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Evaluation of anxiety and depression prevalence in patients with primary severe hyperhidrosis[*]

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Abstract: BACKGROUND: Primary hyperhidrosis (PH) can lead to mood changes due to the inconveniences it causes.
OBJECTIVE: This study aimed to examine the existence of anxiety and depression in patients with severe primary hyperhidrosis who sought treatment at a medical office.
METHODS: The questionnaire "Hospital Anxiety and Depression Scale" was used for 197 individuals, in addition to the chi square test and Fisher exact test, p <0.05.
RESULTS: There was an increased prevalence of anxiety (49.6%) but not of depression (11.2%) among patients with PH, with no link to gender, age or amount of affected areas. Palmar and plantar primary hyperhidrosis were the most frequent but when associated with the presence of anxiety, the most frequent were the axillary (p = 0.02) and craniofacial (p = 0.02) forms. There was an association between patients with depression and anxiety (p = 0.001).
CONCLUSIONS: the involvement of Primary hyperhidrosis was responsible for a higher prevalence of anxiety than that described among the general population and patients with other chronic diseases. Depression had a low prevalence rate, while mild and moderate forms were the most common and frequently associated with anxiety. The degree of anxiety was higher in mild and moderate types than in the severe form.
Keywords: Adolescent; Adolescent psychiatry; Adult; Hyperhidrosis; Mental disorders

INTRODUCTION

Mental disorders usually have a significant impact in terms of morbidity, loss in functionality and decreased quality of life of affected individuals.[1] Worldwide, these disorders cause disability in 30.8% of all the years lived with diseases. Anxiety is the most common form of documented mental disorder, with an incidence rate of 25 to 30% and at least one episode during life.[2] Depression is another mental disorder that affects the health of millions, representing the fourth cause of disability in the world. According to predictions for 2020, it will be the second leading cause of inability to work, behind only heart disease.[3]

As regards patients with chronic diseases, anxiety symptoms affect around 18 to 35% while depression symptoms concern 15 to 61%.[4] It is reported that the symptoms of these disorders can influence adversely the evolution of the disease. However, despite its gravity, there is no proper way to measure the impact that it has on the quality of life of individuals.[5] Tools for examining the existence of these disorders in people with chronic medical conditions are applied in the form of questionnaires. The Hospital

Anxiety and Depression Scale (HADS), the Beck Depression Inventory (BDI) and the State Trait Anxiety Inventory (STAI), are three validated questionnaires for the Portuguese language. For the evaluation of individuals with chronic medical illness, only the HADS is authorized.[6]

Primary hyperhidrosis (PH) is one of the chronic diseases characterized by excessive sweating that can lead to mood changes associated with anxiety, often involving depression and irritability.[7] This sweating appears predominantly in childhood and adolescence. It can be mild, moderate or severe, and the most commonly affected areas of the body are the palmar and plantar regions, followed by the axillary and craniofacial zones.[8,9] PH causes embarrassment, discomfort and even serious social, occupational and psychological problems, which affect the quality of life of patients and can lead to mental disorders that last a lifetime.[10,11]

Despite the embarrassment provoked by PH, no studies were found in the literature that assessed the emotional effects of this disease vis-à-vis the pres-

ence of anxiety and depression in their bearers. In view of this, the study assessed the prevalence and degree of anxiety and depression among adolescents and adults of both genders with severe PH.

Objectives

To examine the existence of anxiety and depression in patients with severe PH who sought treatment at a medical office.

MATERIAL AND METHODS

The study is cross-sectional and observational in nature, so as to accommodate patients of both genders, who sought specific treatment for severe PH. To calculate the sample size, it was assumed that the variable concerning the relevant response had a proportion of 35%[4], a maximum error of estimate of 7%, with a significance level of 5 %. A further 10% was added, taking into account estimated losses, and thus the sample size was 197 individuals. The study included children, adolescents and adults diagnosed with severe PH, while those who lacked discernment to answer questionnaires alone and/or had other chronic diseases associated with PH, were excluded.

