

A collagen condition in relation to fear and particular patterns of chocolate consumption

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Introduction

Joint hypermobility syndrome (JHS) is a heritable disorder of the connective tissue associated to a generalized collagen laxity and characterized by an increase of active or passive joint mobility. Although JHS often goes unnoticed, affected individuals may suffer from repeated injuries of the musculoskeletal system (1).

Another feature of JHS is the significant association with anxiety disorders (particularly panic, agoraphobia and social phobia). JHS and anxiety disorders have similar prevalence in the general population, between 10 and 15%, and have similar female predominance (3:1) (2). These results have encouraged an interest in examining how JHS and anxiety disorders interact with common fears. Assessment of the severity and frequency of specific fears in subjects with JHS have reported a higher prevalence of panic/phobic anxiety in subjects with this collagen-altering condition (3).

Methods

This cross-sectional study was carried out in a Secondary School in Barcelona, Spain. All subjects (N=150) were non-clinical students from 15 to 18 years old, 66 men and 84 women.

No participants fulfilled any of the following exclusion criteria: rheumatological diseases involving the joints, hereditary diseases of the connective tissue (Marfan syndrome and Ehlers-Danlos syndrome, among others), and severe somatic illness. Of the eligible subjects, 16.7% refused to participate in the study.

All participants filled the self-administered Simple Questionnaire to detect hypermobility by Hakim and Grahame (6). After hypermobility examination, participants were asked to complete anonymously a modified version of the self-reported Fear Survey Schedule (FSS; Spanish version of Wolpe and Lang

Results

The final sample included 150 subjects - 66 men (44%) and 84 women (56%). Mean age was 16.45 (SD=.619).

JHS was found in 33 women (39.3%) and 8 men (12.1%). The prevalence in the sample for both genders was 41 (27.3%).

Regarding the FSS for severity of fears, the scores of 76% of the items differed significantly between men and women. Women scored higher than men [99 (34.9) vs. 56.3 (22.3); p=.000]. Concerning frequency, 90.7% of the subjects scored high (3-4) on at least one item. Thirty-two items with scores of 3-4 revealed a frequency > 10% and were thus considered severely feared by the sample. Analyzing men and women separately, women scored 47 items as severe whereas men scored 13 items as severe. The

TABLE 1. Most prominent fears

| TOTAL SAMPLE | % | WOMEN | % | MEN | % |
|-------------------------------|------|-------------------------------|------|-------------------------------|------|
| Death | 52.7 | Being raped or beaten | 82.1 | Death | 42.4 |
| Being raped or beaten | 52 | Death | 60.7 | Failure | 22.7 |
| Cadavers | 32 | Cadavers | 48.8 | Being rejected by others | 16.7 |
| Being rejected by others | 29.3 | To watch surgery | 39.3 | Madness | |
| Failure | 28 | Being rejected by others | | Being raped or beaten | |
| Crawling insectes | 26 | Crawling insects | 36.9 | Having surgery | 13.6 |
| To forget to turn off the gas | | To forget to turn off the gas | | Naked men | |
| To watch surgery | 25.3 | Failure | 32.1 | Crawling insects | |
| Having surgery | 22.7 | Having surgery | 31 | To forget to turn off the gas | |
| To look foolish | 21.3 | Graveyards | 28.6 | Having surgery | 12.1 |
| Madness | 20.7 | To look foolish | 27.4 | Speaking before a group | |
| Graveyards | 18.7 | Being in or seeing a fight | 26.2 | Deep water | |

TABLE 3. Consumption of cigarettes, alcohol, coffee and chocolate related to JHS

| Consumption | JHS % | Non JHS % | P |
|-------------|-------|-----------|-------|
| Cigarettes | 19.5 | 19.3 | 1.000 |
| Alcohol | 36.6 | 34.9 | .996 |
| Coffee | 46.3 | 35.8 | .319 |
| Chocolate | 51.2 | 31.2 | .038 |

Conclusions

Previous research shows that anxiety disorders are more prevalent in hypermobile subjects in both clinical and general population (2). Significant differences have been found between subjects with and without JHS when assessing specific fears, therefore reinforcing the hypothesis that intensity of fears is greater in subjects with JHS. Patterns of chocolate consumption may correspond to attempts of self-treatment of the collagen condition.

References

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In addition, scientific literature shows some indirect findings about specific fears in relation to patterns of chocolate consumption. For instance, the psychological effects of chocolate, as indicated by "chocolate addicts", consist in feelings of increased energy or increased concentration ability, and in an anxiolytic effect during stress (4). A clinical trial was performed on a population of 30 subjects who took a daily consumption of 40g of dark chocolate for up to 14 days. Results showed a reduction of levels of stress-associated hormones and a normalization of the systemic stress metabolic signatures (5).

