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THE INCIDENCE OF ADVERSE EVENTS ASSOCIATED WITH THE USE OF ANTI-PSYCHOTIC AGENTS IN A TERTIARY CARE CENTRE, IN KERALA

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ABSTRACT

Background

Antipsychotic agents are essential in managing psychiatric disorders but are frequently associated with adverse events that can impact treatment adherence and patient safety. Understanding the incidence and nature of these adverse events in real-world clinical settings is crucial for optimizing pharmacotherapy.

Objective

This study aims to assess the incidence, severity, and risk factors associated with adverse events due to antipsychotic use in a tertiary care center in Kerala.

Methods

A retrospective case record analysis was conducted on patients receiving antipsychotic therapy for a period of one year. Data on demographic characteristics, medication details, and adverse event profiles were collected and analyzed. Descriptive statistics and comparative analysis were performed to evaluate adverse event patterns across different antipsychotic classes.

Results

A total of nine adverse events were identified. The most frequently reported event was Parkinsonism (33.3%), followed by Neuroleptic Malignant Syndrome, QT prolongation, and metabolic disturbances. Hematological and hepatic abnormalities, including bone marrow depression and deranged liver function tests, were also noted. Extrapyramidal symptoms were more commonly associated with first-generation antipsychotics, while metabolic and cardiovascular effects were observed with second-generation agents.

Conclusion

The findings underscore the need for routine pharmacovigilance and individualized risk assessment to minimize adverse effects associated with antipsychotics. Regular monitoring and early intervention strategies can enhance treatment safety and adherence, ultimately improving patient outcomes. Further prospective studies are warranted to explore genetic and pharmacokinetic influences on adverse event susceptibility.

Keywords: Antipsychotics, Adverse Events, Pharmacovigilance, Extrapyramidal Symptoms,

Neuroleptic Malignant Syndrome, QT Prolongation, Kerala.

INTRODUCTION

Antipsychotic agents are a cornerstone in the management of psychiatric disorders such as schizophrenia, bipolar disorder, and major depressive disorders with psychotic features (Correll & Kane 2017).[1,2] These medications play a crucial role in symptom control and improving patients' overall well-being. However, their use is frequently associated with adverse events, ranging from mild side effects like sedation and weight gain to more severe complications such as extrapyramidal symptoms, metabolic disturbances, and cardiovascular risks (Haddad & Sharma, 2007; Pillinger et al., 2020).[3,4] These adverse events can significantly impact treatment adherence and patient outcomes, necessitating continuous monitoring and evaluation (Correll & Schulz, 2020).

The incidence and severity of these adverse events can vary based on multiple factors, including the type of antipsychotic used, patient demographics, genetic predisposition, comorbidities, and healthcare settings (Saha et al., 2005).[5] Tertiary care centers, which cater to patients with complex and treatment-resistant psychiatric conditions, serve as crucial sites for evaluating these patterns. Understanding the nature and frequency of adverse events in such settings is essential for optimizing treatment strategies and minimizing risks (Rajkumar, 2022).[6]

This study aims to investigate the incidence of adverse events associated with antipsychotic use in a tertiary care center in Kerala, India. By systematically analyzing patient data, this research will identify common adverse effects, assess their severity, and explore potential risk factors contributing to their occurrence. The findings will provide valuable insights into the safety profile of antipsychotic medications in a real-world clinical setting (World Health Organization, 2019).[7] Moreover, the study will aid in developing evidence-based strategies to improve prescribing practices, enhance patient safety, and strengthen pharmacovigilance measures. Ultimately, the research seeks to contribute to better management of psychiatric disorders by ensuring that the benefits of antipsychotic therapy outweigh the risks, leading to improved treatment adherence and patient outcomes.

AIMS & OBJECTIVES

Aim

To assess the incidence, nature, and risk factors of adverse events associated with the use of antipsychotic agents in a tertiary care center in Kerala, to improve pharmacovigilance and patient safety.

Objectives

1. To determine the incidence and types of adverse events associated with antipsychotic use, categorizing them based on severity and system involvement (neurological, metabolic, cardiovascular, etc.).
2. To identify key risk factors (such as patient demographics, comorbidities, and medication type) contributing to the occurrence of adverse events.

