

Major Depressive Disorder in the Patients of Chronic Kidney Disease in North India

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Abstract

Background: Depression is reported to be the commonest disorder in patients with Chronic Kidney Disease (CKD) but there is wide variability in the reported prevalence rates. Most of the studies have not employed valid diagnostic instruments specific for diagnostic guidelines. The present study aims to measure depression in the patients of CKD using DSM-IV criteria. **Aim:** To evaluate the incidence of Major Depressive Disorder (MDD) according to the DSM-IV criteria in the patients having CKD. **Methodology:** 104 patients having CKD, with or without haemodialysis were assessed. The patients were assessed on MINI for the screening of depression. Co-morbid physical illnesses were screened for and recorded. **Results:** A total of 104 patients with CKD were assessed. 79.2% patients were on haemodialysis. Out of 104 patients screened 44.2 % screened positive for Major Depressive Disorder according to DSM-IV. Patients with MDD had significantly higher prevalence of Diabetes Mellitus ($p = 0.009$) and Obstructive Sleep Apnoea ($p=0.016$) compared to the patients without MDD.

Introduction

Over one million patients worldwide are on dialysis or a functioning graft [1]. In the USA about 30 million patients are suffering from CKD [2]. The prevalence of CKD in India is approximately 0.8% with that data there could be approximately 7.85 million Chronic Renal Failure (CRF) patients in India [3]. Among the psychiatric disorders in general population, Major Depressive Disorder (MDD) is the most disabling [4]. MDD is also a common co-morbid disorder with other medical illnesses. It may influence the course of medical disorders and the presence of depression was found to worsen the outcome of a co-morbid medical disorder [5].

CKD like many other chronic illnesses is associated with a significant psycho-social dysfunction. Studies show that CKD is associated with impairment in health related quality of life [6,7,8] and also common-event-related-distress where most of the events are related to personal health [9]. In addition to these psycho-social aspects, the biological

factors associated with CKD also increase the vulnerability towards depression.

There is an ongoing debate regarding the aetiology of MDD. There is evidence that symptoms of MDD correlate with inflammatory markers and therefore possibility of MDD being a type of inflammatory reaction [10]. At the same time there is correlation of CKD with inflammatory markers [11]. Considering these facts, a correlation in depression & CKD patients may be likely.

Various studies have in fact demonstrated that depression is the commonest psychiatric disorder in the patients with chronic kidney disease (CKD) [12,13,14,15] although the prevalence rates were found to vary widely. One of the reasons for this variation could be the different assessment tools that have been used to diagnose depression [16]. Most of the studies have employed instruments like Becks Depression Inventory for screening for depressive symptoms [17]. The use of BDI with a single cut off score to distinguish the non-depressed from depressed is not recommended and the use of diagnostic criteria are considered necessary [18]. On the other hand, the Mini International Neuropsychiatric Interview (MINI) is a valid instrument and provides diagnosis based on either DSM-IV or ICD -10 criteria [19].

We were able to find two published studies available from India. Both these studies employed Beck Depression Inventory (BDI) for diagnosis of depression [20, 21]. The prevalence of depression in

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patients on CKD was 65.4% with a cut of score of 10 in one study and in the other study the prevalence was calculated to be 47.8% with a cut off score of 14 on BDI.

The present study was planned to measure the prevalence of depression in the patients of CKD employing an internationally acceptable diagnostic criteria (according to DSM – IV) through a valid diagnostic instrument.

Materials and Methods

This study was conducted in the nephrology clinic of a tertiary care teaching hospital in Dehradun which is the capital of a north Indian state of Uttarakhand. Permission was taken by the institutional ethics committee to work on the given protocol. All consecutive patients who were attending the nephrology OPD with the complaints of CKD during the calendar month of October 2012 were assessed. All the patients were included, regardless whether they may or may not be on maintenance haemodialysis. A written informed consent was sought from all the participants. Patients with a known history of past psychiatric illness including MDD and history of dependence to any substance (except nicotine) were excluded from the study.

The patients' biographic and clinical data was collected on a semi-structured proforma. The patients underwent a renal assessment and a psychiatric assessment. Mini-International Neuropsychiatric Interview (M.I.N.I.) which is a short structured diagnostic interview was administered to all the patients.

MINI is developed to assess diagnosis of psychiatric disorders according to DSM – IV and ICD – 10 criteria. In the current study MINI version 5.0 for the DSM–IV was used. It is easy to employ and has administration time of about 15 minutes.

Statistics: Statistic Package for the Social Science (SPSS) version 17.0 (SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc) was used for analysis. T-test and Chi Square test were used to compare means of continuous and categorical variables respectively.

