Prospective Study of Medical Co-Morbidity (Prevalence of Various Medical Illnesses) in Patients with Depression

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Abstract: Depression is associated with various co-morbid diseases and patients with chronic disorders are more likely to be depressed. Ninety four patients with depression were studied in the Department of Medicine and Department of Psychiatry, JA Group of hospitals and GR Medical College Gwalior, during the period from March 2012 to November 2013. Vital statistics of the patients were recorded and all the patients were assessed for medical co-morbidity by clinical examination and subjecting them to investigations namely hematological parameters like CBC, biochemical parameters like RFT, LFT, serum electrolytes, Lipid profile etc. Out of 94 patients with depression, 23 were pre-hypertensive and 14 were hypertensive, obesity was recorded in 25 and 9 were hyperglycemic. ECG reading revealed that 6 of them had sinus tachycardia, 4 suffered from PPulmonale, 5 had left ventricular hypertrophy and bradycardia. Abnormal CXR findings suggestive of COPD were reported in 6 patients, 3 patients had cardiomegaly and pneumonitis, calcified lymphnodes and pleural thickening were found in one patient each. Majority patient had hepatomegaly (24.3%) on USG abdomen. We found a significant association between depression and other co-morbidities like hypertension, obesity, hyperglycemia, hypothyroidism, deranged lipid profile, gastrointestinal disorders, cardio vascular abnormalities and respiratory findings.
Keywords: ECG, depression, hyperglycemia, hypothyroidism, cardiomegaly.

INTRODUCTION

The coexistence of depression and other system illness has become an increasing important clinical issue. Several medical conditions are associated with increased risk of depression, which does not respond to antidepressant treatment very effectively [1,2].

On the other hand depression is associated with increased morbidity, mortality, and chronic disease burden in patients with various medical disorders[3].

Depression increases medical comorbidity through biological mechanisms like hypothalamic-pituitary- adrenal axis (HPA axis) activity, sympathetic stimulation, proinflammatory cytokine level and behaviors problems such as treatment non adherence, neglect of self care, lack of physical activity and substance abuse[4].

Therefore, the current study is an attempt directed towards finding various comorbidities which existed together with depression and to which a direct causal relation may or may not be found.

MATERIALS AND METHODS

Present observational, cross sectional study was performed on 94 patients with depression in the Department of Medicine and Department of Psychiatry, J.A Group of hospitals G.R. Medical College Gwalior (M.P) during the period from March 2012 to November 2013.

The study was conducted after formal approval of the study protocol by the ethical committee of G.R. Medical College Gwalior (M.P)

All the OPD patients presenting with depression to the Department of Psychiatry were taken as cases. Subsequently, these patients were diagnosed as patients of depression by the Psychiatrist after the screening on the basis of Beck's Depression Inventory

(BDI). Written informed consent was taken from each patient after informing them about the nature of the study and the investigations desired for the study.

Confirmed case of depression as diagnosed by the Psychiatrist of either sex, having age ≥15 years, medically stable, and who understand and communicate in either Hindi / English were included.

Patient suffering from psychiatric disorders other than depression, patient already diagnosed for any other known medical diseases/disorders, patients with depression resulting from medicines known to produce, depression due to some underlying disease like Diabetes mellitus, cancer, cardiac ailment etc and patient not willing to provide informed consent were excluded from the present study.

Patients of depression were assessed for the severity of depression according to Beck's Depression inventory (BDI) and were labeled as having mild, borderline, moderate, severe and extreme depression.

Interpretation of the Beck Depression Inventory was done as per the following Ranges of total score.

Total Score   - Levels of Depression
1-10   - These ups and downs are considered normal
11-16   - Mild mood disturbance
17-20   - Borderline clinical
21-30   - Moderate depression
31-40   - Severe depression
Over 40   - Extreme depression

A persistent score of 17 or above indicates the need of medical treatment.

Subsequently, vital statistics of the patients were recorded along and then these patients were investigated for medical co-morbidity including hematological parameters like CBC, biochemical parameters like RFT, LFT, serum electrolytes, Lipid profile etc.

Blood pressure recorded in the patients was categorized as per the classification provided in the Harrison's principle of internal medicine 18th edition [5].

