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## Assessment of psychiatric disorders with CT scan

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### Abstract

**Background:** Disorders of the central nervous system resulting from head trauma, hemorrhage inside the cranium. The present study was conducted to evaluate role of CT in psychic patients.

**Materials & methods:** This study was conducted on 82 psychic patients of both genders with some psychiatric disorders. All underwent CT scan and CT images were read by trained radiologist for the presence, absence of brain abnormalities.

**Results:** Out of 82 patients, males were 48 and females were 34. Among various psychic disorders with abnormal scans were dementia (12), mood disorders (14), schizizophrenia (6), personality disorder (8), behavior disorder (7) and anxiety disorder (3). Mood disorder showed maximum number of abnormal scan among all disorders. Most common abnormal scan in psychiatric disorder patients was generalized brain atrophy (GBA) (26) followed by generalized brain atrophy and ischemia (7).

**Conclusion:** Authors suggested that CT scan is useful aid in psychiatric patients. The information provide by CT scan helps in diagnosis of lesion in brain.

**Keywords:** CT scan, dementia, psychiatric

### Introduction

Brain is the organ of body which controls all other organs. Brain disorders may present initially or solely with psychiatric signs and symptoms. The possibility of reversible nature of few brain disorders have led to the use of brain imaging in psychiatric patients. Disorders of the central nervous system resulting from head trauma, hemorrhage inside the cranium, tumors, aneurysms, and seizures, etc., may initially manifest themselves with psychiatric symptoms, such as disorientation, hallucinations, altered thought process and catatonia. Hence, it is not surprising that a psychiatrist may be the first physician to evaluate patients with occult neurological disorders<sup>[1]</sup>.

There is dual opinion in utilizing CT scan in psychic patients. Few say that it should be used as a screening procedure for all patients and some say that this should be used in only those patients who present with clear focal neurological abnormalities on examination<sup>[2]</sup>. In the absence of clear-cut neurological signs upon these examinations, computed axial tomography (CT) scan of the brain is considered to be a reliable means of detecting neurological diseases. The CT scan, a more advanced X-ray, can take cross-sectional and three-dimensional images of the brain. It also determines tissue densities to locate the focal area of structural disease. It is of special significance in psychiatry for a number of reasons. Being a non-invasive technique, it causes no pain and patients therefore do not object to the procedure<sup>[3]</sup>. The present study was conducted to evaluate role of CT in psychic patients.

### Materials & Methods

This study was conducted in the department of Radio-diagnosis. It comprised of 82 psychic patients of both genders with some psychiatric disorders. The study protocol was approved from institutional ethical committee. All were informed and written consent was obtained.

Data such as name, age, gender etc. was recorded. A detailed case history, symptoms, significant past medical history, presence or absence of confusion, abnormal neurological signs and previous history of head injury or seizure were also recorded. All underwent CT scan and all CT images were read by trained radiologist for the presence, absence of brain abnormalities. The results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

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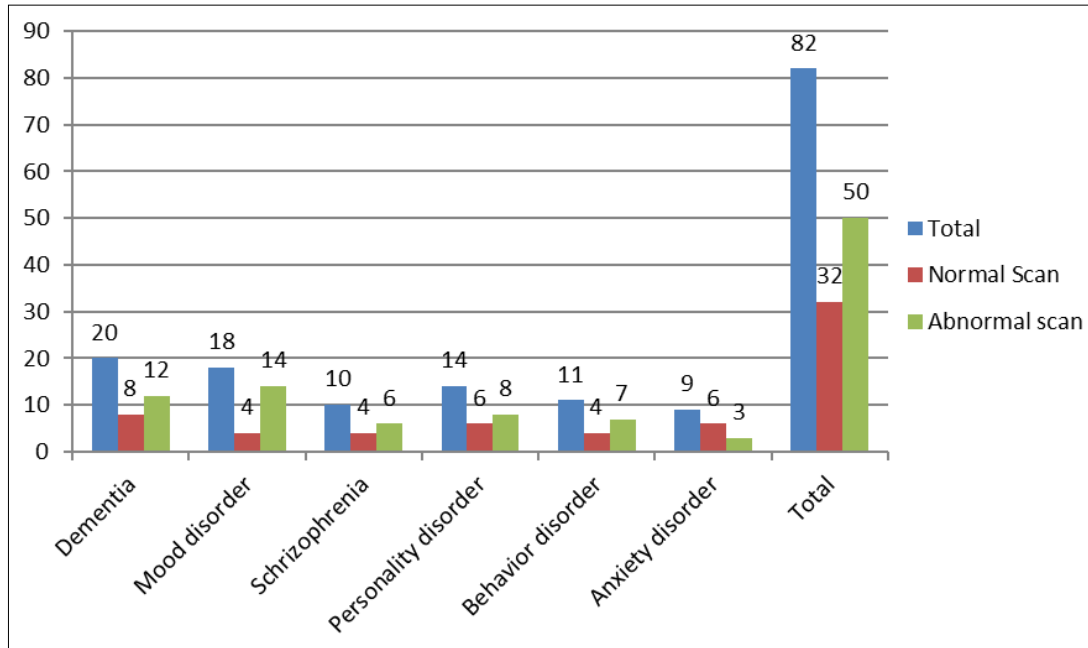
**Results**

**Table 1:** Distribution of patients

| Total - 82 |      |        |
|------------|------|--------|
| Gender     | Male | Female |
| Number     | 48   | 34     |

Table I shows that out of 82 patients, males were 48 and females were 34.