Results

A total of 104 patients were included in the study, among them 39.42% were females. The mean age in the group was 54.15 ± 12.96 years. Most of the

patients belonged to a nuclear type family (61.5%) while 38.5% were from joint family.

The mean duration of kidney disease was 44.22 ± 51.86 months. Out of 104 patients screened 82 (79.8%) were on haemodialysis. The mean duration of haemodialysis was 17.78 ± 22.35 months. The biochemical parameter that were studied are given in Table-1.

On the MINI 46 patients (44.2%) were diagnosed as having MDD according to the DSM-IV criteria. The population was divided into two groups "MDD" group and the "non-MDD" group comprising of the patients who did not fulfil the criteria for MDD according to DSM – IV.

Statistical analysis revealed that the two groups were comparable on the variables such as age, gender, and duration of CKD. The incidence of stroke, hypertension, chronic liver disease, coronary artery disease, chronic obstructive pulmonary disease and ascites was also comparable with the Pearson Chi Square Test with and no significant difference was observed between the "MDD" and "non MDD" group. Significant difference was observed in patients with "MDD" having significantly higher prevalence of Diabetes Mellitus ($p = 0.009$) and Obstructive Sleep Apnoea (OSA) ($p=0.016$) compared to the "non MDD" patients.

Discussion

The current study shows that a significant percentage of patients of CKD (44.2%) have a comorbid depression. The earlier studies have also consistently shown that depression is the most common disorder in the patients with CKD. However most of these studies however did not employ proper diagnostic criteria.

Depressive symptoms in the patients having a chronic physical disorder are common. However depressive symptoms per se do not constitute a diagnosis of MDD. Instruments such as the Beck's Depression Inventory which are routinely used to screen patients of depression do not have specificity for the diagnosis of depression [18]. Further there is no consensus on a cut-off score that correlates with a diagnosis of depression. This is evident with different studies using different cut off for diagnosing depression [20, 21]. BDI is more sensitive to the change in symptoms of depression and is therefore more suitable to measure the efficacy of any intervention over the course of time.

Earlier studies have shown almost one third to half of the patients may have MDD. Most of the studies employed tools like BDI with poor specificity. We suggest that the use of MINI may be more useful in screening purpose as it has greater diagnostic validity.

In the present study population 51% of the patients were screened positive for OSA. There are studies which have reported high incidence of OSA in patients with CKD [22, 23, 24]. The findings related to sleep disorders are published by the authors in a separate study [25].

In addition to a high prevalence of OSA in the study population, there was also a significantly higher prevalence of obstructive sleep apnoea in the "MDD" group in comparison to the "non- MDD" group. Similar finding have been reported in studies showing a high incidence of MDD in the patients of OSA when compared with the normal population [26, 27].

Interestingly studies report that significant percentage of patients diagnosed of MDD, have a comorbid diagnosis of OSA [28]. The relationship of OSA and MDD is complex [29]. There are various factors that may be involved. Excessive Day time Sleepiness (EDS) one of the main symptoms of OSA may masquerade as "easy fatigability" which is core symptom of depression [30]. On the other hand sleep defragmentation in OSA may predispose an individual to depression [31].

Statistical analysis also revealed a significantly higher prevalence of diabetes in the "MDD" group compared to the "non- MDD" group. The higher incidence of depression in the diabetes population is well known [32, 33].

The strength of the present study is that it employs MINI which is a valid instrument for diagnosis of the disorder according to the DSM-IV criteria. This adds strength to the existing literature that depression is present in a high percentage of patients with CKD.

Whether intervention in the case of MDD will improve the prognosis of the patients is still a debatable question. Clinical prudence suggests that treatment of underlying depression should be instituted. However studies on the same subject have shown varying results. Some studies have shown no improvement in the outcome of illness even after intervention for depression [34, 35, 36, 37]. Other studies however have shown that an intervention for depression may improve the prognosis [38, 39, 40, 41, 42, 43, 44, 45].

Table - 1

| | Mean | Std. Deviation |
|--------------------------|--------|----------------|
| Age (Yrs) | 54.17 | 12.963 |
| Duration of CKD (months) | 44.22 | 51.866 |
| Duration of HD* (months) | 17.78 | 22.349 |
| Creatinine (mg/dl) | 5.3346 | 4.67710 |
| Albumin (g/dl) | 2.562 | 1.3670 |
| Hb (g/dl) | 8.121 | 4.1212 |
| Calcium (mg/dl) | 6.498 | 3.2756 |
| Phosphorus (mg/Dl) | 4.736 | 2.8218 |

*HD = Haemodialysis

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