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Left-handedness among persons with asthma

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Background

It has been postulated that there is an increased incidence of left-handedness among persons with asthma. Although most researchers agree that asthma and left-handedness relate each other in childhood, studies of subjects after adolescence found no association between left-handedness and asthma. The aim of this preliminary study was to investigate the relation between asthma and handedness in young adults as well as to estimate the evolution of asthma from adolescence to adulthood in a subgroup of left-handed and ambidextrous individuals with asthma.

Material and methods

274 students of the Faculty of Health Science in Larissa, aged 18–35 years old, were asked to fill in a translated and adapted version of the ISAAC questionnaire and the Edinburgh Handedness Inventory. Fully completed questionnaires reached the number of two hundred and sixty-eight. For asthma assessment was used the ISAAC-phase I/ Part-I ages 14–16 years old, questionnaire. The Phase I questionnaire consists of three parts. In the first Part, the frequency and symptomatology of asthmatic attacks is examined. To evaluate the severity of asthma the Global Initiative for Asthma (GINA) guidelines were used. For the assessment of handedness it was used the Edinburgh Handedness Inventory. The handedness of each individual was determined according to the formula LQ (Latency Quotient) = (R-L)*100/R + L where R and L stands for Right and Left respectively. Each question has 10 points. R and L represent the sum of points of the questions. The range of quotients was -100 for extreme left-handedness to +100 for extreme right handedness. The criterion LQ <0 was taken to indicate left-handedness in this experiment, in accordance with Oldfield. The criterion of LQ ≤ 60 was used to indicate non-right-handedness.

Results

29 women suffered from asthma. Asthma-like symptoms in the past three years and use of anti-asthmatic drugs in the last year were traced in 29 and 8 women respectively. Fourteen patients reported asthma symptoms in the past twelve months. Twenty-three women reported that they were given a medical diagnosis of asthma or asthma-like symptoms in the past. Most mentioned the term asthma-like disease. As chronic bronchitis and emphysema are rare below age 35, the majority of the symptomatic subjects were likely to have had asthma. From the view of this study, these women were treated as having asthma. The mean age of the students was 21 years. According to GINA guidelines the students overall were presented with mild asthma. 90.4% of the students had less than one episode of wheezing per week while 76% had no admission to hospital in the last year. All the asthmatic individuals reported that symptoms first appeared in childhood or in early adolescence (<14 years). Left-handedness or ambidexterity was traced in 38 persons in total (14.5%) and in six women among asthmatic individuals. Four women with asthma were left-handed (LQ <0) and two mixed-handed (0 < LQ < 60). All these six women reported an asthma diagnosis in the past. Although there was a tendency towards left-handedness in asthmatic individuals the differences observed failed to reach significance. None of these six women reported asthma symptoms after eighteen years old and they were all free of symptoms for at least the past two years. Thirteen out of the 23 right-handed women reported persistence of asthma symptoms

after eighteen years old while in ten women there were no symptoms thereafter.

Discussion

The Geschwind-Behan-Galaburda (GBG) hypothesis suggests that high levels of testosterone during fetal life could result to the development of left-handedness by delaying the growth of the left hemisphere. Additionally, testosterone could also affect the development of thymus, favouring the appearance of immune disorders and allergic diseases early in life. There is evidence that GBG's theory applies in asthma and allergic diseases as well. In this study, however, there were no statistically significant differences between the asthmatic and non-asthmatic groups although the former showed a higher percentage of left-handedness. The failure to reach significance could be attributed to the small number of subjects. When larger samples are studied a statistically significant difference concerning left-handedness between allergic and non-allergic subjects is found. However, the prevalence of left-handedness found in asthmatic and non-asthmatic children was similar to the one found in other studies. It is probable that ambidextrous asthmatics have fewer asthmatic attacks than right-handed ones as they enter adult life, despite the fact that left-handed asthmatics might experience more asthma attacks in childhood than right-handed ones. None of the ambidextrous asthmatics reported asthmatic attacks after 18 years old and a statistical difference was established between the two groups. If non-right-handed persons with asthma finally turned out to have a different prognosis, this might lead to a further understanding of mechanisms and genes underlying the disease of asthma and other immune disorders.