LOW BACK PAIN SIMULATION: DIAGNOSIS AND PREVALENCE

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ABSTRACT

Objective: To carry out a literature review for the diagnosis of low back pain simulation in patients claiming disability benefit from the social security. Methods: 100 patients with reported low back pain were evaluated. These were divided in two groups of 50 each; in group I, the patients requested a medical report for the purpose of obtaining disability benefit; in group II the patients were interested only in receiving treatment. Simulators were considered as patients who presented at least two positive signs of the three signs assessed: low back pain on axial cranial compression, low back pain on rotation of the pelvis, and difference in straight leg raising in the supine and sitting seated positions. Results: In group I the percentage of simulators was 72%, in the group II, 18%. There was no significant difference in relation to age or sex. Discussion: Although there are several signs and symptoms to evaluate simulation, most of the doctors ignored them. However, without them, it is difficult to make a correct evaluation of patients with reported low back pain, thereby contributing to overburdening the social security system. Conclusion: There is a high incidence of simulators among patients who request medical reports in order to obtain disability benefits. Level of Evidence: Level II, prospective comparative study.

Keywords: Low back pain. Simulation. Compensation and redress. Social security.

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INTRODUCTION

In recent decades the general state of health of the population has improved significantly. Nevertheless, the number of leaves of absence for medical reasons has increased.[1]

The number of disability benefits granted by the INSS (National Institute of Social Security) in 2006 was about 2.32 million, which represents about 9% of the officially registered workers.[2] There are several factors associated with this high incidence: low quality of treatment, unpreparedness of health professionals,[3] permissive labor system,[4] opportunism of lawyers,[5] interest in financial compensation and ethical and moral predisposition of workers.[6]

It has long been known that simulation is a constant practice in patients whose disease involves some secondary gain.[7] Seeing that low back pain is the most common cause of leave of absence (around 28% of cases),[2] it is desirable to evaluate the presence of simulators in these patients.

There are no concordant data on the frequency of simulation in patients with low back pain, ranging from 1% to 75%[8], with no national study in this respect.

The aim of this study is to evaluate the prevalence of simulation in patients with low back pain that claim social security benefits, and to perform a review of the literature about its diagnosis.

MATERIALS AND METHODS

One hundred patients aged between 18 and 65 years with complaints of low back pain lasting more than three months were evaluated. Patients with previous lumbar spine surgery and with other complaints besides low back pain were excluded. During the appointment there was an evaluation of three signs of simulation described by Waddell:[9] Low back pain on axial cranial compression, low back pain on rotation of the pelvis and difference in straight leg raising in seated and supine position. The patients were divided into two groups of 50 each; in group I, leave of absence, the patients requested a medical statement about their disease in order to claim or extend their INSS benefit; in group II, normal, there was no litigation involving their illness. Patients that demonstrated two or three of the evaluated signs were considered simulators.

Statistical analysis

The Student's t-test for independent samples was considered for a comparison of the groups in relation to quantitative variables. In relation to dichotomous variables, the groups were compared considering Fisher's exact test. A Logistic Regression model was adjusted to compare the groups in relation to

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probability of simulation, controlling the variables sex and age of the patient. The Wald test was considered to assess the importance of the variables on the simulation probability. Values of $p<0.05$ indicated statistical significance.

RESULTS

Variable: Age

The null hypothesis of equal mean ages in the two groups versus the alternative hypothesis of different mean ages was tested in the study. Descriptive statistics of age according to the groups as well as the p value of the statistical test are presented in Table 1.

Table 1. *Distribution of patients in the groups by age.*

Group	n	Age (years)					P value
		Mean	Median	Minimum	Maximum	Standard deviation	
Leave of Absence	50	43.3	44	19	65	10.8	
Normal	50	41.5	42/5	18	60	12.2	0.456

Thus the hypothesis of equality of mean ages in the two groups is not rejected.

Variable: Gender

The null hypothesis that the distributions of gender are the same in the two groups, versus the alternative hypothesis of different distributions, was tested. Frequencies and percentages of the classifications of the variable gender according to the groups are presented in Table 2.

Table 2. *Distribution of patients in the groups by gender.*

Gender	GROUP	
	Leave of Absence	Normal
Male	30	21
	60%	42%
Female	20	29
	39%	58%
Total	50	50

The hypothesis of equal distributions of gender in the two groups ($p=0.074$) was not rejected.

Variable: Simulation

Univariate analysis:

They tested the null hypothesis that the simulation probability among patients in the "leave of absence" group is equal to the simulation probability among patients in the "normal" group, versus the alternative hypothesis of different probabilities. The results obtained in the study are presented in Table 3.

Table 3. *Percentage of simulators in each group.*

Simulation	GROUP	
	Leave of Absence	Normal
No	14	41
	28%	82%
Yes	36	9
	72%	18%
Total	50	50

The result of the statistical test indicated the rejection of the null hypothesis ($p<0.001$). Accordingly, we have subsidies to interpret that the simulation probability among patients that seek medical care to apply for leave of absence is significantly different from the simulation probability among patients that seek medical care in a normal doctor's appointment. In Table 3, it can be noted that 72% of the patients in group I had two or more tests with positive signs, while in group II this percentage was 18%.

