SCIENTIFIC LETTER

Variable seasonal peaks for different types of aortic dissection?

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Seasonal differences in the manifestation of cardiac death caused by arrhythmia, heart failure or acute myocardial infarction, with peaks during winter months, have been reported.[1] Circadian patterns have also been shown for aortic dissection.[2] A recent large population based study failed to find convincing statistical evidence of seasonal variability for ruptured aneurysms and dissections of the abdominal aorta.[3] An analysis of 85 patients with non-traumatic rupture of the thoracic aorta found a higher occurrence during winter.[4] However, there is little additional evidence from the literature that acute dissection of the thoracic aorta would be subject to cyclic variations throughout the year, although daily clinical practice suggests such seasonal variability in the occurrence of aortic dissection. Moreover, it is not known whether all types of aortic dissection follow the same pattern of incidence. Therefore, we reviewed all records of patients admitted to our hospital for acute dissection from autumn 1990 to summer 2001.

METHODS

The screening and confirmation of the diagnosis of acute aortic dissection was performed exclusively by transoesophageal echocardiography, so that every patient with dissection could be included in the present analysis. Hence, within the 11 year period of the study, acute aortic dissection was diagnosed in 389 patients (294 men, 95 women). In 282 patients (208 men, 74 women) acute Stanford type A aortic dissection was found, while 107 patients (86 men, 21 women) had Stanford type B aortic dissection. Over the study period the annual number of Stanford type A and type B dissections remained stable ($p = 0.26$ and $p = 0.23$, respectively; χ^2 test). Cyclic variation regarding the incidence of the different types of acute aortic dissection throughout the year was analysed by dividing the year into its four seasons of equal length. Each season was compared with the rest of the year using χ^2 test with Bonferroni correction (significance for p values < 0.0125).

RESULTS

For Stanford type A aortic dissection a significant peak of 89 cases in winter versus 65 in spring, 68 in summer, and 60 in autumn was found ($p = 0.011$) (fig 1). Conversely, for Stanford type B aortic dissection, there was a peak incidence in spring with 40 cases versus 28 in summer, 22 in autumn, and 17 in winter ($p = 0.003$) (fig 1).

To elucidate the climatic conditions in Zurich we analysed the mean temperature prevailing at the four respective seasons during the 11 year study period: in spring the mean temperature was 11.6°C, in summer 17.2°C, in autumn 6.4°C, and in winter 2.4°C.

DISCUSSION

The underlying factors for the observed seasonal differences regarding both Stanford type A and type B dissections are not well understood, but the pattern of Stanford type A dissection resembles that of cyclic arterial blood pressure variation, which exhibits a seasonal peak in the coldest season.[5] Higher blood pressure levels in winter nicely parallel our observation of a higher incidence of Stanford type A aortic dissection during winter months; this is of relevance as hypertension is likely to be one of the most important predisposing factors of aortic dissection. Seasonal changes of blood pressure, however, do not explain the higher rate of Stanford type B dissections in spring.

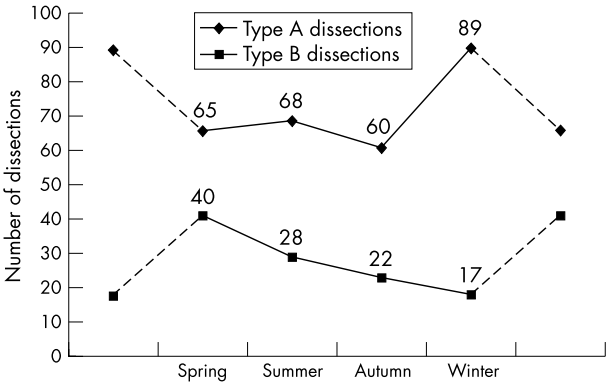

Figure 1 Seasonal distribution of occurrence of aortic dissection Stanford type A and B.

The strengths of the present study are the large sample size and the length of the observation period (11 years). A limitation is that immediately fatal dissections—that is, those not reaching the hospital—are not included. A further limitation is that treatment for Stanford type B dissection in most cases is conservative, contrary to type A dissection, so not all patients with type B dissections are referred to our tertiary care centre.

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