ANXIETY AND DEPRESSION LEVEL AND RELATED FACTORS IN PATIENTS WITH SPINAL CORD INJURY

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ABSTRACT

Spinal cord injury can cause considerable changes in a person's life depending on the functional disability. We aimed to evaluate the psychological status and related factors in patients with spinal cord injury. Subjects included 44 adult persons (29 males; 15 females) who had a SCI (mean age= 34.25 ± 4.42). Functional status, depression and anxiety were assessed by Functional Independence Measure Beck Depression Inventory, Beck Anxiety Inventory respectively. The mean scores of anxiety and depression were 22.7 ± 12.9 and 25.6 ± 9.14, respectively. There was significant negative correlation between anxiety and depression scores with Functional Independence Measure (FIM) scores (r =-0.674, p < 0.001; r =-0.486, p < 0.001). Both anxiety and depression scores were decreased gradually from level A to level D. Anxiety and depression scores were positively correlated with the level of education in patients (r = 0.104, p >0.05; r = 0.202, p > 0.05). There was negative correlation between the ages and anxiety-depression scores (r = -0.249, p > 0.05; r=-0.239, p > 0.05). Clinicians should determine the potential risk factors for psychological problems and support for the necessary treatment in patients with SCI. The influence of pre morbid factors in the development of depression and anxiety must also be acknowledged as a possibility.

Key words: Spinal cord injury, depression, anxiety.

Introduction

The consequence of Spinal cord injury (SCI) is usually permanent paralysis of voluntary muscles below the lesion, reduced mobility, and impairment of social and vocational activities, with a negative impact on body systems such as respiratory, cardiovascular, urinary, gastrointestinal, reproductive and sensory ones[1]. The impact of SCI on psychological status has been variously debated[2]. Several studies have suggested that SCI is associated with raised risks of psychological problems.

Negative psychological states have been found in 30-40% percent of patients with SCI[3]. While factors such as level of lesion, age, age at the time of injury, sex, time since injury and completeness of the lesion have not been consistently found to be associated with lower quality of life (QOL), negative psychological states and pain intensity have been found to lower QOL in people with SCI[4].

Identifying the psychological problems and risk factors associated with poorer outcomes is a step toward understanding how rehabilitation program for these patients can be improved. Depression and/or anxiety are known to interfere with a person's ability to participate in activities and enjoy life.

In studies that have primarily focused on individuals with adult-onset SCI, depression is typically reported to occur in 20-40% of the cases[5].

We aimed to evaluate the severity of depression and anxiety and related factors in patients with SCI.

Patients and methods

This study was conducted at the Physical Medicine and Rehabilitation Outpatients Clinic of Gaziantep University, Gaziantep, Turkey. A total of 44 consecutive patients with Spinal Cord Injury

were recruited. Exclusion criteria have been: (i) use of any drug, known to affect psychological status, (ii) systemic metabolic diseases, (iii) neurological disease affecting the central or peripheral nervous system (iv) active drug or alcohol abuse. All the patients were free of psychotropic medications or electroconvulsive therapy for at least 3 months.

The study was approved by local ethics committee and all patients were asked for their informed consent.

Socio-demographical data, such as educational level and economical state, as well as duration of injury were recorded. Neurological level of the injury, whether complete or incomplete was determined by American Spinal Injury Association (ASIA) scale. Functional level was assessed by Functional Independence Measure (FIM), anxiety and depression levels were assessed by Beck Anxiety and Beck Depression Inventory.

ASIA : Standard Neurological Classification of Spinal Cord Injury is a standard method of assessing the neurological status of a person who has sustained a spinal cord injury. Scale assessments are usually carried out by specialist medical staff at the hospital the person is admitted to, using this ASIA Impairment Scale worksheet the following.

A = Complete: No motor or sensory function is preserved in the sacral segments S4-S5.

B = Incomplete: Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5.

C = Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3.

D = Incomplete: Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade of 3 or more.

E = Normal: motor and sensory functions are normal.

