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The treatment of recurrent anterior epistaxis

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Abstract
Background: Epistaxis represents a very frequent clinical manifestation in the general population. It is estimated that around 60% of people were affected. The first aim of this study is to compare the results of the pharmacological to the surgical treatment and establishing which of the two was the most effective. Subsequently we observe some factors that can favor the choice of surgical treatment.
Methods: In this study we describe the results relating to 121 patients suffering from recurrent anterior epistaxis treated at our ENT Departement between 2017 and 2020.
Results: Surgery has proven to be more effective than pharmacological treatment in the treatment of recurrent anterior epistaxis, particularly in patients suffering from comorbidities such as arterial hypertension and coagulopathy and in patients on anticoagulant therapy.
Conclusions: The surgical treatment has proven to be very effective and safe and we consider it the treatment of choice even in decoagulated patients or suffer from other significant comorbidities

Keywords: Epistaxis, microscope assisted, electro-cautery, comorbidity, surgical treatment

Introduction

According to Anglo-Saxon literature, epistaxis is a very frequent phenomenon in the general population, affecting approximately 60% of subjects. This condition shows peaks of incidence in the ages of less than 10 years and more than 50 years and seems to occur more often in males[1].

Acute and chronic rhinosinusitis, autoimmune diseases, neoplasms but also telangiectasias and vascular malformations, as well as inhalation of irritants or drugs or more simply traumas are considered local causes of epistaxis[2]. Instead, we consider systemic causes of epistaxis to be pathologies such as hypertension, oncohematological diseases, hemophilia, liver failure, thrombocytopenia and thrombocytopathies, but also anti-aggregating and anticoagulant therapies[1,2].

In the nasal cavities, there are areas characterized by dense vascularization and rich anastomoses between the terminal branches of the carotid artery, which are frequently the site of hemorrhage. In the anterior portion of the septum we find the Little's Area (also called Locus Vasalvae or Kiesselbach's plexus), the main site of origin of epistaxis.

Anterior epistaxis is a clinically evident bleeding, always characterized by blood coming out of the nasal cavity. Patients affected are often very emotionally involved, but these episodes rarely represent a situation of real danger. These forms of epistaxis in some cases resolve spontaneously without requiring medical intervention[3-4-5]. However, in many cases, the problem tends to recur frequently, becoming a factor of significant discomfort and worsening of the quality of life.

We can choose between 2 types of therapeutic modalities for the management of anterior epistaxis. Pharmacological therapy involves the use of nasal creams or ointments mainly based on vaseline, pectin or hyaluronic acid which can be associated with oral treatments for example based on aminaphtone, bioflavonoids or myrtillin. Generally the first therapeutic choice falls on the use of these drugs which can be used also by doctors not necessarily specialists in otorhinolaryngology. In other cases we can opt for an outpatient surgical treatment under local anesthesia.

This study analyzes the results of 121 treatments (pharmacological and surgical), carried out between January 2017 and February 2020, in patients suffering from recurrent anterior epistaxis, with the main aim of highlighting the most effective method, in management of this frequent pathology.

Materials and Methods

We conducted a retrospective on the patients evaluated at our clinic for recurrent anterior epistaxis between January 2017 and February 2020. Our database, in reference to that period, showed 92 patients were treated with pharmacological medications (Vaseline-based ointment at least 3 time a day with or without Aminaphtone for 2 times a day for 10 days) and 29 patients underwent a minimally invasive surgical procedure. All patients were evaluated at the ENT Clinic Villa Antonella, Codogno (Italy) and underwent both nasal endoscopy and microscopic observation of the anterior third of the nasal fossa with particular reference to the septal area corresponding to the Littel's area.

All patients subjected to surgical treatment, have undergone to vascular sclerotization by bipolar electro-cautery under microscopic control in local anesthesia, they were monitored for 20 minutes in the post-operative phase and then discharged with an outpatient control program. In all patients in the study, a follow-up visit was performed 1 month after treatment.

