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Outcome Following Medical and or Surgical Intervention (ESPAL) for the Treatment of Epistaxis in ENT Unit in Al-Diwaniyah Teaching Hospital: Cohort Study

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Abstract

Aim of the study: In the current study the aim was to evaluate a sample of Iraqi patients with epistaxis regarding medical and surgical interventions and their outcomes. The study was carried out in Ear Nose and Throat (ENT) unit in Al-Diwaniyah Teaching Hospital, Mid-Euphrates region, Iraq. The study started on January 2018 and ended on June 2019. The main variables included in the study were age, residency, level of education, occupation, clinical presentation (cold versus emergency), severity of bleeding, type of intervention (Medical versus surgical), presence or absence of associated disease and response to treatment. Medical intervention included, direct pressure, anterior nasal packing and chemical cauterization with silver nitrate; whereas, surgical intervention included transnasal endoscopic sphenopalatine artery ligation (TESPAL). Bleeding was more frequently of emergency presentation rather than cold in association with surgical group, more severe in surgical group and characterized by more frequent attacks per month in surgical group in comparison with medical group. Response to medical and surgical intervention was good and satisfactory in all patients even after follow up for 6 months at least. There were negligible adverse effects in association with surgical intervention.

Key words: *transnasal endoscopic sphenopalatine artery ligation, epistaxis, Iraq*

Introduction

One of the most frequent emergencies daily faced by ENT specialists is epistaxis (nose bleed) [1] . Basically nose bleeds are classified into anterior and posterior ones. Anterior bleeding is the most common variety and the source of bleeding is often from Little's areas (Kiesselbach plexus). On the other hand, posterior nose bleeding is the least common and the most likely source of bleeding is the sphenopalatine artery [(2, 3)]. The disease may be primary in which no cause can be identified or secondary for some other conditions such as trauma and coagulopathies [(1-3)]. Epistaxis is most often in children between 2 and 10 years and elderly between 50 and 60 years of age. It is estimated that 60 % of population experienced epistaxis at some point of their life. However, only 10 % of cases deserve medical intervention since most of cases are mild and self-limited [4] . From etiological perspective, local causes include trauma, septal deviation, local steroids and cannulation; whereas, systemic causes included alcoholism, coagulopathies (hemophilia and von Willebrand disease) vascular malformations and hypertension [(5-7)]. Epistaxis may associate the use of a number of medications such as anticoagulants (warfarin), non steroidal anati-inflammatory drugs (ibuprofen) and platelet aggregation inhibitors (clopidogrel). Neoplastic disorders should be suspected in case of headaches, facial pain, unilateral nasal blockage and facial deformity [(5-7)]. Nosebleeds are the consequences of blood vessel rupture within the nasal mucosa. Rupture of mucosal blood vessels may be spontaneous, caused by trauma, secondary to use of a number of medication, or secondary to other neoplastic or non neoplastic disorders. When blood pressure is abnormally high, the duration of bleeding may be prolonged. Similarly the use anticoagulant medications and having coaglupathies increase the duration of bleeding [8]. The most important step in management includes the identification of bleeding site whether anterior or posterior. Medical interventions such as direct pressure, anterior nasal packing, chemical cauterization with silver nitrate, anterior nasal balloon

and thrombogenic gels are usually effective in controlling anterior nasal bleeding. If these measures fail to control bleeding, a posterior source will be suspected and treated properly. Posterior nasal packing may be helpful, surgical intervention and ligation of sphenopalatine artery may be needed to control posterior nasal bleeding [9-11]. In the current study we prospectively evaluated a sample of Iraqi patients with epistaxis regarding medical and surgical interventions and their outcomes.

Patients and Methods

The present cohort study included 65 patients of epistaxis who were treated medically and or surgically and followed up for at least 6 months. The study was carried out in Ear Nose and Throat (ENT) unit in Al-Diwaniyah Teaching Hospital, Mid-Euphrates region, Iraq. The study started on January 2018 and ended on June 2019. The age range of included patients was form 4 to 65 years. The main variables included in the study were age, residency, level of education, occupation, clinical presentation (cold versus emergency), severity of bleeding, type of intervention (Medical versus surgical), presence or absence of associated disease and response to treatment.

Medical intervention included, direct pressure, anterior nasal packing and chemical cauterization with silver nitrate; whereas, surgical intervention included transnasal endoscopic sphenopalatine artery ligation (TESPAL).

The study was approved by institutional ethical approval committee and a verbal consent was obtained from every participant after full illustration of the study aim and procedures.

