PREVALENCE AND ASSESSMENT OF DEPRESSION AMONG DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS (DISH) PATIENTS

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INTRODUCTION

Diffuse idiopathic skeletal hyperostosis (DISH) is a common systemic condition, of prevalence nearly 10% in those aged >50 years (Mader et al., 2017). DISH also called as Forestier’s disease, described firstly in 1950 by Rotes-Queroland Forestier. DISH is an idiopathic disease affecting the axial skeleton characterized by anterolateral spinal ligaments ossification and formation of osteophyte along the whole spines (Goico-Alburquerque et al., 2017). Decreased mobility and mild backache may be the results of ossification of many ligaments (Pulcherio et al., 2014). Thoracic spine usually affected by the disorder. Other joints and spines may be affected. Treatment and diagnosis usually delayed because the majority of patients were asymptomatic (Mader et al., 2009). The pathogenesis of DISH was not clear, but other factors like; anatomic, endocrine, metabolic, genetic, toxic, and environmental factors may take part (Kim et al., 2004). DISH is a disorder of old age, predominantly males male/female ratios 2:1 - 7:1 (Hiyama et al., 2018). Physical illness induced mental illnesses usually disturbing to volition, personality disorder, and dementia. Mood disorders were accompanied physical illness, and most frequent is depression. Depression comorbid with physical disorders can be reactive or psychogenic inducted by social situation changes or depression directly results from the medical condition (Al Abbudi, 2018). Characteristic features of depression include loss of interest, sadness, low self-esteem, feelings of guilt, sleep disturbance, changed appetite, poor concentration and tiredness. Depression may be long-lasing cores or recurrent episodes, with impairment of person’s daily life function, work and school. Severe depression may lead to suicide (Al Abbudi et al., 2017). Depression diagnosis needs experience and accurate valuation. Clinical practice and research purposes required tools for screening of depression. Many screening questionnaires are available, with different score thresholds to diagnose depression (Zhao et al., 2018). The Patient Health Questionnaire 9 (PHQ-9) is a valid brief questionnaire (Adewuya et al., 2006) that used DSM-IV criteria for diagnosis of depression (Spitzer et al., 1999). PHQ-9 can be self-rated, or interviewer-rated, and is well validated dual-purpose questionnaire in the US that gives picture of depression severity (Kroenke et al., 2001), and DSM-IV diagnoses of depressive disorders: major depressive disorder, other depressive disorder and any depressive disorder.

Validity of PHQ-9 was done in many countries in view of construct validity, diagnostic accuracy (Kroenke et al., 2001), changes sensitivity, responsiveness to treatment (Lowe et al., 2006), internal consistency, test-retest reliability (Pinto-Meza et al., 2005) and realistic estimates of population base rates (Rief et al., 2004). Assessment of depression and the severity of depression among patients with diffuse idiopathic skeletal hyperostosis, and analysis of the significant sociodemographic and clinical risk factors associated with diffuse idiopathic skeletal hyperostosis patients were the aims of this study.
MATERIALS AND METHODS

Design and setting: The current is a cross-sectional study. It was conducted from February 1st, 2015 to 31st August 2018, in the Psychiatry department with cooperation with Rheumatology unit at Imamain Kadhimain Medical City, Baghdad, Iraq.

Study population: All patients with diffuse idiopathic skeletal hyperostosis (DISH), both genders who have consulted within the time of study and given their agreement to participate were included.

Data collection tools: Questionnaires were filled by consultant psychiatrist, which included; the collection of sociodemographic and clinical data and PHQ-9 scale. The diagnosis of diffuse idiopathic skeletal hyperostosis (DISH) was based on the clinical findings, radiographic, and biological arguments. The study used the Arabic version of PHQ-9 to identify depression. Face validity process and internal consistency reliability was measured using Cronbach’s alpha for the PHQ9, the results was 0.857 (AlHadi et al., 2017). Patient Health Questionnaire (PHQ) is a clinical diagnostic tool that is widely utilized worldwide because it provides a practical in clinic tool to screen for psychological disorders. A PHQ-9 score ≥ 10 has a sensitivity of 88% and a specificity of 88% for major depression (Kroenke et al., 2001). Major depressive disorder diagnosed if five or more of the nine criteria of depression have been elicited more than half of the days in the past two weeks and one of the symptoms is depressed mood or anhedonia13. PHQ-9 severity score from 0 to 27, since each item of the nine items can be scored from 0-3. (Not at all = 0, nearly every day =3) (Andreas et al., 2017).

Statistical analysis: Analysis and processing of data was done using the SPSS version 20 software IBM system. Frequency and percentages were used. Depression prevalence was calculated. P value of <0.05 was considered for statistical significant.

Definition of variables: The independent variables evaluated to explain depression were Sociodemographic and clinical data include; age, gender, marital status, occupation, education, family history of mental illness, traumatic life events, and medical comorbidity. PHQ-9 used for evaluation and assessment of depression.

Ethical issues: After clarifying the aims of this study, informed consent and agreement were getting from each patient. Interviews were carried out with full privacy. Names and other details were kept anonymous.

