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ROLE OF CLINICAL PAHRMACIST DURING WARD ROUND PARTICIPATION IN TB AND CHEST WARD

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ABSTARCT

Drug interactions, medication errors, adverse drug reactions can potentially affect the success of pharmacotherapy. It is concerned with promotion of safe, effective and economical drug therapy. The prospective interventional study was conducted in TBCD department. We collected total 50cases, in which male patients were 28 (66%) and female were 22 (44%). Study revealed 24% of medication errors, 90% of drug interactions, 6% of adverse drug reactions. Clinical pharmacist has to play a key role in managing the therapy of patients through ward round participation.

KEYWORDS: Adverse drug reactions, Drug interactions, Medication errors, clinical pharmacist, Tuberculosis, Pharmacotherapy.

INTRODUCTION

Due to complex pathology of patients and immensemedicines used to treat critically ill patients of TB and Chest ward may not only have positive effects and also associated with other drug related problems in hospitalized patients. It considers all issues (drug interactions, medication errors, adverse drug reactions) that can potentially affect the success of pharmacotherapy in given patients. It is concerned with promotion of safe, effective and economical drug therapy. It includes both clinical pharmacy and other patient care related activities performed by pharmacists in the hospital and community settings.[1] Clinical pharmacist provides services through ward round participation and chart review services includes drug interaction services, drug therapy monitoring, patient counselling, ADR reporting and monitoring medication errors.[1] Recent survey, states that clinical pharmacist

plays major role in enhancement of patient's quality of life by decreasing pharmacotherapy problems. They are providing health education to patients for promoting self care.[2] In India, shortage of clinicians over worked physicians limits the quality healthcare and counseling to the patients may leads health care problems. And also pharmacist can control the economic burden, familial and social impact on patient to provide cost-effective therapy.[2] The main aim of the study is to monitor medication errors(MEs), drug interactions (DIs), Adverse Drug Reactions (ADRs) in TBCD department.

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve patients' quality of life. Any suboptimum therapy leads to medication error.A number of published reports have confirmed the adverse impact of these errors on patients' health and health care.[3] The use of two or more drugs has the potential risk of a drug–drug interaction (D–DI). D–DIs can contribute to drug induced illnesses that may result in hospitalisations and deaths.[4] Adverse Drug Reactions (ADRs) are a major problem worldwide and are one of the leading causes of mortality and morbidity in health care facilities worldwide. Adverse drug reactions (ADRs) are recognized as an important cause of hospital admissions, with a proportion ranging from 0.9–7.9%. They also constitute a significant economic burden.[5]

METHODOLOGY

The prospective interventional study was conducted in TBCD department at a 1000 bedded multispecialty institution, SVRRGG hospital by obtaining ethical approval from the Sri Padmavathi School of pharmacy between February to march 2016. The sample size of study was 50 inpatients. Data collected from both male and female inpatients during ward round participation. In our study we included Inpatients of TBCD who were aged above 20years with willingnessand excluded patients who were in emergency department, mortality cases and whose data was not available and their details were collected in the specially designedproforma which includes demographic details like age, gender, occupation, religion, disease details, past history, present illness, allergic history, social habbits, laboratory findings and drug chart. The drug chart was assessed for MEs, DIs and ADRs. MEs were assessed by comparing drug chart with the standard treatment guidelines and were categorized based on tertiary reference. DIs were identified and categorized with the aid of MICROMEDIX software solutions, which is the most trusted drug information provider.

ADRs were identified and evaluated by utilizing the Naranjo probability scale. As mentioned the materials of study includes.

RESULTS

Inour study we collected total 50cases, in which male patients were 28 (66%) and femalewere 22 (44%). Number of cases with neither of drug related problems was found to be 5(10%), where female were 6% (3) and male were 4% (2). Medication errors reported were 14(28%) out of 50 cases as shown in table 3. All these medication errors were discussed with physicians, nurses and patients and thus prevented further harmful consequences. Drug interactions observed were 84 out of which major -24 (31%), moderate-33(42.85%) and minor 30(18.96%). All these drug interactions were reported to physicians and appropriate measures were taken such as frequency alteration, discontinuation of drug and monitoring of specific parameters as necessary. Most commonly observed major drug interactions were between Furosemide with Theophylline and Clopidogrel with Aspirin, as shown in table 4. Adverse drug reactions were observed in only 3 cases(6%) out of 50 and drugs involved were AMIKACIN and FUROSEMIDE i.e.Amikacin induced neuromuscular weakness with score 6(probable ADR) and Furosemide weakness with score 5(probable ADR).

Table 1: No.of cases without DRPs.

Gender	No.of Patients
Male	2
Female	3
Total	5

Table 2: Observed Medication Errors.

Type of medication errors	Number of prescriptions	Percent
Omission error	3	6 %
Untreated indication	8	16 %
Dose error	1	2 %
TOTAL	**12**	**24%**

Table 3: Observed Drug Interactions.

Drug interaction	Number of interactions	Percent
Major	24	48 %
Moderate	33	66 %
Minor	33	66 %

Table 4: Major Drug interactions and interventions implemented.