Graph I shows that among various psychic disorders with abnormal scans were dementia (12), mood disorders (14), schrizophrenia (6), personality disorder (8), behavior disorder (7) and anxiety disorder (3). Mood disorder showed maximum number of abnormal scan among all disorders.



**Graph 1:** Number of normal and abnormal scan

**Table 2:** Frequency of abnormal brain scan in different psychiatric diagnostic categories

| Diagnosis            | Frontal atrophy | GBA | Brain ischemia | GBA & I | Infarct | GBA & Infarct |
|----------------------|-----------------|-----|----------------|---------|---------|---------------|
| Dementia             | 1               | 8   | 1              | 1       | 1       | 0             |
| Mood disorder        | 1               | 10  | 0              | 1       | 1       | 1             |
| Schrizophrenia       | 0               | 1   | 2              | 1       | 1       | 1             |
| Personality disorder | 1               | 3   | 1              | 2       | 0       | 1             |
| Behavior disorder    | 1               | 2   | 1              | 2       | 1       | 0             |
| Anxiety disorder     | 1               | 2   | 0              | 0       | 0       | 0             |

Table II shows that the most common abnormal scan in psychiatric disorder patients was generalized brain atrophy (GBA) (26) followed by generalized brain atrophy and ischemia (7).

**Discussion**

Different imaging modalities have been established such as MRI, ultrasound, CT scan, PET scan, SPECT scan etc. CT modality is a cheap, quick, sensitive imaging technique for the majority of brain lesions. CT may be used to detect incidental findings [4]. Other new more sensitive brain imaging techniques such as magnetic resonance imaging (MRI), positron emission tomography (PET) and single photon emission computed tomography (SPECT) are available. But these techniques are relatively costly, less easy to perform and are not easily available. CT scan has additional advantage that it is quite common, easily available and cheap as compare to other expensive modalities [5]. The present study was conducted to evaluate role of CT in psychic patients.

In this study, out of 82 patients, males were 48 and females were 34. We found that among various psychic disorders with abnormal scans were dementia (12), mood disorders

(14), schrizophrenia (6), personality disorder (8), behavior disorder (7) and anxiety disorder (3). Mood disorder showed maximum number of abnormal scan among all disorders.

Different authors have reported different range from 6.8 to 53%.

Condefer *et al.* [6] found that 120 patients were included in the study. Their ages ranged between 33 and 96 years (mean 70.5 years). Fifty-two patients were male. In 85 per cent of patients, the scans were ordered by psychiatric teams to rule out structural lesions because of abnormal signs and/or limited symptoms. The duration of psychiatric symptoms ranged between one month and 24 years. Most patients referred for CT scans had dementia as their primary diagnosis. All brain scans were normal for anxiety disorders, and other psychiatric conditions showed variable numbers of abnormal scan results. The highest percentage of abnormal scans was found in patients with dementia (87 per cent). Among a total of 102 patients, 37 (36 per cent) scans were normal and 65 (64 per cent) showed some abnormality.

We found that most common abnormal scan in psychiatric disorder patients was generalized brain atrophy (GBA) (26) followed by generalized brain atrophy and ischemia (7).

Similarly, Holister <sup>[7]</sup> in his study reported that mood disorder had maximum abnormal studies.

Various indications justifying CT brain scans in psychiatric patients have been proposed. One study suggested the following as definite indications for CT brain scanning in psychiatric patients. Positive history of previous head injury, stroke or other neurological disease, abnormal neurological sign or organic mental sign such as confusion or cognitive decline and first psychotic break or personality change after 50 years of age <sup>[8]</sup>.

CT scans generally are a useful diagnostic tool if there is a localized lesion in the brain, but psychiatric patients do not have an anatomic lesion as the basis of their illness. Also, the presence of an anatomical lesion does not always infer organic brain disease. For example, mild atrophy of the brain often may not indicate psychiatric pathology. Conversely, a person with a normal scan may be suffering from a clinically clear-cut organic brain disease. Hence, the clinical findings should dictate the use of CT scans as a corroborative investigation either to clarify or to complement them when warranted but not to rule out a diagnosis <sup>[9]</sup>.

### Conclusion

Authors suggested that CT scan is useful aid in psychiatric patients. The information provide by CT scan helps in diagnosis of lesion in brain.

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