Patients were assessed by the same physician in a private practice and the questionnaires were answered individually at the appointment. The questionnaire "Hospital Anxiety and Depression Scale" (HADS), developed by Zigmund and Snaith in 1983, duly validated, is structured with closed questions, scored from zero to three. The questionnaire consists of two subscales, classified separately, one measuring anxiety, the other measuring depression, each with seven items. The form of response of 14 items scale ranges from 0 to 21 points, resulting from the sum of the values of each sub-scale. Each item is answered on a scale of four original points ranging from nonexistent (0) to severe (3). As for the degrees of the two diseases, they are classified as normal (0-7 points), mild (8-10), moderate (11-15) and severe (16-21). Higher values indicate higher levels of anxiety and depression. The value 8 is suggested as the cutoff point, considering the absence of lower anxiety and depression values. Scores of between 8 and 10 for each subscale may indicate a possible clinical disorder, and between 11 and 21, a probable clinical disorder.

After reading the questionnaire and choosing the alternatives in a private and air-conditioned environment, the patient returned it to the relevant doctor. Subsequently, it was sealed and only the researchers could access the personal data of participants.

The study was initiated after approval by the Ethics Committee on Human Research at the University of Tiradentes - SE number 080911, and performed at a private clinic. All participants received a

Free and Clarified Consent Term with explanations, following regulated guidelines and standards for research involving humans, in accordance with Resolution No. 196 of October 10, 1996, from the National Health Council of the Ministry of Health, Brasilia-DF.

The collected data were analyzed using the absolute and relative frequencies, the chi-square association test and Fisher's exact test, with a significance level of 95% (p <0.05).

RESULTS

The questionnaire was applied to 197 patients with a mean age of 27.0 ± 9.3, minimum of 11 years and maximum of 68 years. Females had a rate of 55.3% whereas the equivalent figure for men was 44.7%. Among the participants, 128 patients were *mulatto* (of mixed ethnicity), 58 were white and 11 were black. The ages of patients ranged as follows: 88 were aged 20-29 years, 50 were 30-39, 42 were 10-19, and 19 were over 40. Most individuals (154) were affected by hyperhidrosis in more than one body area, while bromhidrosis occurred in 50 patients. The regions most commonly affected by PH, in descending order, were: palmary (144), plantar (143), axillary (128), and craniofacial (36). The respective confidence intervals were: (67.9 to 80.3), (67.4 to 79.8), (57.5 to 71) and (14 to 24.4) (Table 1).

The prevalence of anxiety symptoms among patients with PH was 49.2% (97 of 197), a rate four times higher than that found for depression symptoms, which was 11.2% (22 of 197). The axillary (p = 0.02) and craniofacial (p = 0.02) areas were the most frequently affected among patients with anxiety symptoms, compared with those who did not have these symptoms (Table 2).

In 32 (38.1%) patients, there was axillary and plantar hyperhidrosis associated with bromhidrosis, 10 (22.7%) had axillary hyperhidrosis and bromhidrosis, while 8 (13.6%) had plantar hyperhidrosis associated with bromhidrosis (p = 0.004). Similar anxiety rates were found among groups with axillary hyperhidrosis associated with plantar and axillary hyperhidrosis alone, though they were lower than for the group with plantar hyperhidrosis (p = 0.023) (Table 3).

There was no difference regarding the presence or absence of depression for age, gender, skin color or number of affected areas. It was observed that of the 22 depressed patients, 18 (81.8%) had associated anxiety. These findings were statistically significant when compared with patients who had no depression (p = 0.001) (Table 4).

Upon examining the degree of anxiety, the severe form showed a prevalence of 5.1% with a confidence interval (2.5 to 8.1). The prevalence for the moderate type was around three times greater, while

the mild form of anxiety was the most frequent. In relation to depression, the mild and moderate forms were the most frequent (Table 5).

