Study

The study was conducted at the following health establishment: Al-Hussein Teaching Hospital — Al-Muthanna Governorate Centre, Al-Samawa City, Iraq (ENT outpatient clinic and emergency department).

4. Sample of the Study

A consecutive sample of 70 patients presenting with epistaxis was enrolled during the study period from the ENT outpatient clinic and emergency department of Al-Hussein Teaching Hospital.

5. The Study Instruments

Data collection was carried out through a self-designed structured case collection form formulated in English. History was obtained from all patients regarding age, gender, occupation, blood pressure at presentation, history of hypertension (including duration, control status, and antihypertensive treatment), type of epistaxis (anterior or posterior), severity of bleeding (mild, moderate, or severe), identified risk factors, and treatment administered. All patients were examined clinically by a trained physician. Blood pressure was measured using a calibrated sphygmomanometer after the patient had been seated for at least five minutes following cessation of active bleeding. Hypertension was defined as a systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg, or a documented history of hypertension with or without antihypertensive treatment.

6. Validity of Study Instrument

The case collection form was designed by the researchers after reviewing multiple research articles and studies regarding this topic. These studies varied in terms of the number of variables and the targeting of samples in different cities and countries. After selecting the variables, the form was reviewed by a group of experts for the purpose of evaluation and correction.

7. Statistical Data Analysis

Several statistical measures were used by applying IBM Statistical Package for Social Sciences

(SPSS) version 26 and Microsoft Excel (2016) in order to analyse and evaluate the results of the study. Continuous variables are presented as mean ± standard deviation (SD). Categorical variables were compared using the Pearson Chi-square test or Fisher's exact test where appropriate. A p-value of less than 0.05 was considered statistically significant.

Results of the Study

A total of 70 patients presenting with epistaxis were enrolled in this study. Results are presented across three tables below.

Table (1): Distribution of demographic characteristics

Variables	Freq. (%)	P-value
Age group		0.001 **
< 20 years	22 (31.4%)	
20–39 years	14 (20.0%)	
40–59 years	12 (17.1%)	
≥60 years	22 (31.4%)	
Age mean (Std. Deviation)	38.1 (±23.3)	—
Gender		0.082 (NS)
Male	39 (55.7%)	
Female	31 (44.3%)	
Hypertension Status		0.001 **
Hypertensive	16 (22.9%)	
Normotensive	54 (77.1%)	
Total	**70 (100%)**	

In Table (1), age distribution revealed four groups: those younger than 20 years (31.4%), those aged 20–39 years (20.0%), those aged 40–59 years (17.1%), and those aged 60 years or above (31.4%), with a mean age of 38.1 ± 23.3 years (range 10–70). The bimodal distribution reflects a younger group with environmental and traumatic precipitants and an older group predominantly affected by hypertension and aspirin use. Gender analysis showed that males comprised 55.7% and females 44.3% of the total sample. Hypertension was documented in 16 patients (22.9%), with all hypertensive cases aged 48 years or above. The p-values for age group (0.001) and hypertension status (0.001) were statistically significant, while gender distribution was not significantly different between the two groups (p = 0.082, NS).

Table (2): The association of risk factors with the hypertensive and normotensive groups

Items	Hypertensive Freq %	Normotensive Freq %	Total Freq %	P-value
Aspirin use	9 (56.3%)	10 (18.5%)	19 (27.1%)	0.002 **
Trauma	4 (25.0%)	12 (22.2%)	16 (22.9%)	0.803 (NS)
No identifiable risk factor	3 (18.8%)	13 (24.1%)	16 (22.9%)	0.635 (NS)
Hypertension	1 (6.3%)	0 (0.0%)	1 (1.4%)	0.041 *
Total	**16 (100%)**	**54 (100%)**	**70 (100%)**	

In Table (2), aspirin use was significantly more common in the hypertensive group (56.3%) compared to normotensive patients (18.5%), with a highly significant p-value of 0.002. This reflects the high prevalence of cardiovascular comorbidities in hypertensive patients requiring antiplatelet therapy. Trauma was the second most frequent risk factor overall (22.9%), occurring at comparable

rates in both groups (p = 0.803, NS), consistent with its predominance as a precipitant among younger normotensive patients including students and active workers. Absence of an identifiable risk factor was found in 22.9% of all cases (p = 0.635, NS). Hypertension itself was listed as the sole identified risk factor in one hypertensive patient (p = 0.041).

