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Emergency consultation for epistaxis: A bad predictor for overall health?

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ABSTRACT

Objective: To compare the mortality rate of a large epistaxis cohort with the fatalities of the general Swiss population and to evaluate significant risk factors for impending early death.
Methods: 568 patients out of an epistaxis cohort from a former study were contacted by mail to answer a questionnaire. Deceased patients were identified from March, 2007 through April, 2014. Death rates were compared to the general Swiss population. Different potential risk factors were evaluated by multivariate analysis.
Results: Thirty-four percent of the included patients (61 of total n = 181) died during the observation period. The mean number of deaths per year was 8.7. Binary logistic regression identified anterior localization ($p = 0.027$), comorbid endogenous bleeding predisposition including hemorrhagic hereditary telangiectasia ($p = 0.017$) and age ($p < 0.01$) as independent and significant risk factors for early death in epistaxis patients. A significantly higher mortality was found within our epistaxis cohort compared to the Swiss general population.
Conclusion: With the present data a trivial event such as epistaxis, especially when anteriorly located, needs to be seen in a new light. Emergency consultation because of nose bleeding might be an unexpected bad predictor for mortality. Although conclusions need to be considered with caution due to the retrospective character of the study, we regard epistaxis as an independent alarm-signal. After an acute nose bleed requiring emergency consultation, active collaboration with the patient's general practitioner and additional efforts to check for the patient's general health might be more useful than so far assumed.

1. Introduction

Epistaxis is a very frequent emergency. More than every second person will suffer from at least one single epistaxis episode in his or her adult lifetime [1,2]. The age distribution of nosebleeds is bimodal with event peaks before the age of 10 years and between the age of 45 and 65 [3,4]. A large part of affected patients struggle with recurrent episodes. Own and others' retrospective data showed a long-term recurrence rate for minor events from 15 up to 40% [5]. The high rate of epistaxis incidences and its highly recurrent pathophysiologic nature lead to the fact that epistaxis is ranked among the main diagnoses in otorhinolaryngologic emergency rooms and causes a high workload for physicians and medical staff [6,7].

Most episodes do not take a severe course. Nonetheless, epistaxis can reach a critical extent with the need for an

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emergency consultation and further diagnostics, treatments and hospital admissions. Hemorrhage, in general, is a dreaded complication for every otorhinolaryngologist. Death directly caused by epistaxis is rare. In the early sixties, a multicentric collection of case reports described 7 fatal cases in a 3 years period [8].

Depending on the vascular bleeding source, the severity and recurrence frequency, epistaxis can potentially lead to critical anemia. Epistaxis and death are often non-causally associated. In our own unpublished series, 3 patients died in the short-postinterventional follow-up. One patient deceased in the context of a polytrauma, one due to cancer and one after the complication of an in-hospital lung embolism.

Occasionally severe epistaxis episodes require blood transfusions [9]. Regardless of its etiology most epistaxis episodes fortunately take a non-threatening course, while only very few are of hemodynamic or cardiologic relevance. In addition, severe posterior bleeding can, under certain circumstances, potentially compromise the airway [10].

In a previous survey study that was conducted by conventional mail in order to estimate the long-term outcome after epistaxis treatment at our department, we received a surprisingly high rate of death notes. We launched this investigation due to this high number of deaths among our epistaxis cohort and also inspired by other colleagues who have experienced a similar link between epistaxis and mortality.

The aim of this study was to compare the mortality rate of our epistaxis cohort with the mortality rate of the general Swiss population and to evaluate risk factors within our cohort of nosebleed patients for impending death.

2. Materials and methods

This is a follow-up investigation of a former cohort survey study at the University Hospital of Zurich during which we systematically collected medical information of 603 patients attending the emergency because of epistaxis [11]. The discrimination between anterior and posterior bleeds were made upon visibility of the potential bleeding source on anterior rhinoscopy. If the bleeding source was not directly visible at all, or was only identified with an endoscope, the bleeding has been classified as posterior.

All patients have been seen and treated at the ENT department. All epistaxis patients, regardless of whether hospital admission was necessary or simple outpatient treatment was done, were included.

The treating physician obtained and stored the data of epistaxis patients electronically at a pre-programmed form within the clinical information system. The data of this initial cohort was obtained in the period from March 29, 2007 to April 1, 2008 [11].

In April 2014 thirty-five patients from this initial cohort were known to have deceased, as their death was registered at the clinical information system. The remaining patients of the cohort have been contacted by conventional mail and asked to answer a paper-questionnaire for a survey study in order to estimate the long-term outcome and satisfaction after treatment at our department.

A thorough search was performed using the clinical information system of the hospital in order to identify further patients who had died meanwhile within the initial cohort. The mortality data obtained by questionnaire and active hospital record search were compared to data on the general population's mortality rate for a period of 6 years. This latter information was provided by the Swiss Federal Agency for Statistics (http://www.bfs.admin.ch/).

For multivariate analyses, we directed our attention particularly on following parameters: age at treatment at our ENT emergency room, sex, patient's history for hypertension, patient's history for an endogenous bleeding predisposition (i.e. hemophilia, hemorrhagic hereditary telangiectasia (HHT), thrombocytopenia, malignancies of the hematopoietic system, and others), traumatic etiology of the nosebleed, hospital admission due to epistaxis, received blood transfusions, anatomical localization of the bleeding and intake of medication having an influence on hemostasis (ASA (acetylsalicylic acid), Marcoumar® (phenprocoumon), Plavix® (clopidogrel)). The occurrence of death was defined as the primary endpoint.

The statistical analyses, graphs and plots were done using the Statistical Package for the Social Sciences software (SPSS) version 22.0.0.1 (IBM Corp., Armonk, NY, USA) and GraphPad Prism software version 5.04 (GraphPad Software Inc., California, USA).

We performed the Hosmer–Lemeshow test, which is an evaluated test to determine the goodness of fit of the logistic regression model. Confidence interval for the hazard ratio was defined as 95%. Results were considered statistically significant at the p-level <0.05.

The survey study was conducted in accordance to the latest version of the Helsinki declarations and with the permission of the ethical committee of the canton of Zurich (KEK-ZH-Nr.: 2013-0519, ClinicalTrials.gov-Identifier: NCT02127554).

3. Results

The initial cohort, treated at our ENT emergency because of epistaxis, consisted of 603 patients. Thirty-five (35) patients were registered as deceased in the clinical information system at the time of April the first in 2014. Conventional mails have been sent to the remaining 568 patients from the initial cohort.

Two hundred and fifteen (215) letters were lost without trace. Two hundred and five mails (205) were returned by the postal service, due to impossible delivery. One hundred and forty-eight (148) questionnaires have been replied.

Twenty-eight (28) mails returned with a death notice by a relative or caregiver of the patient and 120 mails returned with the voluntarily filled out paper-questionnaire. These 120 patients were obviously alive in April 2014.

The thorough search in our clinical information system in February 2015 revealed additional 5 confirmed deaths among the initial cohort.

Two (2) death notices were excluded because neither was the date of death exactly specified at the returned mail nor was this information available in our clinical information system. Five (5) deceased patients were excluded because they died after the end of our defined observation period on first of April 2014.

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