Blood sugar was recorded as random blood sugar and was categorized into normoglycemic, hyperglycemic and hypoglycemic. Thyroid profile of patients was assessed.ECG was done in all patients and normal as well as abnormal findings were recorded. USG findings, chest X-ray findings were also recorded in all patients and data tabulated statistically.

For all the patients, ASO, CRP, RA factor tests were ordered as part of the screening procedure for various musculoskeletal disorders and arthritis and results were tabulated.

All the data analysis was performed using IBM SPSS ver. 20 software. Data is expressed as percentage. Categorical data was compare using Chi square test. Level of significance was assessed at 5%.

RESULTS

Out of 94 patients who were included in the study, 29(30.8%) belonged to age group 15-25 years, 21(22.3%) belonged to age group 26-35 years and 23(24.4%) belonged to age group of 36-45 years with mean age being 36.06 years. Out of 94 followed, 54.2 % were males and 45.7% were females.

Blood pressure monitoring among the 94 participants of the study revealed 1 hypotensive patients, 56 normotensive patients, 23 pre-hypertensive patients and 14 hypertensive patients.

Out of total 3 male and 6 females were obese, 8 males and 8 females were overweight, 36 males and 25 females were normal and 4 males and 4 females were normal

Out of 94 patients, 45 males and 38 females were euglycemic, 2 males were hypoglycemic while 4 males and 5 females were hyperglycemic. Of the 94 patients, 25 males and 25 females were anemic.

DISCUSSION

Depression is commonly associated with various chronic disorders and many of times when it is the presenting complaint, associated disorders are likely to be missed. In present study, 24.5% patients were pre-hypertensive, 13.8% were hypertensive stage-1 and 1.06% to be in hypertension stage-2 category. Similar reports were revealed in the study done by Stordal *et al*. [6].

In present study, 9.57% patients were found to be obese i.e. BMI >30 kg/m^2 out of which 66.3% were females and 33.7% were males. This finding is consistent with a meta-analysis of longitudinal studies, which showed that depression is associated with 18% increased risk of being obese. Only gender acted as a moderating factor; in subgroup analyses the association was found in women but not in men, whereas age and continent of residence did not affect the association [7].

Out of 94 patients presented for study 50 were found to be anemic according to WHO's Hemoglobin thresholds used to define anemia 8 i.e. 53.1% of test population were anemic. However no classification was done as mild moderate or severe anemia. On gender distribution 25(49%) males were anemic and 25(58.1%) females were anemic in the present study.

Table-1: USG findings in patients of depression

USG finding	No. of patients
Normal USG	57
Fatty liver	3
Hepatomegaly	9
Hepatosplenomegaly	2
Splenomegaly	3
Cholelithiasis	3
Renal calculi	2
Cystitis	3
Renal cyst	2
Mesentric lymphadenitis	1
Gastritis	2
Colitis	5
Liver abscess	1
Nephropathy	1
Others	1
Total	94

Table-2: Chest x-ray findings in patients of depression

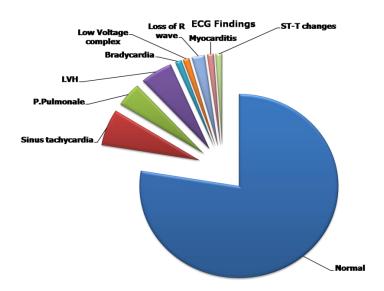| Chest X-Ray Findings	No. of patients
Normal	82
COPD	6
Cardiomegaly	3
Pneumonitis	1
Calcified Lymph nodes	1
Pleural thickening	1
Others	0
Total	94

Fig-1: Pie chart showing ECG findings in patients of depression

In our study only 17 were found to have platelet counts less than 1.5Lakh/cumm and remaining 77 patients were found to have platelet counts in the normal range (1.5-4 Lakh/cumm). Thus, 18.1% of patients had platelet counts less than 1.5 Lakh/cumm in contrast to 81.9% patients with normal platelet counts.

Out of 94 patients analyzed for biochemical parameters, 83 (88.3%) were normoglycemic, out of which 45(54.2%) were males and 38 (45.8%) were females. 2(2.1%) patients out of 94 were hypoglycaemic (the cut off limit of blood sugar level for hypoglycaemia was taken as <55mg/dl.