Functional independence measure

The most widely used functional measure, was developed to evaluate functional ability in daily activities, as represented mainly by the burden of care of a disability[8]. It was not designed specifically for SCI. It evaluates 6 areas of function (self-care, sphincter management, transfers, locomotion, communication, and social cognition) based on 18 tasks. Scores of each task range from 1 to 7, with 1 reflecting full assistance and 7 being complete independence. The scale reflects the time, energy, effort, and equipment that are used to achieve the task. Bladder and bowel care items include an additional scoring system assessing frequency of accidents (1 being 5 or more accidents in the past 7 days and 7 being no accidents). Locomotion is measured in terms of distance.

Beck anxiety inventory

The Beck Anxiety Inventory consists of twenty-one questions about how the subject has been feeling in the last week, expressed as common symptoms of anxiety (such as numbness and tingling, sweating not due to heat, and fear of the worst happening)[9,10]. It is designed for an age range of 17-80 years old. Each question has the same set of four possible answer choices, which are arranged in columns and are answered by marking the appropriate one with a cross.

Beck depression inventory

The Beck Depression Inventory is a 21-question multiple-choice self-report inventory, one of the most widely used instruments for measuring the severity of depression[11]. Its development marked a shift among health care professionals, who had until then viewed depression from a psychodynamic perspective rather than from the point of view of the patient, and how this was rooted in his mind.

Statistical analyses

The data were analyzed using SPSS 16.0 for Windows. Mann-Whitney U test and Kruskal-Wallis test was used for quantitative data. Pearson correlation analysis was used for determining the relationship between the variables. The two-tailed significance level was set at 0.05.

Results

In this study, a total of 44 patients, 29 male and 15 female patients, were included. The mean scores of age and education level were 34.25±4.42 and 7.63±3.3 years, respectively. The mean scores of anxiety and depression were 22.7 ± 12.9 and 25.6 ± 9.14, respectively. Twenty-eight (64%) of them have moderate or severe anxiety and 29 (66%) has moderate or severe depression level.

	Patients / n (%)	
Mean age± SD (years)	34.25±4.42	
Sex		
Male n.(%)	29(%66)	
Female n.(%)	15(%34)	
Employment status n (%)		
Employed	17(%38.5)	
Official	4(%9)	
Homemaker	10(%23)	
Others	13(%29.5)	
Marital status		
Married n. (%)	19(%43)	
Single n. (%)	20(%45.5)	
Divorced n. (%)	5(%11.5)	
Education (years)±SD	7.63±3.3	
Anxiety and Depression Scores in Patient		
Severity	*Anxiety (n)*	*Depression* (n)
Minimum	11(%25)	10(%23)
Medium	16(%36.5)	17(%38.5)
Sever	17(%38.5)	17(%38.5)
Median ± SD	*22.7±12.9*	*25.6±14.9*

Table 1: Demographic Characteristics of The Patients.
SD: Standard deviation

Etiology	n	%
Traffic accident	16	36.5
Falls	16	36.5
Gun shot	7	16
Other	5	11
Severrity of injury		
(ASİA)		
Motor complete	28	63.5
(A,B)		
Motor incomplete	16	36.5
(C,D)		
Level of the lesion		
Tetraplegia	11	25
Paraplegia	33	75
SCI duration±SD	31.2±4.7	
(month)		
Motor FIM score±SD	67.1±11.3	

Table 2: Characteristics of Spinal Cord Injury.
SCI: Spinal cord injury; FIM:Functional independence measurement;
SD: Standard deviation

Discussion

The most common cause of SCI was traffic accident and fall from height in our study group. The mean duration of disease and total functional independence score were 31.2 ± 4.7 months and 67.1 ± 11.3 years respectively.

We found that 28 patients were motor complete and 16 patients were motor incomplete, 11 patients have tetraplegia and 33 patients have paraplegia (Table 2).