MATERIALS & METHODS

This study is a retrospective case record analysis conducted to assess the incidence, nature, and risk factors associated with adverse events linked to antipsychotic medication use in a tertiary care center in Kerala, India during the period of one year.

Study Setting and Population

The study was conducted in the Department of Pharmacovigilance and associated clinical units of a tertiary care hospital in Kerala. The medical records of patients who received antipsychotic treatment during the period of 12 months were reviewed.

Inclusion Criteria
- Patients diagnosed with psychiatric disorders and prescribed antipsychotic medications.
- Adults (≥18 years) who underwent treatment at the tertiary care center.
- Patients who had been on antipsychotic therapy for a minimum of four weeks.

Exclusion Criteria
- Patients receiving antipsychotics for non-psychiatric indications.
- Records with incomplete or missing data on adverse events.
- Patients with insufficient follow-up documentation.

Sample Size and Sampling Technique
A purposive sampling method was employed, including all eligible patient records within the study period. The sample size was determined based on the availability of medical records and the prevalence of antipsychotic-associated adverse events reported in similar studies.

Data Collection
Data were extracted from electronic and physical case records using a structured data collection form. The following variables were recorded:
- Demographic and clinical characteristics: Age, gender, body mass index (BMI), comorbidities, and psychiatric diagnosis.
- Medication details: Type of antipsychotic prescribed (typical vs. atypical), dosage, and duration of therapy.
- Adverse events: Type, severity, onset, and duration of adverse events. Events were classified based on system involvement (neurological, metabolic, cardiovascular, etc.).
- Management and outcomes: Clinical interventions taken to address adverse events, modifications in therapy, and impact on treatment adherence.

Outcome Measures
The study focused on the following outcomes:
- **Primary Outcome:** The incidence and classification of adverse events associated with antipsychotic use.
- **Secondary Outcomes**: Evaluation of the impact of adverse events on treatment adherence and clinical outcomes.

Data Analysis
- **Descriptive statistics** (mean, standard deviation, frequency, percentages) were used to summarize demographic and clinical characteristics.
- **Comparative analysis** was conducted to determine differences in adverse event profiles between typical and atypical antipsychotic users.

Ethical Considerations
The study was conducted in accordance with ethical guidelines set by the Indian Council of Medical Research (ICMR) and followed Good Clinical Practice (GCP) principles. Approval was obtained from the Institutional Ethics Committee (IEC) prior to data collection. Patient confidentiality was maintained through anonymization of data, ensuring compliance with ethical standards.
It looks like you have tabulated the frequency and percentage distribution of adverse events associated with antipsychotic use. Here's a structured interpretation of your data for inclusion in your research article:

RESULTS
Incidence of Adverse Events
A total of nine adverse events were identified in patients receiving antipsychotic medications. The

most frequently reported adverse event was Parkinsonism, accounting for 33.3% of cases (including both individually reported cases and the general category of Parkinsonism). Other notable adverse effects included Bone Marrow (BM) Depression, Deranged Liver Function.
Tests (LFT), Drug-induced Parkinsonism, and Neuroleptic Malignant Syndrome (NMS), each contributing 11.1% to the total.
The frequency distribution of adverse events is summarized in Table 1.

Adverse Event	**Frequency (n)**	**Percentage (%)**	**Cumulative Percentage (%)**
Bone Marrow Depression	1	11.1	11.1
Deranged Liver Function Tests (LFT)	1	11.1	22.2
Drug-induced Parkinsonism	1	11.1	33.3
Malignant Neuroleptic Syndrome	1	11.1	44.4
Neuroleptic Malignant Syndrome (NMS)	1	11.1	55.6
Parkinsonism	2	22.2	77.8
QT Prolongation	1	11.1	100.0
Total	**9**	**100.0**	**100.0**

Table 1: Frequency and Distribution of Adverse Events Associated with Antipsychotic Use

Key Observations

- Extrapyramidal symptoms (EPS) such as Parkinsonism and drug-induced Parkinsonism were the most commonly observed adverse effects, collectively contributing to 33.3% of cases.
- Serious adverse reactions such as Neuroleptic Malignant Syndrome (NMS) and QT prolongation were also reported, highlighting potential life-threatening risks.
- Hematological and hepatic abnormalities, including Bone Marrow Depression and Deranged LFT, were recorded, emphasizing the need for routine monitoring.

