

Does the weather really affect epistaxis?

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Abstract. *Does the weather really affect epistaxis?* **Objectives:** The aim of this study was to determine the incidence and severity of epistaxis under different air conditions.

Methods: This prospective study of 310 patients was conducted between January 2010 and December 2010 in the Diyarbakir State Hospital. Epistaxis rates were examined in under conditions of mean temperature (MT; degrees Celsius), mean humidity (MH; (%), air pressure (AP; atmosphere bar), sunlight duration (SD; hours), rainfall (kg/m²), and wind speed (km/hour).

Results: A positive correlation between epistaxis rates and temperature was found, but the correlation between epistaxis rates and humidity, air pressure, and rainfall were negative. Additionally, no correlation was seen between epistaxis rates and either wind speed or sunlight duration.

Conclusion: This clinical study provides evidence to support the idea that meteorological factors should be considered risk factors of epistaxis rates.

Introduction

Epistaxis, meaning nosebleed in Greek, and can occur at least once in the lifetime of 60% of the population, with a greater prevalence in those aged less than 10 years and those aged more than 35 years.¹⁻³ Six per cent of all epistaxis patients need medical treatment, which means that approximately 3.5-4% of the population may seek medical care for epistaxis in their lifetime.³ According to these numbers, it is clear that epistaxis is a serious public health problem. Therefore, the causes of epistaxis must be discussed to clarify and resolve the problem.

There are several theories on the relationship between meteorological factors and the incidence of epistaxis. Some authors have suggested that rates of epistaxis increase during cold months, whereas others have suggested that rates increase during hot months. There are also studies that report no seasonal distribution associated with meteorological factors.⁴⁻⁷ The aim of this study was to research the incidence of epistaxis during periods of different air conditions.

Materials and method

This prospective study of 310 patients was conducted at the Diyarbakir State Hospital between

January 2010 and December 2010. The study protocol and consent forms were designed according to the 59th World Medical Association General Assembly (Seoul, 2008) and were signed by all patients. All patients underwent a detailed physical examination. Patients with bleeding disorders, chronic diseases, acute infections, a history of hypertension, and nasal deviation were excluded from the study. The meteorological data were provided by the Turkish State Meteorological Service. Epistaxis rates were compared with the parameters of mean temperature (MT, degrees Celsius), mean humidity (MH, %), air pressure (AP, atmosphere bar), sunlight duration (SD, hours), rainfall (kg/m²), and wind speed (km/hour). The relationships between the meteorological factors and epistaxis were analyzed using SPSS 15.0 for Windows. A linear correlation test was applied to the statistical results.

Results

The mean age (standard deviation) of patients was 32.02±12.5 years. There were 130 (42%) female and 180 (58%) male patients. The average number of epistaxis cases per day was 0.85.

Epistaxis rates and meteorological factors were evaluated by 12-month monitoring of patients. A positive correlation was determined between

Table 1

Spearman's rho test for the meteorological parameters

Parameter	Rho	P
Mean temperature(celcius degree)	0,457	<0,001
Mean humidity (%)	-0,473	<0,001
Air pressure (atmosphere bar)	-0,427	<0,001
Sunlight duration (hours)	0,418	<0,001
Rainfall(kg/m2),	-0,185	0,012
Wind speed(km/hour)	0,132	0,074

mean temperature and patient numbers ($p < 0.001$) (Table 1). When the mean daily temperature increased, the rate of epistaxis was seen to increased (Table 1, Table 2). A negative correlation was found between humidity and epistaxis. As humidity decreased, a statistically significant increase was observed in the rate of epistaxis ($p < 0.001$) (Table 1, Table 3). When the mean air pressure decreased, a statistically significant increase in epistaxis rates was seen ($p < 0.001$) (Table 1, Table 4). During longer hours of daylight, a greater incidence of epistaxis was found (Table 1, Table 5). A negative correlation was found between rainfall and epistaxis ($p = 0.012$). No significant relationship was determined between wind speed and epistaxis rates (Table 1, Table 6).

Discussion

Epistaxis is one of the most important diseases in ENT emergencies. There are many factors that can cause epistaxis, such as coagulopathies, hypertension, self-induced digital trauma, and nasal drugs (such as nasal corticosteroids).^{3,8} There have been previous studies on meteorological factors and epistaxis rates. Some authors such as Tompkinson *et al.*⁴ and Murata *et al.*¹⁰ found a correlation between epistaxis and meteorological factors. On the other hand, others reported that there is no such correlation.^{4,9-11} The groups of authors who found a correlation between weather conditions and epistaxis are subdivided into two groups. The first group reported a positive correlation between the weather and epistaxis, whereas the second group reported a negative correlation between epistaxis and the weather.^{9,10}

In this study, a positive correlation between temperature and epistaxis rates. This result supports