RESULTS

The current study includes total 52 diffuse idiopathic skeletal hyperostosis (DISH) patients. Nine of them not complete the questionnaire and withdrawn from the study. Data analysis was done for 43 patients. The age range was 45–80 years, mean 58±9.6 years. About 80% fall into the age group ≥50 years. Male was nearly three forth of the sample; 86% married, about 72%of higher education, 60% still active working, non-smokers 72%. Patients with DISH exposed to life events 53.5%, patients with family history positive of mental illness were 11.6%, and about 35% have medical comorbidity. (Table 1). Duration of illness was 3–20 years, mean 8.5±4 years. PHQ-9 range was 1 – 25, mean 12.8±8.28.

The prevalence of depression among patients with DISH was 62.8%; about 88.8% of moderate depression to severe depression (Table 2). Depression was of significant correlation with age group (P=0.020), gender (P=0.042). Occupation (P=0.011), and life events (P=0.004) (Table 3). Depression severity was correlated significantly with age group (P=0.006) and life events (P=0.014) (Table 4). The correlation of depression was statistically significant with duration of illness (P=0.030). The correlation of severity of depression was statistically significant with duration of illness (P=0.023) (Table 5).

| Table 1. frequency and percentages of the sociodemographic and clinical characteristics of the patients with diffuse idiopathic skeletal hyperostosis (DISH) involve in the study |
|---------------------------------------------------------------|
| characteristics                                      | No. | %       |
| Age Group                                              |     |         |
| below 50 years                                         | 9   | 20.9    |
| 50 - 60 years                                          | 17  | 39.5    |
| above 60 years                                         | 17  | 39.5    |
| Gender                                                  |     |         |
| Male                                                    | 33  | 76.7    |
| Female                                                  | 10  | 23.3    |
| Marital Status                                          |     |         |
| Single                                                  | 6   | 14      |
| Married                                                 | 37  | 86      |
| Education                                               |     |         |
| Intermediate                                            | 12  | 27.9    |
| Secondary                                               | 23  | 53.5    |
| College                                                 | 8   | 18.6    |
| Occupation                                              |     |         |
| Unemployed                                              | 12  | 27.9    |
| Free Work                                               | 23  | 53.5    |
| Employed                                                | 3   | 7.0     |
| Retired                                                 | 5   | 11.6    |
| Housekeeper                                             | 6   | 14.0    |
| Smoking                                                 |     |         |
| non smoker                                              | 31  | 72.1    |
| Smoker                                                  | 12  | 27.9    |
| Life Events                                             |     |         |
| No                                                      | 20  | 46.5    |
| Yes                                                     | 23  | 53.5    |
| Family History                                          |     |         |
| No                                                      | 38  | 88.4    |
| Yes                                                     | 5   | 11.6    |
| Comorbidity                                             |     |         |
| No                                                      | 28  | 65.1    |
| Yes                                                     | 15  | 34.9    |
Table 2. Frequency and percentages of depression and severity of depression among patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

|                | No. | %    |
|----------------|-----|------|
| Depression     |     |      |
| No             | 16  | 37.2 |
| Yes            | 27  | 62.8 |
| Severity of Depression |   |      |
| mild depression| 3   | 11.11|
| moderate depression| 13 | 48.14|
| severe depression | 11 | 40.74|

Table 3. Correlation of depression with sociodemographic and clinical characteristics of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

| Sociodemographic and clinical variables | Not depressed | Depressed | P  |
|----------------------------------------|---------------|-----------|----|
| Age Group                              |               |           |    |
| below 50 years                          | 5             | 4         | 0.020|
| 50 - 60 years                           | 9             | 2         |    |
| above 60 years                          | 2             | 15        |    |
| Gender                                  |               |           |    |
| Male                                    | 15            | 18        | 0.042|
| Female                                  | 1             | 9         |    |
| Marital Status                          |               |           |    |
| Single                                  | 4             | 2         | 0.108|
| Married                                 | 12            | 25        |    |
| Education                               |               |           |    |
| Intermediate                            | 5             | 7         | 0.573|
| Secondary                               | 7             | 16        |    |
| College                                 | 4             | 4         |    |
| Occupation                              |               |           |    |
| Unemployed                              | 1             | 11        | 0.011|
| Free Work                               | 11            | 12        |    |
| Employed                                | 3             | 0         |    |
| Retired                                 | 1             | 4         |    |
| Smoking                                 |               |           |    |
| non smoker                              | 12            | 19        | 0.744|
| Smoker                                  | 4             | 8         |    |
| Life Events                             |               |           |    |
| No                                      | 12            | 8         | 0.004|
| Yes                                     | 4             | 19        |    |
| Family History                          |               |           |    |
| No                                      | 15            | 23        | 0.397|
| Yes                                     | 1             | 4         |    |
| Comorbidity                             |               |           |    |
| No                                      | 13            | 15        | 0.087|
| Yes                                     | 3             | 12        |    |