Obtained data were transformed into SPSS (version 23) spread sheet. Numeric data were expressed as range, mean and standard deviation, whereas, categorical data were expressed as number and percentage. Independent sample t-test was used to evaluate mean difference between two groups; while chi-square test was used to study association between categorical variables. The level of significance was considered at $P \leq 0.05$.

Results

The present study included 65 patients with epistaxis. Those patients were categorized according to type of intervention into two groups. The first group included 52 patients who responded well to medical treatment and considered as medical intervention group. The second group included 13 patients who failed to respond to proper medical treatment and needed surgical intervention in the form of endoscopic sphenopalatine artery ligation. The latter group was considered the surgical intervention group. The demographic characteristics of patients enrolled in the current study are demonstrated in table 1.

The age range of all patients was from 4 to 65 years, that of medical intervention group was from 4 to 65 years and that of surgical intervention group was from 9 to 40 years. Mean age of medical intervention group was more than that of surgical intervention group, 26.15 ±8.13 years versus 18.02 ±16.55 years; however, the difference was statistically insignificant (P = 0.095), table 1. The study included 38 (58.5 %) males and 27 (41.5 %) females; there was no significant difference in the frequency distribution of patients according to gender between medial group and surgical group (P = 0.378), table 1. There was also no significant difference in the frequency distribution of patients according to residency, urban versus rural, between medial group and surgical group (P = 0.524), table 1. In addition, there was no significant difference in the frequency distribution of patients according to occupation between medial group and surgical group (P = 0.318), table 1. The distribution of patients according to level of education was also shown in table 1.

Idiopathic cases were seen in 44 (67.7 %) patients. Most of cases belonging to surgical group had idiopathic cause (93.3 %). Associated disorders were encountered mainly in patients with medical intervention and included trauma, chronic hypertrophic allergic rhinitis, dryness of nasal mucosa, common cold, diabetes mellitus, hypertension and immune thrombocytopenic purpura (ITP), as shown in table 2.

The characteristics of bleeding episodes are shown in table 3. Bleeding was more frequently of emergency presentation rather than cold in association with surgical group, more severe in surgical group and characterized by more frequent attacks per month in surgical group in comparison with medical group, as shown in table 3.

Response to medical and surgical intervention was good and satisfactory in all patients even after follow up for 6 months at least. There were negligible adverse effects in association with surgical intervention.

Table 1: Demographic characteristics of enrolled patients

Characteristic	Total n = 65	Medical Intervention n = 52	Surgical Intervention n = 13	P
Age (years)				
Range	4 - 65	4 - 65	9 - 40	0.091† NS
Mean ±SD	19.65 ±15.54	26.15 ±8.13	18.02 ±16.55	
Gender				
Male, n (%)	38 (58.5)	29 (44.6 %)	9 (13.8 %)	0.378 ¥ NS
Female, n (%)	27 (41.5)	23 (35.4 %)	4 (6.2 %)	
Residency				
Urban, n (%)	40 (61.5)	7 (10.8 %)	33 (50.8 %)	0.524 ¥ NS
Rural, n (%)	25 (38.5)	6 (9.2 %)	19 (29.2 %)	
Occupation				
Student, n (%)	8 (12.3)	8 (12.3 %)	0 (0.0 %)	0.318 ¥ NS
Self-employed, n (%)	40 (61.5)	31 (47.7 %)	9 (13.8 %)	
Unemployed, n (%)	17 (26.2)	13 (20.0 %)	4 (6.2 %)	
Education				
Illiterate, n (%)	2 (3.1)	2 (3.1 %)	0 (0.0 %)	---
Primary, n (%)	37 (56.9)	35 (53.8 %)	2 (3.1 %)	
Secondary, n (%)	15 (23.1)	12 (18.5 %)	3 (4.6 %)	
University, n (%)	11 (16.9)	3 (4.6 %)	8 (12.3 %)	

n: number of cases; SD: standard deviation; † : Independent samples t-test; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Table 2: Associated diseases

Associated Disease	Total n = 65	Medical Intervention n = 52	Surgical Intervention n = 13
Idiopathic, n (%)	44 (67.7 %)	32 (61.5 %)	12 (92.3 %)
Trauma, n (%)	2 (3.1 %)	2 (3.8 %)	0 (0.0 %)
Chronic hypertrophic allergic rhinitis, n (%)	1 (1.5 %)	1 (1.9 %)	0 (0.0 %)
Dryness of nasal mucosa, n (%)	8 (12.3 %)	8 (15.4 %)	0 (0.0 %)
Common cold, n (%)	1 (1.5 %)	1 (1.9 %)	0 (0.0 %)
Diabetes mellitus, n (%)	3 (4.6 %)	3 (5.8 %)	0 (0.0 %)
Hypertension	4 (6.2 %)	3 (5.8 %)	1 (7.7)
Immune thrombocytopenic purpura	2 (3.1 %)	2 (3.8 %)	0 (0.0 %)

