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Epistaxis: Are temperature and seasonal variations true factors in incidence?

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Abstract

Objective: To investigate the previously documented inverse association between ambient temperature and presentation rates for patients with epistaxis and seasonal variation of emergency presentation rates for patients with epistaxis.

Study design: A retrospective analysis of all consecutive emergency patients with epistaxis presenting to hospital from the community over a five-year period, 1997–2002 (1830 days), including those who required admission to hospital with epistaxis over the same period. Patients in whom there was a clear aetiology for the epistaxis (traumatic, recurrent, iatrogenic, coagulopathic and hypertensive) were excluded.

Setting: A tertiary referral centre in south-west London serving a population in excess of 2.8 million.

Method: A retrospective analysis of all patients presenting or admitted to St George's Hospital with epistaxis over a five-year period. Daily ambient temperature readings from London Heathrow airport were recorded for the same period. Presentations were correlated with monthly temperature variations and the month itself. Statistical analysis with Pearson's correlation coefficient was performed.

Results: 1373 patients with epistaxis presented to our department, of whom 386 (28.1 per cent) were admitted to hospital. No correlation is seen between ambient temperature and presentation rate for patients with epistaxis. No seasonal preponderance is noted for presentation rate (Pearson $r = 0.160$, $p = 0.221$) in this series.

Conclusion: To our knowledge, this is the largest study to date examining ambient temperature association and epistaxis, and the first to investigate presentation rate in place of admission rate. We feel that the exclusion of all patients with epistaxis not admitted to hospital introduces a bias. In this series, there is no correlation between ambient temperature, seasonal preponderance, presentation rate or admission rate for patients with epistaxis. This is contrary to previously reported findings. We do not support the view that there is a relationship between epistaxis and temperature or seasonal variation. This contradicts the current belief that incidence of epistaxis displays seasonality, and has implications for the allocation of resources for healthcare provision within ENT departments.

Key words: Epistaxis; Seasons; Temperature; Hospital Admission

Introduction

There have been several previous reports in the literature that suggest patients admitted to hospital with epistaxis have different rates of admission depending on the season and temperature.[1] Some authors have reported that a negative correlation exists between ambient temperature and epistaxis admission rates;[2–5] in other words, as the temperature falls there is seen an increase in admission rates. There is an opposing opinion that there is a positive correlation between admission rates and temperature.[6] In this study we attempted to investigate if a true correlation between epistaxis presentation rates and temperature or season really exists.

Method

A retrospective analysis of epistaxis presentations to St George's Hospital during the five-year period 1997–2002 was made using the patient administration system and accident and emergency records. Given that all presentations, referrals and post-operative re-attendances to our hospital are logged in and admitted through accident and emergency, our database is complete and accurate. This means that patients cannot access our

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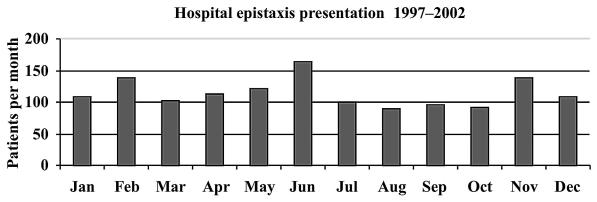

FIG. 1
Epistaxis presentations by month from 1997–2002.

emergency ENT services without being registered in the patient administration database. A comprehensive review of the patient records enabled identification of patients in whom there was a clear predisposition to the epistaxis episode. Patients with traumatic, iatrogenic, coagulopathic, hypertensive and recurrent epistaxis were therefore excluded from the study as the aetiology of their epistaxis was already known. In-patient inter-specialty referrals were also excluded as the patients had not been exposed to variations of daily ambient temperature in the days preceding the episode. The sample population was therefore a representative sample of primary, spontaneous epistaxis presentation to hospital from the community.

St George's hospital is a tertiary referral centre, and has a catchment population in excess of 2.8 million patients. The results were correlated with daily temperature data measured at London Heathrow airport, which at 18.4 miles from St George's Hospital is the closest station to the hospital with accurate daily meteorological recordings. The airport's database was also chosen because related papers in the literature cite local airport ground temperature readings. Monthly mean temperatures were calculated and hospital epistaxis presentation and admission was documented for each day of the five-year period. Following descriptive analysis, SPSSX (Statistical Package for the Social Sciences) was used for statistical data analysis. Linear correlation was sought using Pearson's correlation coefficient.