The purpose of this study was to evaluate joint hypermobility in a non-clinical sample of students between 15 and 18 years old, in relation to 1) frequency and severity of fears and 2) consumption of cigarettes, alcohol, coffee and chocolate.

scale, validated by Bulbena et al. 2006) (3). The FSS explores the intensity and frequency of a number of widespread feared objects and situations which subjects had to punctuate from 0 to 4 according to their fear. Items scored as *very* (3 points) or *extremely* (4 points) intense by >10% of the sample were used to evaluate the most severe and prominent fears in the sample.

Self-reported daily consumption of cigarettes, alcohol, coffee and chocolate were gathered as dichotomic variables.

Scores for severe fears and these particular patterns of daily consumption were compared between subjects with and without JHS. Total FSS scores and the scores per item were analyzed by gender.

most frequent and severe fears reported for both genders were death, being raped or beaten, cadavers, being rejected by others and failure. These results differ from men and women (Table 1).

When we compared the FSS scores for severity of fears between the groups with and without JHS, the mean total score was significantly higher for the hypermobile group [91.6 (30.2) vs. 75.9 (38.1); p=.005]. Frequency of severe fears were also significantly higher among subjects with JHS [7.6 (7.8) vs. 11 (7.4); p=.001] (Table 2).

Regarding consumption, 29 subjects smoked cigarettes every day (19.3%), 53 subjects drank alcohol more than once a week (35.5%), 58 subjects took at least one coffee everyday day (38.7%) and 55 subjects took chocolate to calm down (36.7%). Frequency of chocolate consumption were significantly higher among subjects with JHS [31.2% vs. 51.2%; p=.038] (Table 3). There were no significant differences regarding cigarettes, alcohol and coffee consumption.

TABLE 2. Joint hipermobility and most prominent fears

| Most prominent fears | Mean FSS score Subjects with JHS | Mean FSS score Subjects without JHS | P |
|---|-------------------------------------|--|--------|
| 1-Open wounds | 1,10 | 1,12 | 0,557 |
| 4-Cadavers | 2,07 | 1,72 | ,150 |
| 5-Speaking before a group | 1,76 | 1,37 | ,052** |
| 9-Failure | 2,34 | 1,83 | ,003* |
| 15-Being given an injection | 1,02 | 1,04 | ,649 |
| 23-Watching others getting injections | 1,24 | 0,73 | ,154 |
| 26-One person bulling another | 1,78 | 1,30 | ,004* |
| 27-Seeing deep water | 1,05 | 1,10 | ,629 |
| 30-Dirtyness | 1,15 | 0,79 | ,053** |
| 31-Crawling insects | 2,10 | 1,44 | ,005* |
| 32-Being in or seeing a fight | 1,88 | 1,42 | ,011* |
| 37-Being criticized | 1,37 | 1,32 | ,848 |
| 40-To watch surgery | 1,90 | 1,44 | ,083** |
| 41-Death | 2,56 | 2,34 | ,400 |
| 42-Human blood | 1,00 | 1,03 | ,572 |
| 43-Rats and mice | 1,27 | 0,93 | ,084** |
| 44-Animal blood | 1,17 | 0,81 | ,246 |
| 46-Being rejected by others | 1,98 | 1,83 | ,366 |
| 54-Loud unexpected noises and voices | 1,83 | 1,34 | ,004* |
| 56-Graveyards | 1,54 | 1,45 | ,531 |
| 57-Being ignored | 1,59 | 1,36 | ,283 |
| 61-Visiting people who never clean their houses | 1,15 | 1,06 | ,584 |
| 62-Making mistakes | 1,51 | 1,42 | ,443 |
| 63-To look foolish | 1,83 | 1,54 | ,161 |
| 65-Madness | 1,71 | 1,25 | ,046* |
| 79-To injure or attack other people | 1,54 | 1,39 | ,556 |
| 80-Fainting | 1,56 | 1,02 | ,029* |
| 83-Having surgery | 1,83 | 1,58 | ,329 |
| 85-Dark places | 1,27 | 1,19 | ,981 |
| 93-Drugs | 1,68 | 1,22 | ,046* |
| 95-Being raped or beaten | 2,90 | 1,99 | ,003* |
| 97-To forget to turn off the gas | 2,32 | 1,50 | ,000* |

*P<0.05

**P<0.1