TABLE 1: Characteristics of the sample according to demographic and clinical features of PH patients at the clinic of general surgery, Aracaju-SE, 2012

Variable	n	(%)
Age groups (years)		
10 – 19	42	(21.3)
20 – 29	88	(43.7)
30 – 39	50	(25.4)
Over 40	19	(9.6)
Gender		
M	88	(44.7)
F	109	(55.3)
Skin color		
White	58	(29.4)
Mulatto	128	(65)
Black	11	(5.6)
Number of affected areas		
One area	43	(21.8)
More than one area	154	(78.1)
Affected area		
Axillary	128	(65)
Palmar	144	(73.1)
Craniofacial	36	(18.3)
Plantar	143	(72.6)
Bromhidrosis	50	(25.4)

DISCUSSION

In this study, it was observed that PH showed no gender discrimination and patients aged 20-29 were the most affected. Black patients were less affected than white or brown patients, while the body areas most affected were the palmar and plantar regions. These findings are similar to those reported by authors like Fenilli et al. (2009), Kauffman et al. (2011), Wolosker et al. (2011), suggesting that the sample presents demographic elements, which are consistent with the literature.[9,12,13]

There was no statistically significant difference between the prevalence of anxiety in men and women with PH, regardless of age range, skin color and the number of body areas affected. In the general population, the frequency of anxiety is approximately 16% and when associated with other chronic medical illnesses, it is 18-35%.[4,14] The prevalence of anxiety is two times higher in females, usually appearing in childhood or adolescence, persisting until early adult-

hood.[15,16] The results of this study suggest that the existence of PH itself, regardless of sex and age, could be responsible for a higher prevalence of anxiety than described in the general population and in patients with other chronic diseases.

The presence of anxiety symptoms was higher in patients with axillary or craniofacial PH, compared with other assessed areas. According to Burato (2009), patients with anxiety disorders begin to avoid certain situations that appear to them to trigger anxiety, producing a vicious cycle composed of situation-anxiety-avoidance.[17] The discomfort of feeling observed can trigger anxiety symptoms in patients with excess sweat in visible areas of the body, if this is interpreted as a lack of hygiene.

The prevalence of anxiety symptoms was similar among groups with axillary hyperhidrosis associated with the plantar and axillary forms alone, and more significant in the group with plantar hyperhidrosis. Sporting activities and professional and interpersonal relationships are affected by the presence of PH, limiting the use of shoes and clothes, which need to be changed several times a day.[8] The presence of axillary involvement could be a contributing factor to the emergence of anxiety symptoms.

Depression symptoms were present in 11.2% of PH patients and in most cases there was an association with anxiety symptoms. The global prevalence rate is estimated at 16% and in a study of Brazilian patients, it was found to be 10.9%.[18,19] The prevalence of depression, when associated with chronic medical conditions, ranges from 15 to 61%.[4] It is described that depression usually comes when associated with anxiety symptoms and is twice as common in females.[20,21] In the present study, no difference was observed between the sexes regarding the presence of depression symptoms. Also, depression symptoms did not worsen in patients with PH, compared with the general population.

Regarding the degree of anxiety and depression, the mild form had a higher prevalence, followed by the moderate type, while the severe form was less visible. The cutoff score was set at 8, given the lower scores such as the absence of anxiety and depression. For Moorey et al. (1991),[22] scores of between 8 and 10 may indicate a possible clinical disorder, while between 11 and 21 reveals a likely disorder. Studies about the assessment of declared QoL (quality of life) confirmed that most patients with PH described their lives as bad or very bad, due to the inconveniences caused by the disease.[12,23] Thus, it can be understood that the inconvenience suffered in the personal, social, professional and emotional spheres may be responsible for the negative feelings reported in the HADS questionnaire, which probably influenced the pres-

TABLE 2: Comparison between the groups with and without anxiety according to demographic and clinical characteristics in PH patients at the clinic of general surgery, Aracaju-SE, 2012

Variable	Anxiety (n=97)		Absence of Anxiety (n=100)		p
	n	(%)	n	(%)	
Age groups (years)					
10 – 19	14	(14.4)	28	(28.0)	0.06
20 – 29	45	(46.4)	41	(41.0)	
30 – 39	30	(30.9)	20	(20.0)	
Over 40	8	(8.2)	11	(11.0)	
Gender					
M	39	(44.3)	49	(49.0)	0.21
F	58	(53.2)	51	(51.0)	
Skin color					
White	30	(30.9)	28	(28.0)	0.51
Mulatto	7	(7.2)	4	(4)	
Black	60	(61.9)	68	(68)	
Number of affected areas					
One area	22	(23.2)	18	(18.2)	0.39
More than one area	73	(76.8)	81	(81.8)	
Affected area					
Axillary	71	(73.2)	57	(44.5)	0.02
Palmar	67	(69.1)	77	(77.0)	0.21
Craniofacial	24	(24.7)	12	(12.0)	0.02
Plantar	66	(68.0)	77	(77.0)	0.15