Inclusion criteria were any age group, both genders, recurrent nosebleeds originating from the anterior third of the nasal cavity, unilateral nosebleeds. Exclusion criteria were neoplastic or autoimmune diseases localized to the nose, bilateral nosebleeds, ongoing local infections, and pregnancy.

The work was conducted in accordance with the Declaration of Helsinki on biomedical studies involving human subjects. All patients were informed about the procedures performed and gave their written consent.

We analyzed our data with the main objective of comparing the results of the pharmacological to the surgical treatment and establishing which of the two was the most effective.

Then we observed the results of surgery in the presence of some comorbidities (hypertension, dyslipidemia, atrial fibrillation and caugulopathies) and during antiplatelet or anticoagulant therapy. Finally, we studied the relationship between seasonality and surgical choice.

Statistical analyses were done using a dedicated software program: R Development Core Team (2023). A p-value less than 0.05 were considered statistically significant in Chi-square tests.

Surgical procedure

All patients underwent vascular sclerotization treatment in the anterior third of the nasal cavity by electrocautery with bipolar forceps. All operations were performed with the patient in the supine position, on the operating table and under microscopic control (Karl Kaps Microscope, Germany©). Local anesthesia was used by means of cotton balls soaked in lidocaine solution (10 mg/ml). In some cases, in addition to lidocaine, we partially soaked the cotton balls with a few drops of oxymetazoline. We left the anesthetic in contact with the nasal mucosa for about 5 minutes and then performed cauterization with bipolar forceps of the arterial or venous vessels afferent to the hemorrhagic point and then sclerotized the point itself. The patients were observed in the post-operative phase for about 20 minutes and then discharged.

Results

Between January 2017 and February 2020, 121 patients are treated for recurrent anterior epistaxis. Of these 59% are male and 41% female. The age ranged from 10 to 94 years, with an average of 64 years and 6 months.

92 patients (76%) were subjected to pharmacological therapy (29 underwent treatment with Vaseline-based ointment, 47 underwent treatment with Vaseline-based ointment combined with Aminaphthone). 29 patients (24%) underwent surgical treatment of vascular sclerotization by electrocautery with bipolar forceps under microscopic control.

We reported in Figure 1 the main comorbidities present in the population studied (Figure1). 45% has no pathologies in remote pathological anamnesis. 40% of patients suffer from hypertension, while 36% have an alteration of the coagulation cascade. Of these patients, only 2 suffer from thrombocytopenia, while the remaining have an iatrogenic coagulation deficit due to antiplatelet or anticoagulation treatment. 17% of patients have dyslipidemia and only 6% have atrial fibrillation.

Considering the sites of origin of the epistaxis, we find a clear prevalence of the Little's area (LV) which represents the most frequent site (95% of cases). Only 5% of cases of the bleeding originate from different sites (Figure. 2) that are the head of the inferior turbinate, nasal vestibule and middle third of the nasal septum.

Of the 92 patients subjected to pharmacological treatment, 76 (82%) achieved resolution of the problem and reported no episodes of epistaxis during the follow-up visit. However, 16 of them (18%) presented a recurrence of the problem despite the treatment performed (in 10 cases the patients had taken exclusively Vaseline ointment and 6 Vaseline ointment with Aminaphthone). Of the 29 patients who underwent surgical treatment, none reported recurrence of epistaxis. The results of our statistical analysis show that surgery in epistaxis is more effective than medical-pharmacological treatment with statistical significance.

(calculated chi-square 5,81200828 > theoretical chi-square 0.00393214, alpha 0,05, 1 gdl).

Then we observe the role of comorbidities in the population studied. We find that there is a statistically significant relationship between the cases of intervention and the presence of at least one of hypertension, coaugulopathies, dyslipidemia, or atrial fibrillation (calculated chi-square 2,06505448 > theoretical chi-square 0.00393214, alpha 5%, 1 gdl).