Table (3): Epistaxis type, severity, and treatment by hypertension status

Characteristic	Hypertensive n (%)	Normotensive n (%)	Total n (%)	P-value
Type of Epistaxis				0.210 (NS)
Anterior	13 (81.3%)	49 (90.7%)	62 (88.6%)	
Posterior	3 (18.8%)	5 (9.3%)	8 (11.4%)	
Severity				0.001 **
Mild	2 (12.5%)	20 (37.0%)	22 (31.4%)	
Moderate	10 (62.5%)	12 (22.2%)	22 (31.4%)	
Severe	4 (25.0%)	22 (40.7%)	26 (37.1%)	
Treatment				—
Sea water spray	3 (18.8%)	16 (29.6%)	19 (27.1%)	
Otrivin + Gentamicin ointment	3 (18.8%)	9 (16.7%)	12 (17.1%)	
Otrivin + Chloramphenicol ointment	3 (18.8%)	9 (16.7%)	12 (17.1%)	
Merocel packing + TXA	4 (25.0%)	6 (11.1%)	10 (14.3%)	
Anterior nasal packing + Otrivin	2 (12.5%)	8 (14.8%)	10 (14.3%)	
Other / advanced packing	1 (6.3%)	6 (11.1%)	7 (10.0%)	

In Table (3), anterior epistaxis was the predominant type overall (88.6%). Posterior epistaxis was more frequent among hypertensive patients (18.8%) compared to normotensive patients (9.3%), though this difference did not reach statistical significance (p = 0.210), likely reflecting the limited sample size in the hypertensive subgroup. Regarding severity, a statistically significant difference was observed between groups (p = 0.001): moderate epistaxis predominated in hypertensive patients (62.5%), while mild and severe episodes were more evenly distributed in the normotensive group. Sea water spray (27.1%) and antibiotic-based topical agents were the most common treatments in normotensive patients, while Merocel packing combined with tranexamic acid (TXA) was more frequently required in the hypertensive group, reflecting their greater bleeding severity.

Discussion

The results of the present study reported that more than half of the patients in the current investigation were male (55.7%). This finding is consistent with the observation that males in Al-Muthanna province are more likely to be engaged in outdoor occupations involving physical exertion, trauma exposure, and prolonged sun exposure, all of which are known precipitants of epistaxis. The mean age of 38.1 years reflects a bimodal distribution: a younger cohort driven by traumatic and environmental causes, and an older cohort in whom hypertension and aspirin use predominate. This bimodal pattern has been described in several population-based studies from arid Middle Eastern regions [1,2].

In this study, hypertension was documented in 22.9% of patients. All hypertensive patients were aged 48 years or above, consistent with the well-established age-related increase in the prevalence of hypertension and its associated vascular changes. This is in agreement with findings from other studies

demonstrating that hypertension is more prevalent among older patients presenting with epistaxis, and that the presence of established hypertension significantly modifies the clinical course of epistaxis episodes [3]. Of the 16 hypertensive patients, those with uncontrolled hypertension or higher measured blood pressure at presentation tended to have more severe bleeding, supporting the hypothesis that inadequate blood pressure control contributes to haemorrhagic risk.

This study confirms that the severity of epistaxis was significantly associated with hypertension status ($p = 0.001$). Moderate epistaxis was the predominant severity category in hypertensive patients (62.5%), while mild epistaxis predominated in the normotensive group (37.0%). These findings are consistent with the pathophysiological mechanisms of hypertensive epistaxis: chronic elevation of blood pressure induces arteriosclerotic changes in nasal vessel walls, reduces vascular elasticity, and elevates transmural pressure, collectively predisposing vessels to rupture and impairing local haemostasis [4,5]. The requirement for Merocel packing and tranexamic acid was more common in hypertensive patients, further corroborating the clinical impact of hypertension on epistaxis management.

Aspirin use was significantly more prevalent in the hypertensive group (56.3% vs. 18.5%, $p = 0.002$). This finding reflects the common clinical scenario in which hypertensive patients with concurrent cardiovascular disease are maintained on long-term antiplatelet therapy. Aspirin

impairs platelet aggregation through irreversible inhibition of cyclooxygenase-1, prolonging bleeding time and contributing to recurrent or difficult-to-control epistaxis [6]. This association between aspirin use and epistaxis severity has been well documented in the literature, and our findings reinforce the importance of medication history in the evaluation of patients with epistaxis.

Trauma was the leading risk factor in the normotensive group and the second most common overall (22.9%). The high proportion of young patients (children and students) in the normotensive group makes trauma and nose picking important and expected precipitants in this cohort. The absence of an identifiable risk factor in 22.9% of cases is consistent with idiopathic anterior epistaxis, which frequently occurs in young healthy individuals secondary to spontaneous mucosal vessel rupture without a clear precipitant [7,8].

The present study had some limitations. First, the study was conducted at a single centre, which may limit the generalisability of findings. Second, blood pressure was measured at a single time point following cessation of bleeding, which may not accurately represent the patient's habitual blood pressure. Third, quantitative assessment of aspirin dose and duration was not performed. Future studies with larger prospective samples, multi-centre designs, and objective quantification of pharmacological risk factors are recommended.

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