There was significant negative correlation between anxiety and depression scores with FIM scores ($r = -0.674, p < 0.001$; $r = -0.486, p < 0.001$). Both anxiety and depression scores were decreased gradually from level A to level D. Anxiety and depression scores were positively correlated with the level of education in patients ($r = 0.104, p>0.05$; $r = 0.202, p>0.05$). There was negative correlation between the ages and anxiety-depression scores ($r = -0.249, p > 0.05$; $r = -0.239, p > 0.05$) (Table 3).

In this study, we evaluated anxiety and depression and possible factors which may be associated with psychological status in patients with SCI. Our results may shed light on the long term psychological consequences of SCI.

We found that anxiety and depression scores were higher in patients with SCI. Furthermore, there was a strong correlation between functional status and psychological status. In a number of studies it has been reported that anxiety and depression scores varies between 20-40% in SCI patients[12,13].

The importance of our study was reflecting the psychological status in patients with SCI in Turkish society.

Anxiety-depression scores were positively correlated with education level in our patients. We have interpreted that this correlation may be related with life expectations.

Features	n (%)	Anxiety (median)	Depression (median)
Sex			
Female	15(34)	22	22
Male	29(66)	20	26
		MW-U=215.0 p>0.05	MW-U=176.5 p>0.05
Marital status			
Married	21(47.5)	22	25
Single	15(34)	20	28
Divorced	8(18.5)	21	23.5
		KW=0.52 p>0.05	KW=1.14 p>0.05
Grade of Injury (ASIA)			
A	14 (32)	36	37
B	9 (20.5)	33	33
C	10 (22.5)	15	18
D	11 (25)	8	6
		KW=15.96 **P=0.001***	KW=12.50 **p=0.006***
Level of Injury			
Tetraplegia	11 (25)	36	42
Paraplegia	33 (75)	20	25
		MW-U=116.0 P=0.075	MW-U=117.5 p=0.082
Age		r = -0.249 p > 0.05	r=-0.239 p > 0.05
Education		r= 0.104 p > 0.05	r= 0.202 p > 0.05
Disease duration		r= 0.016 p>0.05	r= -0.159 p>0.05
Functional state		r= -0.674 **p<0.001***	r= -0.486 **p=0.001***

Table 3: Correlation between anxiety-depression scores and clinical conditions.
MW-U= Mann-Whitney U test, KW= Kruskal-Wallis test, r=correlation coefficient, considered as statistically significant if p< 0.05.

Patients' life expectations may increase with high education level, and an higher educational level was associated with increased depressive and anxious symptoms[15].

A recent study has shown that lower socioeconomic status is related to an increased level of depression and anxiety[16]. Occurrence of anxiety and depression may be related to differences in socioeconomic state in our patients.

We found that anxiety was more frequent in males, while depression in female. These last ones may be more likely to focus on their somatic symptoms of anxiety, perhaps because of a more intense experience of pain, fatigue, agitation, and other problems compared to males.

Depression is a significant problem and is associated with poorer outcomes of participation and quality of life[17,18]. Patients particularly at risk include those with incomplete injuries and those participating less in their communities.

Many studies in patients with complete SCI injury have been reported with higher rates of anxiety and depression. The results of our study were consistent with the literature in this respect[19].

Depending on functional impairment development potential is likely to create additional risk for depression or anxiety in SCI patients[19]. Clinicians should determine the potential risk factors for psychological problems and support for the necessary treatment in patients with SCI.

Finally, the association of depression and anxiety with medical complications needs to be considered. Further studies with more extensive assessment of depressive symptoms and more longitudinal data would provide a better basis for improving rehabilitation.

The stresses of coping with architectural barriers, economic costs, vocational limitations, strains on family roles and other factors may predispose lower morale in patients.

The influence of pre morbid factors in the development of depression and anxiety must also be acknowledged as a possibility. This area needs careful investigation.

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This study has limitations that patients have not seen by the psychiatrist for the psychological evaluation. The use of direct behavioral observation and interview as well as psychological tests may be the best way for the future research.

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