Drugs Involved	Frequency	Effect	Intervention
Fluconazole + Metronidazole	1	May result in increased risk of QT – interval prolongation and arrhythmias	Continuous monitoring of ECG
Fluconazole + Deriphylline	1	May result in increased exposure to Theophylline	Continuous monitoring of Theophylline
Paracetamol + Isoniazide	1	May result in increased risk of hepatotoxicity	Discontinue PARACETAMOL from therapy
Clopidogrel + Amlodipine	3	May result in decreased antiplatelet effect and increased risk of hemorrhagic events	Continuous monitoring of bleeding & clotting
Furosemide + Metronidazole	1	May result in increased risk of QT – interval prolongation and arrhythmias	Consider close ECG monitoring
Furosemide + Deriphylline	4	May result in altered Theophylline concentrations	Consider dose alterations of deriphylline
Amikacin + Furosemide	2	May result in increased Amikacin plasma and tissue concentrations and additive ototoxicity or nephrotoxicity	Consider close monitoring for AMIKACN serum concentrations & monitor for symptoms of AMIKACIN toxicity
Metronidazole + Ondansetron	3	May result in increased risk of QT – interval prolongation and arrhythmias	Consider continuous monitoring of ECG
Fluconazole + Ondanetron	1	May result in increased risk of QT – interval prolongation	Consider continuous monitoring of ECG
Att + Efavirenz	1	May result in decreased serum Efavirenz concentrations	Consider alteration of dosage schedule & dose
Metronidazole + Levofloxacin	2	May result in increased risk of QT – interval prolongation and arrhythmias	Consider continuous monitoring of ECG
Aspirin + Clopidogrel	1	May result in increased risk of bleeding	Consider continuous monitoring of Blood counts
Insulin + Levofloxacin	1	May result in changes in blood glucose and increased risk of hypoglycemia or hyperglycemia	Consider continuous monitoring of glucose

Table 5: Gender wise of all observed medication related problems.

S.No	Prescription criteria	Out of 45 cases with DRPs	
		Male	Female
1	MEs	6 (50%)	6 (50%)
2	DIs	46 (51%)	44 (48%)
3	ADRs	1 (33.33%)	2 (66.66%)

DISCUSSION

Medication error is any preventable event that may cause or lead to inappropriate medicationuse or patient harm while the medication is in the control of the health care professional, patient, or consumer.[6] Drug-drug interactions occur when a drug interacts with another drug. This can alter the way one or both of the drugs act in the body, or cause unexpected side effects. The drugs involved can be prescription medications, over-the-counter medicines and even vitamins and herbal products. ADRs are any untoward medical occurrence that may present during treatment with a drug but does not necessarily have a causal relationship.[7] Most commonly observed diseases during the data collection period were pulmonary TB. The main risk factor for TB in most of these cases was immunodeficiency. Asthma and pneumonia were the next most observed cases, which may be due to seasonal variations. Pneumonia patients were treated with amoxicillin and other antibiotics according to national guidelines. COPD, Asthma and other pulmonary diseases were treated appropriately according to suitable guidelines. Among these, viral pneumonia is the exception for which appropriate therapy was not provided.Only 10% of cases were not exposed to any drug related problems, indicating that more intensive monitoring is necessary to prevent further unavoidable consequences in patient's health. Sayali POTE et al. reported 51.64% of mediaction errors.[3] Compared to their study, 24% of medication errors were observed in this study. Omission error was highest with 16% compared to 12.1% of incorrect dose error as reported by Sayali POTE et al. All 24% of patients had atleast 1 medication error compared to 34% reported by Sayali POTE et al. This is because of small sample size of the current study.

In our study, prevalence of DDIs of major severity was 48 % compared to 13% in Fokter et al. (2010) study and 12.2% in Egger et al. (2003) report. These results indicate that drug interactions in TBCD ward are as important as in other wards.Identification of levels for each DI is very helpful in assessing its potential clinical importance and for appropriate management. For this purpose, we categorized all identified DIs into different types and the results were more compared to other studies. Average 2 drug interactions were reported in

our study, which are consistent with other studies (Egger et al. 2003; Fokter et al. 2010).[8-10] Prevalence of ADRs in our study is only 6% compared to 1.82% reported by Shanmugam Sriram et al. When these results are considered in a large group of patients, it may be consistent with previous studies (Shanmugam Sriram et al).[11] All the reported events were evaluated, after collecting adequate data from appropriate sources, as to explore the likely involvement of suspected drug in causing the reported event. In assessing the causality, concerned clinician and/or unit chief opinion was obtained. After having assessed the causal relationship betweenthe suspected drug and the adverse reaction, irrespective of their causality category, the reports were reported to the concerned physician for discontinuation of the causal drug and pharmacovigilance unit of Hospital.Small sample size is the only limitation of the study and main strength is till date there is no study on drug related problems in TBCD ward. However, clinical pharmacist is the only qualified person to monitor and prevent all types of DIs, MEs and ADRS, collectively said to be DRPs (Drug Related Problems) and has to play a vital role in all the health care settings.

CONCLUSION

This study stated the prevalence of drug related problems occurring in TBCD ward. Among all DRPs frequently observed problems were drug interactions, followed by medication errors and ADRS. Clinicalpharmacist plays a key role in managing the therapy of patients.However, there is need of clinical pharmacist in health care settings to minimize and prevent occurring of problems arisen from drug.

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