Table 2

Number of patients during the different temperature levels

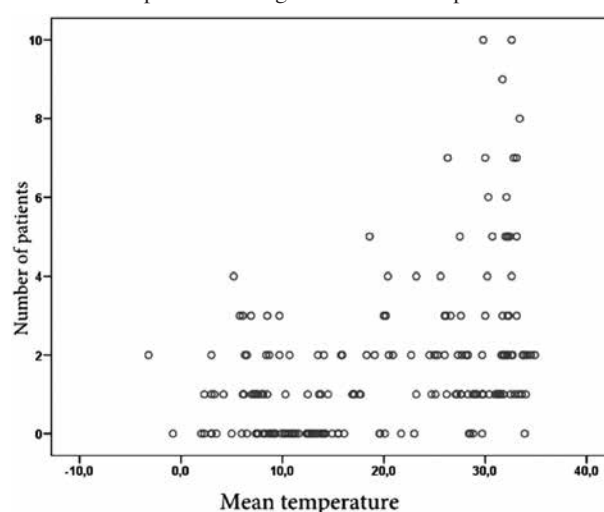
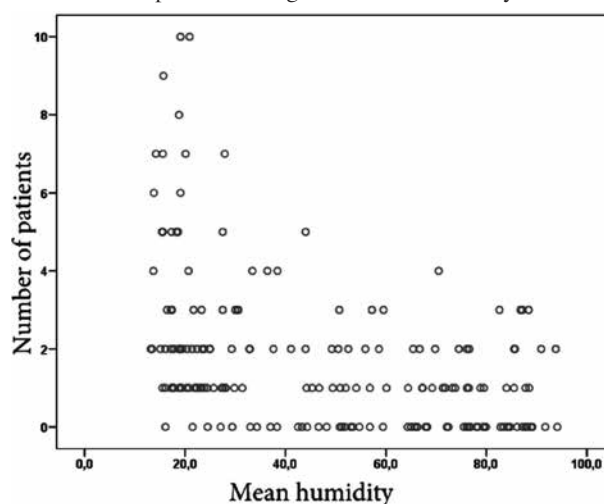


Table 3

Number of patients during the different humidity levels



the findings of Murata *et al.*,¹⁰ but is in contrast with the results of Danielides *et al.*⁹ and Olededejo *et al.*¹²

The second parameter was daily mean humidity. In this study, the daily mean humidity was determined to have a negative correlation with epistaxis rates. This parameter explains the higher epistaxis rates of people who live in centrally-heated buildings, which have low humidity atmospheres. Previous studies have shown a correlation between epistaxis rates and humidity.^{9,13} The third parameter was air pressure, which was determined to have a statistically significant negative correlation with epistaxis rates in the current study. This result supports the findings of Danielides *et al.*⁹

Table 4

Number of patients during the different air pressure levels

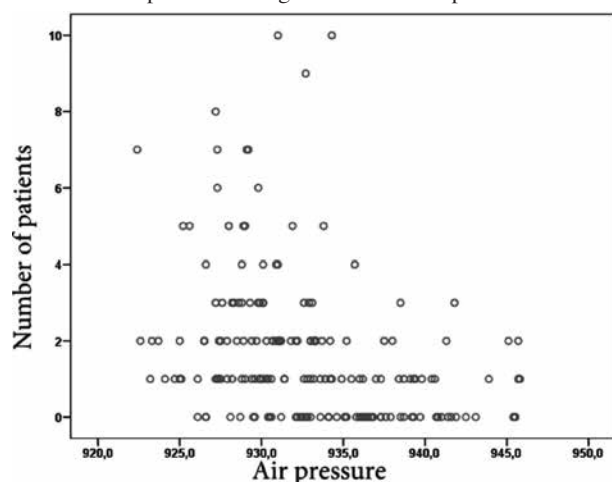
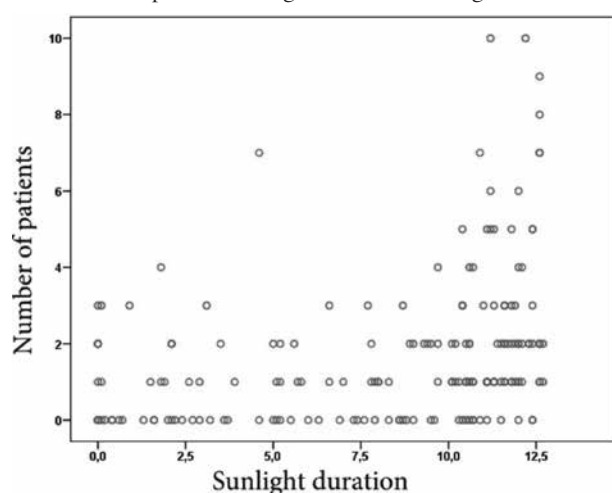


Table 5

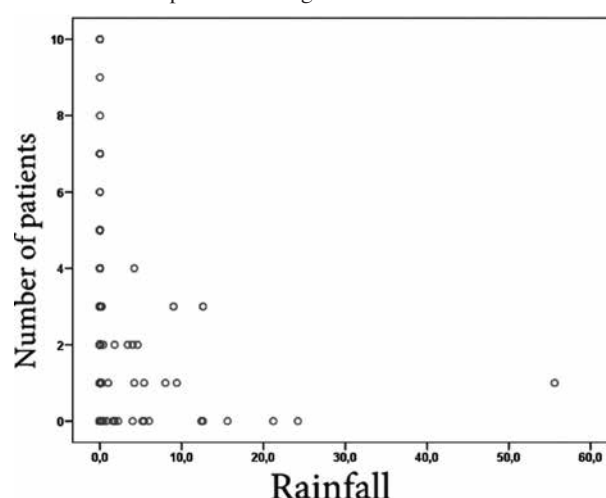
Number of patients during the different sunlight duration



According to our study, sunlight duration has an effect on epistaxis rates. A statistically significant positive correlation was determined between epistaxis and sunlight duration. Rainfall was the other parameter determined to have an effect on epistaxis rates in this study. Epistaxis rates were seen to statistically significantly decrease on rainy days. This finding also supports the findings of humidity because rain increases the humidity, which then decreases epistaxis rates. The final parameter of wind speed was determined to have no effect on epistaxis rates according to the results of this study.

Table 6

Number of patients during the different rainfall levels



Conclusion

Most ENT specialists think that meteorological factors play a role in epistaxis rates. This clinical study provides evidence to support this notion. Meteorological factors should be considered a risk factor of epistaxis rates. However, it is clear that further studies are required in larger populations in different air conditions and locations to confirm these findings.

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