Furthermore we studied the relationship between antiplatelet and anticoagulant therapy and surgical treatment. We observed that the cases of surgical treatment are statistically more frequent in treated patients compared to untreated patients (calculated chi-square 0.04901159 > theoretical chi-square 0.00393214, alpha 5%, 1 gdl).

Finally we check the relationship between surgical cases and the type of season. We observed that the number of surgical treatments increase statistically in the summer and winter seasons. (calculated chi-square 4,88871496 > theoretical chi-square 0.35184632, alpha 5%, 3 gdl).

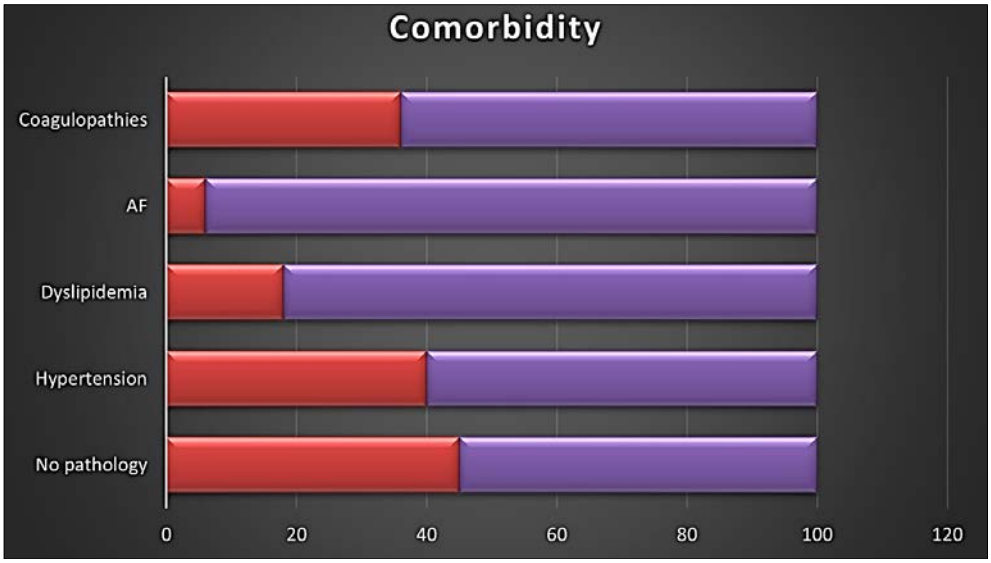

Fig 1: Comorbidity in patients of the study

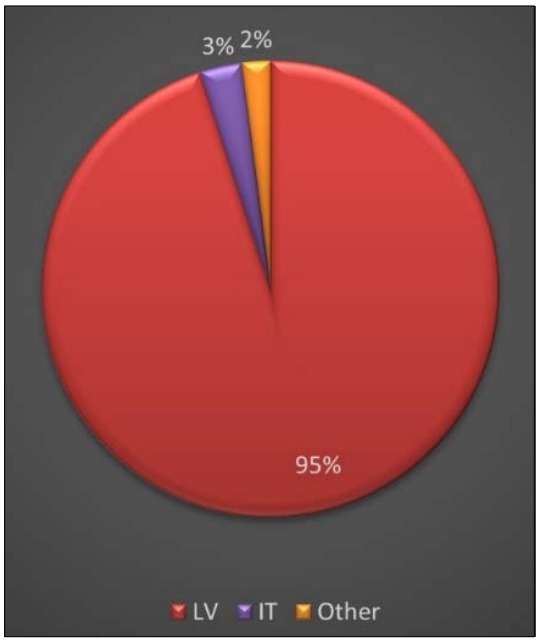

Fig 2: Site of bleeding in patients of the study

Discussion

According to recent data, epistaxis, or nasal bleeding, represents a very frequent problem that affects approximately 60% of the Western population. Anterior nosebleeds are often a mild and self-limiting clinical event. However, our clinical experience has led us to note that despite the low level of danger of these events, patients affected are often emotionally involved. Indeed, who have been visited at our ENT department for a problem of recurrent epistaxis, have always been very annoyed by the situation and often even scared.