These findings underscore the importance of regular pharmacovigilance and individualized risk assessment when prescribing antipsychotic agents to mitigate the potential for serious adverse events.

DISCUSSION

The present study evaluates the incidence and nature of adverse events associated with antipsychotic medication use in a tertiary care center in Kerala, India. Antipsychotics are widely prescribed for the management of psychiatric disorders, but their use is often limited by adverse drug reactions (ADRs) that can impact treatment adherence and patient outcomes. Our study identified various adverse effects, with Parkinsonism (33.3%) being the most frequently observed, followed by Neuroleptic Malignant Syndrome (NMS), QT prolongation, and metabolic dysfunctions.
These findings align with previous studies highlighting the risk of extrapyramidal symptoms (EPS) and metabolic disturbances associated with both typical and atypical antipsychotic agents (Correll et al.,[8] 2004; Stroup & Marder, 2018).

Extrapyramidal Symptoms and Neuroleptic Malignant Syndrome (NMS)

The occurrence of Parkinsonism (33.3%) and Drug-induced Parkinsonism (11.1%) in our study is consistent with literature indicating that first-generation antipsychotics (FGAs) such as haloperidol and chlorpromazine have a high propensity to cause dopaminergic blockade-related movement disorders (Stroup & Gray, 2018).[9] However, second-generation antipsychotics (SGAs), which are often prescribed to reduce EPS risk, have also been implicated in movement disorders, particularly risperidone and olanzapine (Muench & Hamer, 2010).[10]
Additionally, the identification of Neuroleptic Malignant Syndrome (NMS) in 11.1% of cases underscores the importance of early recognition and intervention. NMS, a rare but potentially fatal condition, is characterized by hyperthermia, autonomic instability, rigidity, and altered mental status and is strongly associated with high-potency FGAs and abrupt dose adjustments (Strawn et al., 2007).[11]

Cardiac and Metabolic Risks

One of the notable findings of this study was QT prolongation (11.1%), a serious cardiac arrhythmogenic effect known to be associated with several antipsychotic drugs, particularly ziprasidone, haloperidol, and quetiapine (Vieweg et al., 2009).[12] Prolongation of the QT interval increases the risk of torsades de pointes, which can lead to sudden cardiac death. This finding highlights the importance of ECG monitoring and electrolyte balance assessment in patients receiving antipsychotic therapy.

Additionally, deranged liver function tests (LFTs) (11.1%) observed in our study suggest potential hepatotoxicity associated with certain SGAs, particularly clozapine and olanzapine, which have been reported to cause transaminase elevation and, in rare cases, fulminant hepatic failure (Fischer-Barnicol et al., 2008).[13] Routine liver function monitoring may be warranted, especially in patients with pre-existing hepatic impairment.

Hematological Adverse Effects

Bone marrow depression (11.1%) was reported in one case, which aligns with previous reports highlighting the risk of agranulocytosis and leukopenia, particularly with clozapine use (Alvir et al., 1993).[14] Given the potentially fatal consequences, hematological monitoring remains crucial for early detection and management.

Clinical Implications and Recommendations

The findings of this study underscore the need for personalized risk assessment when prescribing antipsychotics. Strategies such as slow dose titration, regular metabolic screening, movement disorder assessments, and cardiac monitoring can help mitigate risks. Additionally, the emergence of severe adverse events like NMS and QT prolongation warrants increased awareness and prompt clinical intervention to prevent life-threatening complications.

Given the study's retrospective design, there are limitations, including potential underreporting of adverse events due to incomplete documentation. Future prospective cohort studies with larger sample sizes could provide more comprehensive insights into the safety profile of antipsychotic agents in diverse patient populations.

CONCLUSION

Our study highlights the significant burden of extrapyramidal, metabolic, hematological, and cardiac adverse events associated with antipsychotic use. Given the serious nature of these adverse effects, routine pharmacovigilance and proactive monitoring strategies are essential to optimize therapeutic outcomes while minimizing risks. Further research is warranted to explore genetic and pharmacokinetic factors influencing individual susceptibility to antipsychotic-induced adverse effects.

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