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*Original Research*

# Evaluation of usefulness of CT of the brain in patients presenting with a psychiatric condition

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***ABSTRACT:***
**Background:** Psychiatric symptoms can be secondary to medical conditions such as cerebral neoplasms or hyperthyroidism. The present study was conducted to assess usefulness of CT of the brain in patients presenting with a psychiatric condition. **Materials & Methods:** 78 patients with psychiatric conditions of both genders were included and treatment administered were recorded for each of the patients undergoing CT scanning. The CT scans were performed using a general electric (GE) multi-slice CT scanner. **Results:** Out of 78 patients, males were 48 and females were 30.CT diagnosis was psychosis in 18, bipolar affective disorder in10, depression in 6, dementia in 16, alcohol dependencein 12, bipolar affective disorder in 7, heroin dependence in 8, anxiety disorder in 10 and cerebral palsy in 3 cases. The difference was significant (P< 0.05). **Conclusion:** CT is useful in diagnosis of various psychiatric disorders among males and females.
**Key words:** Bipolar affective disorder, Computed tomography, Psychiatric disorders

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## INTRODUCTION

Psychiatric symptoms can be secondary to medical conditions such as cerebral neoplasms or hyperthyroidism. For this reason, patients presenting with psychiatric symptoms routinely undergo a series of screening investigations that typically include physical examination, serum electrolytes, thyroid function tests and CT of the brain.[1]

The clinical approach to a patient necessitates the evaluation for an underlying neurological disorder or other organic aetiology, which may impact further management.[2] The identification of an underlying causal or otherwise clinically occult neurological illness by neuroimaging may result in quite a different treatment path, and it is for this reason that psychiatrists worldwide are faced with this dilemma of whom to image and whom not to.[3] In the 1980s when CT scanning, and later MRI scanning, came into vogue, several recommendations were made following research publications of the usefulness of neuroimaging in the detection of underlying brain lesions or other disorders.[4]Although psychiatric symptoms can be secondary to nonpsychiatric medical conditions, there are no clear guidelines for the use of CT of the brain as part of the 'organic screen' used in the investigation of patients presenting with psychiatric symptoms.[5]The present study was conducted to assess usefulness of CT of the brain in patients presenting with a psychiatric condition.

## MATERIALS & METHODS

The present study comprised of 78patients with psychiatric conditions of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. Past psychiatric history, significant family history, substance use, medical history, physical and mental state examination findings, admission, diagnostic and statistical manual (DSM) IV diagnosis and treatment administered were recorded for each of the patients undergoing CT scanning. The CT scans were performed using a general electric (GE) multi-slice CT scanner. The CT findings were correlated with the patient demographics, psychiatric diagnosis and clinical evaluation.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

| Total- 78 | | |
|---|---|---|
| **Gender** | **Males** | **Females** |
| Number | 48 | 30 |

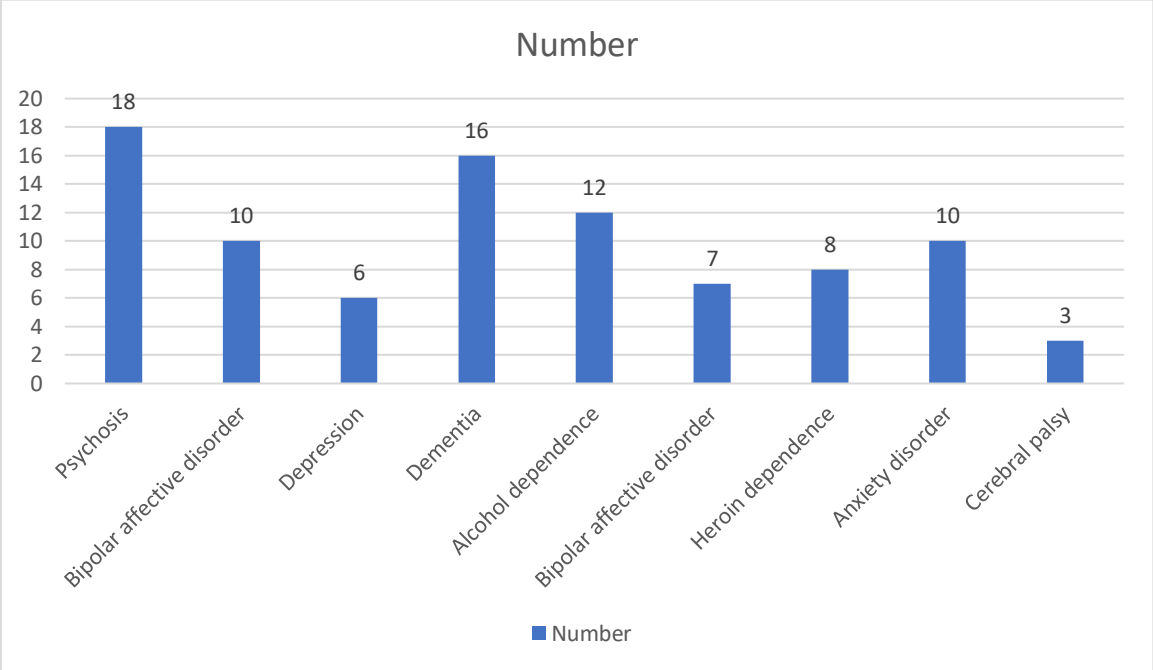
Table I shows out of 78 patients, males were 48 and females were 30.