Table 3: Characteristics of bleeding episodes

Characteristic	Total n = 65	Medical Intervention n = 52	Surgical Intervention n = 13	P
Presentation				
Emergency, n (%)	12 (18.5 %)	7 (10.8 %)	5 (7.7 %)	0.053 ¥ NS
Cold, n (%)	53 (81.5 %)	45 (69.2 %)	8 (12.3 %)	
Bleeding severity				
Mild, n (%)	44 (67.7 %)	42 (64.6 %)	2 (3.1 %)	<0.001 ¥ HS
Moderate, n (%)	11 (16.9 %)	4 (6.2 %)	7 (10.8 %)	
Severe, n (%)	10 (15.4 %)	6 (9.2 %)	4 (6.2 %)	
Frequency of bleeding attacks/ month				
1, n (%)	12 (18.5 %)	12 (18.5 %)	0 (0.0 %)	
2, n (%)	3 (4.6 %)	3 (4.6 %)	0 (0.0 %)	
12, n (%)	18 (27.7 %)	18 (27.7 %)	0 (0.0 %)	
16, n (%)	14 (21.5 %)	12 (18.5 %)	2 (3.1 %)	
20, n (%)	7 (10.8 %)	0 (0.0 %)	7 (10.8 %)	
24, n (%)	2 (3.1 %)	1 (1.5 %)	1 (1.5 %)	
30, n (%)	9 (13.8 %)	6 (9.2 %)	3 (4.6 %)	
Median (IQR)	12 (8)	12 (14)	20 (7)	<0.001 † HS

n: number of cases; IQR: inter-quartile range; ¥: Chi-square test; †: Mann Whitney U test; NS: not significant at $P \leq 0.05$; HS: highly significant at $P \leq 0.01$

Discussion

Nose bleeding is common in daily clinical practice and some cases are true emergency that needs prompt and rapid intervention in order to prevent further complications [1-4]. Anterior nasal bleeding is usually easy to control using conventional medical approaches than posterior nasal bleeding. These medical interventions included direct pressure, anterior nasal pack and silver nitrate cauterization. However, posterior nasal bleeding frequently associated with severe and recurrent attacks of bleeding that requires surgical intervention, often in the form of endoscopic sphenopalatine artery ligation. Posterior epistaxis often arises from the posterior septum and the posterior lateral nasal wall, which constitutes 5 to 10% of patients. Due to the difficulties in spotting the location of bleeding, its treatment is more difficult than anterior epistaxis [9-11].

In the current study we included 65 cases of epistaxis that have been managed in the unit of ENT in Al-Diwaniyah teaching hospital and then we categorized them according to type of intervention into medical group and surgical group aiming at identifying possible demographic characteristics, associated disorders or characteristic of nose bleed that can predict the need for surgical intervention.

In the current study, regarding demographic characteristics, those patients who required surgical intervention were relatively young; however, the difference in mean age between both groups did not reach statistical significance. Probably those young patients has posterior nose bleeding more than those older patients; however, the lack of statistical significance makes this observation related to chance factor rather being a significant association. Indeed, several authors reported that those who need inpatient treatment are usually older than those receiving outpatients treatment [12, 13].

In the present study, regarding gender, residency, occupation and level of education, it seems that none of these factors associates type of clinical presentation or affects type of intervention. These observations are in line with the observations made by several other authors [14-16]

In the present study, associated diseases were more frequent in group of medical intervention and the majority of cases of surgical group were idiopathic. These findings seems contradictory to majority of previous reports [17-20]; however, it may be merely statistical finding and increasing sample size in the future may reveal better idea regarding the impact of primary and secondary nasal bleeding on treatment approach.

In the current study following up of patients revealed significantly more attacks in association with surgical intervention in comparison with medical interferences; however, we believe that the source of this recurrent attacks is attributed to secondary infection and subsequent mucosal abrasion evidenced by that bleeding severity is much less than original one before operative interference reflecting mucosal oozing rather than true arterial bleeding.

In the current study both medical and surgical interventions were efficient in producing high rate of satisfactory good results. However, some cases did not respond to medical intervention and needed surgical intervention to control nose bleeding.

Conclusion

when medical treatment fails to control nose bleeding, transnasal endoscopic sphenopalatine artery ligation is effective and safe procedure with negligible adverse outcomes.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Diwaniyah Teaching Hospital / Department of surgery / Al-Diwania / Iraq and all experiments were carried out in accordance with approved guidelines.

