Prevalence of Extrapyramidal Side Effects in Patients on Antipsychotics Drugs at a Tertiary Care Center5

Ramprasad Santhanakrishna Kirgaval1*, Srinivas Revanakar2 and Chidanand Srinrangapattna2
1Department of Psychiatry, Shimoga Institute of Medical Sciences, Shimoga, Karnataka, India
2Department of Pharmacology, Shimoga Institute of Medical Sciences, Shimoga, Karnataka, India

Abstract

Background: Antipsychotic drugs are associated with adverse effects that can lead to poor medication adherence, stigma, distress and impaired quality of life. Among the various side effects of anti-psychotics extra pyramidal symptoms constitute one of the important side effects interfering with the compliance of the patients towards medication.

Objective: Evaluation of extrapyramidal side effects by AIMS in patients who are on antipsychotics.

Results: The extrapyramidal symptoms were more commonly seen in males (62.85%), the age of incidence of maximum was seen among the patients on the Risperidone (45.7%), Involvement of the extremities was common (42.85%) and 64.28% of individuals had moderate severity and 54.28% of individuals were aware of the extrapyramidal symptoms which provided mild distress.

Conclusion: Extrapyramidal symptoms are one of the commonest side effect of the antipsychotics interfering with compliance of the patients towards adherence to medications, thereby decreasing the efficacy.

Keywords: Extrapyramidal symptoms; Compliance; Antipsychotics; AIMS.

Introduction

Psychosis is the most severe psychiatric disorder, in which there is marked impairment of behavior, serious inability to think coherently, comprehend and lack of insight. Positive symptoms include hallucinations, delusions and experiences that are not characteristic of normal mental life. Negative symptoms represent deficits in normal functions such as blunted affect, asocial behavior and diminished motivation. Symptoms of impaired cognition include deficits in working memory, processing speed and social norms [1].

The mesolimbic pathway being associated with the positive symptoms and mesocortical pathway associated with negative and cognitive symptoms [2]. Dopamine role in the causation of psychosis is complex. The positive symptoms are due to over activity in the mesolimbic dopaminergic pathway activating D2 receptors whereas negative symptoms may result from decreased activity in the mesocortical dopaminergic pathway where D1 receptors dominate [3]. Glutamate also has a role in the etiology of psychosis; NMDA antagonist such as phencyclidine, dizocilpine can produce both positive and negative symptoms in contrast to amphetamine which produces only positive symptoms. Glutamnergic and GABAergic neurons play a complex role in controlling the neuronal activity in the mesolimbic and mesocortical pathway.

NMDA receptors hypofunction will reduce the level of activity in the mesocortical dopaminergic neurons which results in the negative symptoms. This enhances the dopaminergic activity in the mesolimbic pathway. In this pathway NMDA receptors are located on the GABAnergic neurons. Thus it results in reduced GABAnergic inhibition of the mesolimbic neurons and result in the enhanced dopamine release in the limbic area resulting in the production of positive symptoms [4].The term neuroleptics refers to typical antipsychotics [5]. The first antipsychotic chlorpromazine was introduced in 1952 [6]. They act through D2 receptor blockade. These typical antipsychotics chlorpromazine, haloperidol or fluphenazine are effective in relieving positive symptom of the psychosis but have some serious limitations such as lack of efficacy against negative symptoms and adverse effects like extrapyramidal symptoms [7]. The inhibitory effects of dopaminergic neurons are normally balanced by the excitatory actions of cholinergic neurons in the striatum. Blocking dopamine receptors alters this balance, causing a relative excess of cholinergic influence, which results in extrapyramidal motor effects. The appearance of the movement disorders is generally time and dose dependent [8].

Advances in the treatment have emerged from discovery of newer antipsychotics also called as second generation antipsychotics rather than their therapeutic effects [11]. Antagonism of dopaminergic (D2) receptors is involved not only in antipsychotic effects,
but also in causing extra pyramidal symptoms. Studies with positron emission tomography showed antagonism of 60-70% of dopamine (D₂) receptors is required for antipsychotics to be effective and 75-80% of dopamine(D₂) receptor blockade leads to the occurrence of acute extra pyramidal symptoms [12]. The use of second generation antipsychotics clozapine is associated with a lower risk of movement disorders when compared to the use of first generation antipsychotics. Goldstein pointed out that long standing use of clozapine was not associated with increased occurrence of extra pyramidal symptoms [13]. There are few comparable data available for assessing the risks carried by atypical antipsychotics for the induction of extra pyramidal symptoms. The order causing extra pyramidal symptoms according to Tarsy is clozapine < quetiapine < olanzapine [14].

Dystonia are characterized by intermittent or sustained muscle action. Movements vary from fleeting disturbance to maintained abnormal postures [15]. It may occur in 25% to 40% of patients receiving typical antipsychotics. Younger adults and children are more commonly affected. Dystonia occurs after years of use of antipsychotics, but may also occur after a significantly shorter exposure to antipsychotic therapy. Dystonia is typically focal, but it can also affect several muscle groups. It manifests in the cranial, pharyngeal, cervical and axial muscles leading to oculogyric crisis, stiff jaw, tongue protrusion, torticollis, laryngeal dysfunction [27]. The use of second generation antipsychotics is associated with a lower risk of movement disorders when compared to the use of typical antipsychotics [21]. Akathisia may persist for the duration of antipsychotics, which is less than 20% to 52% with typical antipsychotics [21]. Akathisia may persist for the duration of antipsychotic therapy and usually ceases after the discontinuation of antipsychotics [22].