**Table II Assessment of parameters**

| CT diagnosis | Number | P value |
|---|---|---|
| Psychosis | 18 | 0.05 |
| Bipolar affective disorder | 10 | |
| Depression | 6 | |
| Dementia | 16 | |
| Alcohol dependence | 12 | |
| Bipolar affective disorder | 7 | |
| Heroin dependence | 8 | |
| Anxiety disorder | 10 | |
| Cerebral palsy | 3 | |

Table II, graph I shows that CT diagnosis was psychosis in 18, bipolar affective disorder in10, depression in 6, dementia in 16, alcohol dependencein 12, bipolar affective disorder in 7, heroin dependence in 8, anxiety disorder in 10 and cerebral palsy in 3cases. The difference was significant (P< 0.05).

**Graph I Assessment of parameters**




## DISCUSSION

Psychiatric disorders are a diverse group of conditions that primarily impair cognition, emotion, and behavioral control; occur early in life; and have a high aggregate prevalence in all countries where epidemiology has been investigated. Although psychiatric disorders directly account for fewer than half of one percent of all deaths, they contribute significantly to premature mortality through multiple medical causes.[6]Brain imaging studies (MRI, CT, positron emission tomography, single photon emission computed tomography) in primary psychiatric disorders (excluding the dementias) brain imaging provide clinicians with diagnostic information.[7,8]The present study was conducted to assess usefulness of CT of the brain in patients presenting with a psychiatric condition.

We found that out of 78 patients, males were 48 and females were 30.Berk[9] analysed the indications for CT scanning in psychiatric inpatients and concluded that there are specific clinical variables that correlated with scan abnormality. Furthermore, these variables, including presence of neurological abnormality, diagnosis of delirium or dementia, organic mental state abnormality and EEG abnormality could be used as clinical guidelines for referral for CT scan.1 Other relevant clinical factors to consider are older age of patient, history of prior

head injury, alcohol abuse and neuropsychological test abnormality.

We observed thatCT diagnosis was psychosis in 18, bipolar affective disorder in10, depression in 6, dementia in 16, alcohol dependencein 12, bipolar affective disorder in 7, heroin dependence in 8, anxiety disorder in 10 and cerebral palsy in 3 cases.Emsley et al[10] in study of 100 patients referred for CT scans, reported abnormalities in 61 patients. Of these patients, 23% had focal brain lesions. The conclusion of the study was that certain clinical factors are useful in identifying patients that may warrant CT scanning.2 This study also highlighted the fact that a too restrictive approach in selection for CT scanning may risk the failure to detect a significant intracranial lesion.

Agzarian et al[11] evaluated the usefulness of CT of the brain in patients presenting with a psychiatric condition without focal neurological signs. The reports of 397 consecutive CT brain scans of patients presenting to two acute tertiary hospital psychiatric services over a 2-year period were assessed retrospectively. Of the 397 patients, 241 had psychosis, 87 had depression, 44 had bipolar affective disorder, seven had alcohol dependence, five had dementia, and the remaining 13 had a variety of diagnoses including personality disorder and transient ischaemic attack. Findings on 377 (95%) of the CT scans showed no abnormality. Specific abnormalities were described in 20 (5%) of the CT scans. Three scans showed non-specific minor abnormalities, which, when followed up by MRI, showed no relevant abnormality. All the abnormalities shown on CT were considered to be clinically unrelated to the patient's psychiatric condition.

Chhagan et al[12]undertook of all psychiatric inpatients who had CT scans performed Demographic data, mental state examination, physical examination findings, substance use and diagnosis upon admission were recorded. The relationship between these variables and CT scan findings was analysed. Results: A total of 897 admissions were retrospectively analysed. One hundred and three patients had documented CT scan imaging. In total, 17 of the 23 patients with abnormal findings on CT scan were found to be psychotic (74.0%). The remaining 26.0% included depression and dementia. There was no statistically significant difference between the normal and abnormal CT scan groups with regard to gender, age, family history, substance use and physical examination. The majority (65.2%) had cerebral atrophy and/or cerebral calcifications. A smaller group of other documented findings was noted.

McClellan et al[13] carried out a study assessing the usefulness of routine CT brain scanning of 261 psychiatry inpatientsover a 3-year period at the Louisiana State University Medical Centre, concluding that there was no justification for the routine CT of the brain as part of a screening procedure in patients admitted with psychiatric symptoms.Larson et al[14] in a retrospective review of 123 patients provided an alternative to this latter approach. Of the patients in the study group, 85% were classified as having normal neuroimaging or normal except for cerebral atrophy. All the patients who showed abnormalities on CT scanning manifested with true positive findings on clinical examination.

## CONCLUSION

Authors found that CT is useful in diagnosis of various psychiatric disorders among males and females.

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