References

1. Fishman J, Fisher E, Hussain M. Epistaxis audit revisited. J Laryngol Otol. 2018 Dec;132(12):1045
2. Send T, Bertlich M, Eichhorn KW, Ganschow R, Schafigh D, Horlbeck F, Bootz F, Jakob M. Etiology, Management, and Outcome of Pediatric Epistaxis. Pediatr Emerg Care. 2019 Jan 07.
3. Kitamura T, Takenaka Y, Takeda K, Oya R, Ashida N, Shimizu K, Takemura K, Yamamoto Y, Uno

A. Sphenopalatine artery surgery for refractory idiopathic epistaxis: Systematic review and meta-analysis. Laryngoscope. 2019 Jan 06.

4. Gilyoma JM, Chalya PL. Etiological profile and treatment outcome of epistaxis at a tertiary care hospital in Northwestern Tanzania: a prospective review of 104 cases. *BMC Ear Nose Throat Disord*. 2011;11:8.
5. INTEGRATE (UK National ENT research trainee network) on its behalf: Mehta N, Stevens K, Smith ME, Williams RJ, Ellis M, Hardman JC, Hopkins C. National prospective observational study of inpatient management of adults with epistaxis - a National Trainee Research Collaborative delivered investigation. Rhinology. 2019 Jan 05.
6. Clark M, Berry P, Martin S, Harris N, Sprecher D, Olitsky S, Hoag JB. Nosebleeds in hereditary hemorrhagic telangiectasia: Development of a patient-completed daily eDiary. Laryngoscope Investig Otolaryngol. 2018 Dec;3(6):439-445.
7. Ramasamy V, Nadarajah S. The hazards of impacted alkaline battery in the nose. J Family Med Prim Care. 2018 Sep-Oct;7(5):1083-1085.
8. Parajuli R. Evaluation of Etiology and Treatment Methods for Epistaxis: A Review at a Tertiary Care Hospital in Central Nepal. *Int J Otolaryngol*. 2015;2015:283854.
9. Joseph J, Martinez-Devesa P, Bellorini J, Burton MJ. Tranexamic acid for patients with nasal haemorrhage (epistaxis). Cochrane Database Syst Rev. 2018 Dec 31;12:CD004328.
10. Wong AS, Anat DS. Epistaxis: A guide to assessment and management. J Fam Pract. 2018 Dec;67(12):E13-E20.
11. Santander MJ, Rosenbaum A, Winter M. Topical tranexamic acid for spontaneous epistaxis. Medwave. 2018 Dec 10;18(8):e7372.
12. Beck R, Sorge M, Schneider A, Dietz A. Current Approaches to Epistaxis Treatment in Primary and Secondary Care. *Dtsch Arztebl Int*. 2018;115(1-02):12–22.
13. İsmi O, Vayisoğlu Y, Özcan C, Görür K, Ünal M. Endoscopic Sphenopalatine Artery Ligation in Posterior Epistaxis: Retrospective Analysis of 30 Patients. *Turk Arch Otorhinolaryngol*. 2016;54(2):47–52.
14. Adoga AA, Kokong DD, Mugu JG, Okwori ET, Yaro JP. Epistaxis: The demographics, etiology, management, and predictors of outcome in Jos, North-Central Nigeria. *Ann Afr Med*. 2019;18(2):75–79.
15. Newton E, Lasso A, Petrcich W, Kilty SJ. An outcomes analysis of anterior epistaxis management in the emergency department. *J Otolaryngol Head Neck Surg*. 2016;45:24.
16. Traboulsi H, Alam E, Hadi U. Changing Trends in the Management of Epistaxis. *Int J Otolaryngol*. 2015;2015:263987.
17. Buchberger AMS, Baumann A, Johnson F, et al. The role of oral anticoagulants in epistaxis. *Eur Arch Otorhinolaryngol*. 2018;275(8):2035–2043.
18. Nardo-Marino A, Williams TN, Olupot-Olupot P. The frequency and severity of epistaxis in children with sickle cell anaemia in eastern Uganda: a case-control study. *BMC Hematol*. 2017;17:14.
19. Yüksel A , Kurtaran H , Kankiliç ES , Ark N , Uğur KS , Gündüz M. Epistaxis in geriatric patients. Turk J Med Sci. 2014;44:133–136.
20. Sarhan NA, Algamal AM. Relationship between epistaxis and hypertension: A cause and effect or coincidence?. *J Saudi Heart Assoc*. 2015;27(2):79–84.