Multivariate analysis

They tested the null hypothesis that the simulation probability among patients in group I is equal to the simulation probability among patients in group II, versus the alternative hypothesis of different probabilities, making adjustments for sex and age of the patient. The results obtained in the study related to the p value, OR (odds ratio) and 95% confidence intervals for OR are presented in Table 4.

Table 4. *Statistical reliability of results.*

Variable	p value	OR	CI 95%
Group	<0.001	11.27	4.23 - 30.07
Age	0.968	1.00	0.96 - 1.04
Gender	0.750	0.86	0.33 - 2.24

In this manner, controlling the patient's age and gender, we rejected the null hypothesis of equal simulation probability in the two groups. The estimated OR was 11.27 with 95% confidence interval from 4.23 to 30.07, indicating that the simulation probability is significantly higher in group I. In this analysis, no significant importance of the patient's age and gender was observed and in the simulation probability.

DISCUSSION

The first reports of simulation date back to ancient Greece, "When the Hellenic armies were preparing to attack Troy, they also summoned the King of Ithaca: Ulysses feigned madness, yoked an ox and a horse to the plow, and set out to plow through the sands of the sea. Palamedes revealed his ingenuity, placing Telemachus, the hero's small son, in front of the plow. The simulator gave himself away when he turned the animals aside".[10] Throughout history simulation reports are basically constituted of prisoners, soldiers or sailors that longed to escape punishment or war; after 1871, with the publication in Prussia of the first accident assistant payment act (Reichshaftspflichtgesetz), there was an exponential increase of work-related complaints, which led physicians to mistrust the veracity of previously nonexistent symptoms.[11] Over the course of the 20th Century, various articles were published on simulation, but today most physicians are still unfamiliar with its main signs and symptoms.[12]

As regards the diagnosis of simulation in low back pain, it is emphasized that there is no consensus for its determination,[13] but it is possible to perform a correct evaluation of these patients with anamnesis and physical exam. First of all one should be mindful of frequent behavioral aspects in simulators[13,14] (Chart 1); in anamnesis besides asking the conventional questions it is also possible to inquire about the presence of unlikely symptoms, such as whether the low back pain increases on inspiration, aiming to observe whether these symptoms are endorsed.[15] It is also possible to use the Low Back Pain Simulation Scale,[16] which consists of 103 terms habitually used to describe pain, including 45 that clearly indicate simulation. A final score is employed to distinguish between simulators and non-simulators. Several signs were described in the physical exam,[9,17-20] of which the most well-known are those published by Waddell[9], who reported eight signs in five categories (Chart 2), classifying patients presenting three of more categories as simulators. Fishbain[21] recently conducted a review of literature and pointed out flaws in the criteria of Waddell, reporting diseases, mainly fibromyalgia, which present the signs described as non-organic: 1) alteration of sensitivity not corresponding to anatomical standard, 2) pain on palpation not corresponding to anatomical pattern, 3) pain on light palpation, which occurs, 4) regional motor abnormalities and 5) disproportionate verbalization of symptoms. Since no consensus has yet been reached to diagnose simulation in low back pain[22] the author used Waddell's three most specific signs for simulation.[21]

The results show that 72% of the patients with referred low back pain that require a medical statement, invent or exaggerate symptoms in order to obtain some benefit. Physicians, who while in medical school are trained to believe in the sincerity of their patients, are easily manipulated,[23] which frequently leads to a false evaluation of the case, which in the end contributes to demands on the social security system.

It is necessary for orthopedists to be mindful of this scenario and to use exams on a routine basis to detect simulation in any patient involved in litigation.

Chart 1. *Behavioral aspects in simulation.*
Increase of body movement
Aversion of eye contact
Hardly assertive
High-pitched voice
Delay in answering
Short answers
Easily distracted
Detailed and repeated descriptions of the situation caused by the alleged lesion
Considerable interest in result of exams
Exaggerated use of orthopedic apparatuses
Complaints of negligence and disregard of the medical and social security system.

Chart 2. *Wadell's non-organic signs for low back pain.*
1. Sensitivity: Pain on light palpation in the lumbar region, Pain on disseminated palpation not corresponding to anatomical pattern
2. Simulation: Pain on axial cranial compression, Pain on shoulder rotation
3. Distraction: Difference when raising leg in seated or supine position
4. Regional: Motor or sensitive abnormalities that cannot be explained on an anatomical basis
5. Sign of hyper-reaction: Verbalization or expression disproportionate to symptoms.

Recollecting that even poets were not exempt from curiosity about the simulator, as Fernando Pessoa intones: "The poet is a pretender, he fakes so completely, what is fake appears as pain, the pain that he really feels."

CONCLUSION

Most patients with low back pain who request social security benefit are simulators.

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