Chi-square test

TABLE 3: Comparison between patients with axillary and plantar hyperhidrosis associated, axillary hyperhidrosis and plantar hyperhidrosis, regarding the presence of bromhidrosis, anxiety and depression, Aracaju-SE, 2012

Variable	Axillary and plantar hyperhidrosis associated	Axillary hyperhidrosis	Plantar hyperhidrosis	P
Bromhidrosis	32(38.1)	10(22.7)	8(13.6)	0.004
Anxiety	46(54.8)	25(56.8)	20(33.9)	0.023
Depression	8(9.5)	6(13.6)	7(11.9)	0.769

Chi-square test

ence of anxiety and, to a lesser degree, depression in those affected by PH.

The disorder usually starts in childhood or adolescence, ages at which there is a predisposition to develop certain types of psychopathologies. Since a higher prevalence of anxiety has been observed in PH patients than in those with other chronic diseases, individuals need to be informed about the therapeutic possibilities in order to avoid further damage to their mental health.[8,24]

The skin is the main human interface with the environment that also has the functions of forming body image and constituting the ego. The quality of life of patients with skin disorders, such as hyperhidrosis, is likely to be affected, making sufferers more susceptible to mental disorders.[25] PH, a disease that affects many people, entails uncomfortable situations, affecting in complex fashion physical health, psychological state and level of independence in social relations. It is not fully recognized as a disease, probably owing to a lack of awareness on the part of both medical profes-

TABLE 4: Comparison between the groups with and without depression, according to demographic and clinical characteristics in PH patients at the clinic of General Surgery, Aracaju-SE

Variable	Depression (n=22)		Absence of depression (n=175)		p
	n	(%)	n	(%)	
Age groups (years)					
10 – 19	4	(18.2)	38	(21.7)	0.72
20 – 29	12	(54.5)	74	(42.3)	
30 – 39	4	(18.2)	46	(26.3)	
Over 40	2	(9.1)	17	(9.7)	
Gender					
M	10	(45.5)	78	(44.6)	0.55
F	12	(54.5)	97	(55.4)	
Skin color					
White	8	(36.4)	50	(28.6)	0.5
Mulatto	12	(54.5)	116	(66.3)	
Black	2	(9.1)	9	(5.1)	
Number of affected areas					
One area	2	(10.0)	38	(21.8)	0.21
More than one area	18	(90.0)	136	(78.2)	
Affected area					
Axillary	14	(63.6)	114	(65.1)	0.53
Palmar	16	(72.7)	128	(73.1)	0.57
Craniofacial	7	(31.8)	29	(16.6)	0.07
Plantar	15	(68.2)	128	(73.1)	0.39
Anxiety	18	(81.8)	79	(45.1)	0.001

Fisher's exact test

TABLE 5: Prevalence for anxiety and depression levels in PH patients at the clinic of General Surgery, Aracaju-SE, 2012

Variable	%	(n)	IC 95%
Anxiety			
Severe	5.1	(10)	2.5 - 8.1
Moderate	17.8	(35)	12.7 - 23.4
Mild	25.4	(52)	20.8 - 32.5
Depression			
Severe	1.0	(2)	0.0 - 2.5
Moderate	4.1	(8)	1.5 - 7.1
Mild	6.1	(12)	3.0 - 9.6

CI 95%

sionals and the general population. In this context, the results obtained here demonstrate in an innovative way the importance of similar studies, to complement knowledge of disorders caused by PH in carriers.

CONCLUSION

PH was responsible for a higher prevalence of anxiety symptoms than what is usually reported among the general population and in patients with other chronic diseases. However, depression symptoms had a low prevalence rate in PH patients and they were often associated with anxiety symptoms.

In accordance with the anxiety level, frequency was higher for mild and moderate forms than the severe type. The mild and moderate types were the most frequent in depression. Anxiety and depression were not associated with gender or age group. ❑

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