Drug induced Parkinsonism is the most common especially in elderly patients. The duration between the start of the antipsychotic drugs and onset of the symptoms are variable which may range from few days to few months. It is characterized by the triad of bradykinesia, muscle rigidity and tremor. Postural tremor is more common than resting tremor. Tremor of the lips and perioral muscles can be observed, which is called as “rabbit syndrome”. In patients who have used antipsychotics, the prevalence is about 15%. Parkinsonism is considered as a reversible condition usually lasts up to 4 months. Risk factors for occurrence of tardive dyskinesia include elderly patients as well as female patients with brain damage, dementia, mood disorders, increased duration of antipsychotic therapy, and use of anticholinergic drugs, antiparkinsonism drugs and previous occurrence of extra pyramidal symptoms [25].

Abnormal involuntary movement scale is used by physicians for detecting and monitoring abnormal movements associated with tardive dyskinesia which occurs on treating the patients on antipsychotic medications. It rates the severity of abnormal movements from 0 to 4. It is a valuable tool for clinicians who are monitoring the effects of long term treatment with neuroleptic medications and also for researchers studying the effects of these drugs. The abnormal involuntary movement scale test is given every three to six months to monitor the patient for the development of tardive dyskinesia. Usually tardive dyskinesia develops three months after the initiation of antipsychotic drugs, but in elderly it can occur early within one month after the initiation of the treatment [26].

The neuroleptic malignant syndrome is one of the life threatening disorders occurring in patients who are extremely sensitive to the extra pyramidal side effects of antipsychotics. The initial symptom is marked rigidity, fever, changes in the mental status and the autonomic dysfunction [27].

### Materials and Methods

The present study was conducted in a tertiary care Mc Gann district hospital teaching hospital, Shivamogga Institute of Medical Sciences, among the patients attending the psychiatry outpatient department. The study was conducted for duration of one year. The study involved the assessment of the extrapyramidal symptoms caused by the antipsychotic medications. "Abnormal involuntary movement scale (AIMS, was used to assess the extrapyramidal symptoms. The different types of the extrapyramidal symptoms, their severity and the awareness of these symptoms by the patient was assessed.

### Inclusion criteria

1. Patients diagnosed with psychosis and being treated.
2. Patients diagnosed with depressive psychosis and being treated.
3. Patients diagnosed with bipolar disorder and being treated.

### Exclusion criteria

1. Newly diagnosed psychiatric patients.
2. Psychotic patients not compliance with the medication.
3. Patients not diagnosed with psychosis.

Ethical considerations

1. The study is approved by Institutional Ethical Committee.
2. Informed consent by the patient are their caregiver was procured before administering AIMS.

Results and Discussion

The present study involved total number of seventy patients on antipsychotics diagnosed with the extrapyramidal symptoms.

The present study was conducted among the patients on antipsychotics diagnosed with the extrapyramidal symptoms. The study involved total number of seventy patients among which 44(62.85%) of patients were male and 26 (37.14%) of patients were female. In a similar study conducted by Ayehu et al. males were 67.21% and the females were 32.8%.

The extrapyramidal symptoms were seen more common in the individuals of the age group 30-39 years with 34.28% followed by 40-49 years with 25.71%, 20-29 years with 18.57% and in patients above 50 years with 20%.The extrapyramidal symptoms were seen least in the age group of 10-19 years. Similarly in the study conducted by the Ayehu et al. the extrapyramidal symptoms were seen most commonly in the age group of 18-29 years followed by the age group above 35 years with 35.9% and in the age group 25-34% with 20.3%.

In the present study 72.85% of patients were diagnosed with the psychosis, 15.71% with the manic depression and 11.42% with the bipolar depression.

Tab. Resperidone was most commonly prescribed among 45.71% of patients, followed by the combination of the Tab. Resperidone with Tab. Fluphenazine in 25.71% patients, Tab. Aripiprazole in 17.14%, Tab. Lithium in 12.85%, Tab. Resperidone with Tab. Chlorpromazine with 5.7% and Tab. Trifluphenazine and Tab. Chlorpromazine had the equal incidence of the extrapyramidal symptoms with 4.28%.

Among the extrapyramidal symptoms the involvement of the extremities were the most common in 42.5% individuals, followed by the Trunk in 35.7% and facial and the oral involvement in 21.42%.

The severity of the extrapyramidal symptoms was moderate in the 45% individuals, mild in the 25.71% individuals and severe in the 10% individuals.

In the present study 54.28% of the patients were aware of the extra pyramidal symptoms which produced mild distress, followed by the 41.42% patients in whom the symptoms were aware and it produced moderate distress, awareness with no distress was seen in the 2.85% individuals and awareness with severe distress was seen in the 1.42% individuals.

Further studies are required to delineate the influence of the dose of antipsychotics in the occurrence of EPS (Tables 1-7 and Figures 1-7).
Conclusion

Extrapyramidal motor symptoms are one of the major side effects of the antipsychotic medications. It has a great influence on the compliance of the patients towards the antipsychotic medications leading to failure of the treatment. Hence the extrapyramidal side effects to be properly diagnosed and appropriately treated so that there is increased compliance and efficacy of the medications.

References

12. Peluso ML, Lewis SL, Barnes TRE, Jones PB (2010) Extrapyramidal motor...

OMICS International: Open Access Publication Benefits & Features

Unique features:
• Increased global visibility of articles through worldwide distribution and indexing
• Showcasing recent research output in a timely and updated manner
• Special issues on the current trends of scientific research

Special features:
• 700+ Open Access Journals
• 50,000+ editorial team
• Rapid review process
• Quality and quick editorial, review and publication processing
• Indexing at major indexing services
• Sharing Option: Social Networking Enabled
• Authors, Reviewers and Editors rewarded with online Scientific Credits
• Better discount for your subsequent articles

Submit your manuscript at: http://www.omicsonline.org/submission