Hyperglycemia was documented among 9(9.6%). Among these, 1 patient was found to have random blood sugar level >200 mg/dl. 3 patients were having blood sugar level between 180-200 mg/dl, and 5 patients were having blood sugar level between 150-180 mg/dl. This finding is close to the study done by Goodnick and Henry 1995, which stated that prevalence of depression in diabetes varies from 8.5% to 17.3% [9]. In the investigation that aimed to estimate the prevalence of depression among people with diabetes and to examine the association of co morbid depression with lost productivity and health resource utilization in persons with and without diabetes, the results showed that the prevalence of diabetes in the sample was 6.2%, and 13.4% were classified as depressed. However, diagnosis of diabetes requires multi pronged approach towards investigating the patient including HbA1C and oral GTT which could not be done in a cross sectional study. Therefore, for the sake of simplicity and authenticity, normoglycemic, hypoglycemic and hyperglycemic terms have been used in the classification.

Out of 94 patients presenting for the study, 24(25.5%) patients had serum creatinine level more than 1.2 mg/dl. Out of this 24, 9 patients were females and 15 were males, thus males have more renal dysfunction than females in this study. This finding is inconsistent with the previous study [10] in which prevalence of renal diseases in a cohort of 221 patients was 4.52%. A suitable reason for this disparity could be large sample size and different cutoff level for serum creatinine in the later study.

In the study serum potassium level was found to be less than 3.5 mg/dl in 12(12.8%) patients and serum sodium level less than 131 mg/dl was found in 4 (4.25%) patients. However, it is noteworthy that none of these patients revealed characteristic ECG changes or neurological/somatic symptoms to justify electrolyte imbalance.

As part of routine biochemical investigations, serum lipid profile were estimated and result showed that 8(8.51%) patients had serum cholesterol level more than 250mg/dl and 12(12.8%) patients had serum triglyceride level more than 150mg/dl. It is inferred from this result that these patients were at greater risk of developing cardiovascular disorders, obesity, metabolic syndromes and diabetes in the days to come according to current lifestyle patterns.

Out of all 12 patients reported oligomenorrhoea, 13 patients reported constipation and 20 patients reported increase in weight more than 5lb in previous 2 weeks. Subsequently, thyroid profile was done in all the patients in whom 4 patients were reported to have hypothyroidism, which is similar to the previous study [11] in which percentage of hypothyroid patients was 3.62%.

Among musculoskeltal disorders, 44 patients reported back pain and 22 patients reported joint pain in their somatic complaints. 5 patients were found to have CRP positive and 1 female patient was found to have RA factor positive in the study. Also, in a population based primary care study 50, 65% of patients with depression experienced 1 or more pain complaints [10] which are close to the number of patients presenting with depression and one or more pain complaint in our study (66%).

USG evaluation revealed that about one fourth of patients had hepatomegaly (24.3%).It is inferred from this observation that out of 46(48.9%) patients presenting with complains of abdominal pain and 35.1% patients presenting with loose motions, 29% of patients revealed ultrasonographic findings suggestive of gastrointestinal dysfunction (29%) which is consistent with the findings of the study done by Moussavi *et al*. in which gastrointestinal dysfunction were the major diagnosis in patients with depression/anxiety disorder. The rates were 30.6% and 26.4% respectively [12].

It is inferred from the ECG evaluation that 8(8.51%) out of 94 patients showed ECG findings suggestive of Cardiac abnormalities like LVH, myocarditis, low voltage complex and ST-T changes. Whereas, 7(7.4%) patients revealed ECG findings suggestive of Respiratory abnormalities like P Pulmonale and loss of R wave as in COPD.

Cardiovascular abnormalities in chest x-ray were found in 3.19% of total patients and respiratory findings in chest x-ray were found in 9 (9.57%) patients which were contrary to the other studies of depression where cardiovascular diseases dominated the total burden of co- morbidity. However, these are just the findings of chest x- ray and not the complete picture of cardiovascular burden of co-morbidity which is a sum of all findings from various other investigations that is ECG, Lipid profile etc.

CONCLUSION

To sum up the whole study, the results of this observational study affirms the co-existence of depression and its co morbidities which enjoys a bidirectional, reciprocal relationship with each other.

We also found that there exists a significant correlation between depression and comorbid conditions like hypertension, obesity, hyperglycemia, hypothyroidism, deranged lipid profile, gastrointestinal disorders, cardio vascular abnormalities and respiratory findings.

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