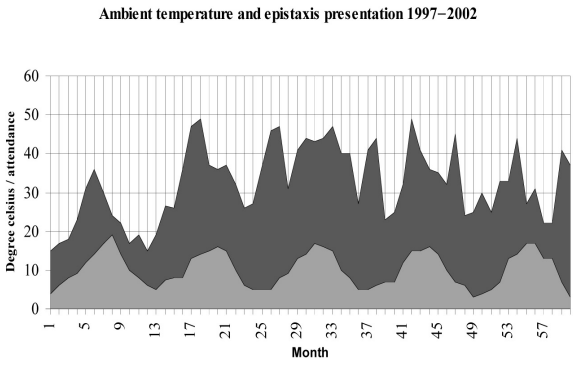

FIG. 2
Ambient temperature and epistaxis presentation trends over 60 months. It can be seen that there is no visual correlation between the peaks and troughs of the two variables.

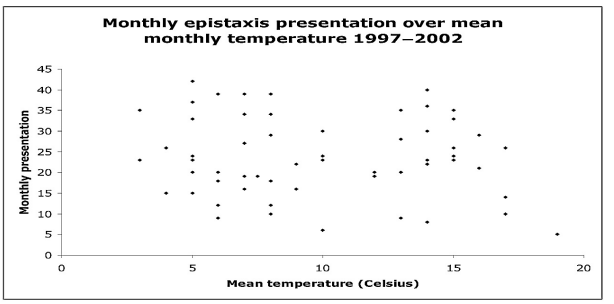

FIG. 3
Statistical analysis with Pearson's coefficient showed no significant correlation between epistaxis presentation (r = 0.160, p = 0.221) and ambient temperature for 1830 consecutive days.

Results

Between January 1997 and January 2002, 1436 patients with epistaxis presented to our institution; 1373 patients were included in the study after 63 exclusions. Of these, 386 (28.1 per cent) were admitted to hospital for in-patient treatment, nasal packing, or surgical intervention. The months with the highest incidence of spontaneous epistaxis presentation over the five-year study period were November and June.

Discussion

Epistaxis admissions form the bulk of the emergency ENT admissions. As such, factors causing an increase in epistaxis admission, and therefore bed occupancy, may directly affect elective healthcare provision. There have been many papers looking at the patient demographics and concurrent medical problems of these admissions to demonstrate the important factors. There have been fewer investigating environmental factors and temperature. Tompkinson *et al.*[1] demonstrated an inverse relationship between epistaxis admission and temperature, and Danielides *et al.*[2] have also demonstrated this. Murata's[6] study contradicted this, with peak admission rates in June with higher ambient temperatures. From our figures it can be seen that there is no correlation between the monthly mean ambient temperature and epistaxis presentation rate. Moreover, the two months with the highest presentation, June and November, have widely different ambient temperatures. With all previously published reports, the admission rates have been used, which may have introduced bias as it can be argued that when the ambient temperature falls there can be a tendency to admit some patients more often for socioeconomic reasons. Analysis of the presentation rate eradicates this bias. Moreover, the factors governing admission are multifactorial and dependent not only on patient variables, but those of the assessing doctor as well. These variables are difficult to control in a retrospective analysis, which is why analysis of presentation rate is of greater statistical importance.

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Conclusion

In conclusion we feel that temperature has no significant causal relationship with epistaxis presentation rate. We feel that the data is as accurate as possible and the bias is minimised for the reasons above. This lies between the two extremes of previously reported data and contradicts the current belief that incidence of epistaxis displays seasonality. This is of relevance when allocating resources for healthcare provision.

- **This study looks at the influence of ambient temperature and season on the incidence of epistaxis as presenting to a hospital emergency department**
- **1373 patients were reviewed, covering a five-year period**
- **There was no correlation between ambient temperature or season with admission or presentation of patients with epistaxis**

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