The management of the epistaxis is very different depending on whether the patient is assessed in the acute phase or in the intercritical phase [6-7-8]. In the latter condition, we believe it is very important to clarify the situation and reassure the patient by instructing him/her on how to manage the situation should it recur. In these cases, we always perform a nasal endoscopy and if no significant problems are found, we propose to the patient a pharmacological treatment generally based on ointments.

In cases of recurrent anterior nosebleeds, we advise patients, once the site of the hemorrhage has been identified, to undergo surgical treatment of vascular sclerotization by electrocautery with bipolar forceps under microscopic control. This is a very effective procedure. In fact, none of the operated patients showed a recurrence of epistaxis in the following days. Therefore, we support that among the many treatments discussed in the literature [6], surgical treatment is the most effective in controlling anterior epistaxis.

However, effectiveness is not the only factor to consider when choosing a therapy for epistaxis. Another very important aspect is the safety of the treatment as also supported by American Clinical Practice Guideline [6]. In this sense the surgical procedure we performed in our patients proved to be extremely safe. In the patients studied, we have never encountered complications. We believe that the use of the microscope during the operation provides added value to the procedure. This allows us to better evaluate the hemorrhagic site and a more conservative treatment with a clear reduction in the risk of ulceration and septal perforation [9-10]. To minimize the risks of damage[1] to the mucosa and septal cartilage, we no longer resort to cauterizing treatment with silver nitrate.

Therefore, we believe that the choice of a surgical approach in cases of recurrent anterior epistaxis is the one to be preferred.

Furthermore, we observed a relationship between some risk factors and surgical treatement. Patients affected by arterial hypertension according to what was analyzed seem to have a greater probability of resorting to surgery. These data are in agreement with what has been recently supported by Byun *et al* [11-12] and in the past by Charles *et al* [13]. Dyslipidemia and cougulopathies also represent, according to what emerged from our results, a risk factor related to the surgical treatment of epistaxis in line with what has already been claimed by other authors [14-15-16].

We also observed a statistically significant association between the assumption of antiplatelet or anticoagulant therapy and the need to resort to surgery. In fact, anticoagulated patients affected by epistaxis resort to surgery more frequently than those not anticoagulated. This phenomenon suggests that in these patients, since anticoagulant therapy increases and aggravates epistaxis [2,17,18], it is necessary to carry out the treatment most effective. However, not all authors support the existence of a relationship between anticoagulant drugs and epistaxis episodes [19].

Finally, we study the role of atmospheric environmental factors in recorrent epistaxis. We notice that the greatest number of surgical procedures are performed at our Clinic in the summer and winter seasons. We assume that this phenomenon, as already supported by other authors [20], is to be attributed to certain environmental and climatic conditions that occur at our latitudes in these specific seasons. In summer, for example, vasodilation favored by high temperatures could accentuate and aggravate the phenomena of epistaxis, while during the winter some factors could favor mucosal dystrophy and therefore more marked epistaxis (increased incidence of viral infections, variations in ambient air determined by heating systems, etc.). Furthermore, we believe that the increased number of surgical interventions for nosebleeds during the summer season, in agreement with Ying-Xia Lu *et al*. [21], could be partly attributable to an increase in the concentration of air pollutants due to the reduction in rainfall in this season. Therefore, what emerged leads us to consider the summer and winter seasons as factors that favor the number of surgical treatments.

Conclusion

Vascular sclerotization by bipolar electrocautery under microscopic control is an effective and safe treatment in cases of recurrent anterior epistaxis. The procedure is performed on an outpatient basis under local anesthesia with minimal invasiveness and great respect for the nasal mucosa. This treatment has proven to be very effective and safe and we consider it the treatment of choice even in decoagulated patients or suffer from other significant comorbidities.

Author contribution

The manuscript was totally designed and written by the author MC. The statistical analysis was conducted by Matilde Grecchi

Conflict of Interest

The author declares no conflict of interest.

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