P < 0.05 was considered statistically significant

Table 4. Correlation of severity of depression with sociodemographic and clinical characteristics of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

| Sociodemographic and clinical variables | not depressed | mild depression | moderate depression | severe depression | P value |
|----------------------------------------|---------------|-----------------|---------------------|------------------|---------|
| Age Group                              |               |                 |                     |                  |         |
| below 50 years                          | 5             | 2               | 2                   | 0                | 0.006   |
| 50 - 60 years                           | 9             | 0               | 6                   | 2                |         |
| above 60 years                          | 2             | 1               | 5                   | 9                |         |
| Gender                                  |               |                 |                     |                  |         |
| Male                                    | 15            | 2               | 9                   | 7                | 0.237   |
| Female                                  | 1             | 1               | 4                   | 4                |         |
| Marital Status                          |               |                 |                     |                  |         |
| Single                                  | 4             | 1               | 0                   | 1                | 0.180   |
| Married                                 | 12            | 2               | 13                  | 10               |         |
| Education                               |               |                 |                     |                  |         |
| Intermediate                            | 5             | 1               | 4                   | 2                | 0.819   |
| Secondary                               | 7             | 1               | 8                   | 7                |         |
| College                                 | 4             | 1               | 1                   | 2                |         |
| Occupation                              |               |                 |                     |                  |         |
| Unemployed                              | 1             | 2               | 4                   | 5                | 0.106   |
| Free Work                               | 11            | 1               | 6                   | 5                |         |
| Employed                                | 3             | 0               | 0                   | 0                |         |
| Retired                                 | 1             | 0               | 3                   | 1                |         |
| Smoking                                 |               |                 |                     |                  |         |
| not smoker                              | 12            | 1               | 8                   | 10               | 0.175   |
| Smoker                                  | 4             | 2               | 5                   | 1                |         |
| Life Events                             |               |                 |                     |                  |         |
| No                                      | 12            | 2               | 4                   | 2                | 0.014   |
| Yes                                     | 4             | 1               | 9                   | 9                |         |
| Family History                          |               |                 |                     |                  |         |
| No                                      | 15            | 3               | 11                  | 9                | 0.686   |
| Yes                                     | 1             | 0               | 2                   | 2                |         |
| Comorbidity                             |               |                 |                     |                  |         |
| No                                      | 13            | 2               | 8                   | 5                | 0.286   |
| Yes                                     | 3             | 1               | 5                   | 6                |         |

P < 0.05 was considered statistically significant

Table 5. Correlation of duration of illness with depression and severity of depression of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

| Severity of depression | Duration of illness | 1-5 years | 6-10 years | 11-15 years | 16-20 years | P value |
|------------------------|---------------------|-----------|------------|-------------|-------------|---------|
| Depression             | Not depressed       | 5         | 11         | 0           | 0           | 0.030   |
|                        | Depressed           | 4         | 12         | 7           | 4           |         |
| Severity of Depression | mild depression     | 1         | 0          | 2           | 0           | 0.023   |
|                        | moderate depression | 2         | 7          | 2           | 2           |         |
|                        | severe depression   | 1         | 5          | 3           | 2           |         |
DISCUSSION

This is the first study explores depression among diffuse idiopathic skeletal hyperostosis (DISH) patients. The prevalence of depression among patients with diffuse idiopathic skeletal hyperostosis (DISH) was 62.8%. Depression was of significant correlation with age group (P=0.020), gender (P=0.042), Occupation (P=0.011), and life events (P=0.004). High severity of depression was found; about 88.8% of moderate to severe depression. Depression was significantly correlated with duration of illness (P=0.030). Severity of depression was significantly correlated with duration of illness (P=0.023). Up to the knowledge of the author there are no exact figures to compare the results of this study with it. Chronic physical disorders consider as one of the traumatic stressful life events that may precipitate depression and other psychological disorders. The mechanisms behind physical disorders elevate the risk of initiation of depressive disorder were two mechanisms. The first has cognitive or psychological mechanism. Chronic difficulty or life events may induce depressive disorder in susceptible patients. Second mechanism, more specific relation appears to present to link depression with certain physical illness (Goodwin, 2006).

Variables may include; physical disability degree, physical pain, disease duration, gender, social stress level and availability of social support (Wolfe and Hawley, 1993; Azad et al., 2008).

Adaptation with severe or chronic physical disorders is difficult for the patients that may result in depression. Difficult adaptation may be due to changes social situation. Maladjustment in response to severe stress of medical disorder may results in depression (Al Abbudi, 2018). Mental disorders form 12.1% of depression global burden and by the year 2020 are increase to 15%. 25% of People may be affected during their lives by behavioural and mental disorders (Azad et al., 2008). People with chronic medical disorders are complaining of depressive disorder twice as compared with people without chronic illnesses (Azad et al., 2008; Pattern, 2001). There is association of depression with different disorders that presented with somatic or physical symptom, include, fibromyalgia, chronic fatigue and chronic pain states (Goodwin, 2006). In conclusion depression is high in diffuse idiopathic skeletal hyperostosis (DISH) patients. Age, gender, occupation, life events, and duration of illness consider as the significant risk factors. Patients may get benefit from close liaison between mental health professionals and rheumatologist.

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