Original Research Article

Prescribing Pattern of Various Drugs in Neurology Department at Tertiary Care Hospital in Haryana

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ABSTRACT

Introduction: Neurological disorders are a major cause of morbidity, mortality and disability. These adversely affect the quality of life among all age group patients. Majority of neurological disorders include epilepsy, headache, cerebrovascular disorders with hemiparesis, neuropathic pain, Extra-pyramidal syndrome, cervical myelopathy, Parkinson's disease and tuberculoma. This study was done with aim to evaluate the prescription pattern of various drugs in different types of neurological disorders and to use the WHO / INRUD prescribing indicators to assess the rational drug prescribing.
Materials and Methods: A prospective study was carried out in patients attending the neurology OPD in PGIMS, Rohtak, Haryana. The prescription data of patients attending the neurology clinic was analysed over a period of 3 months.
Results: Epilepsy was commonest type of neurological disorder and sodium valproate was the commonest drug prescribed for its treatment followed by Phenytoin. Headache was second commonest neurological disorder for which non-steroidal anti-inflammatory drugs (NSAIDs) was commonly prescribed. For neuropathic pain, carbamazepine and pregabalin was commonly prescribed. Common adverse effects associated with various drugs were nausea, vomiting, dizziness and sedation. The overall drug prescribing performance scoring was 3.55.
Conclusion: Epilepsy was the commonest type of Neurological disorder noticed and sodium valproate was the commonest prescribed drug. There were more trends towards writing brand name of drugs rather than [recommended international non-proprietary name] r-INN but this can only increase cost of treatment. Our study revealed good Prescribing pattern as shown by WHO scale - IRUD/INRUD. Further such studies with large sample size are needed so as to guide clinicians toward rationale drug.

Key Words: anti-epileptic drugs; adjuvant drugs; Non proprietary name (Generic Name); INRUD.

INTRODUCTION

The use of medicines is known to be one of the most effective therapeutic interventions in health care today, especially when utilized responsibly. The World Health Organisation (WHO) defines rational medicines use as when a "patient receives medications appropriate to clinical needs, in doses that meet their individual requirements, for an adequate period of time and at the lowest cost to them and their family." [1,2] this is known to have medical, social and economic benefits both to the individual and the society. On the other hand, irresponsible use of medicines has been identified as a major problem in healthcare worldwide for instance, [3] WHO estimates that at least 50% of all medicines

are used irrationally. In developing countries where 20-50% of health budgets are spent on drugs and other health commodities, irrational medicines use has been documented to contribute to patient morbidity and mortality, increase individual and government spending, as well as reducing confidence in the health care system. It can take the form of self medication, misuse and underuse of drugs, polypharmacy, unnecessary use of antibiotics and injections, as well as inappropriate prescribing as per clinical guidelines. [4]

WHO and the International Network of Rational Use of Drugs (INRUD) have developed a set of drug prescribing indicators to be used as measures of prescribing performance in primary care. [4] To the best knowledge, only few studies have been carried out till date in tertiary care measuring the Index of rationale use of drugs [IRUD]. Measured values could be used as benchmarking among health care facilities and as a baseline for ongoing monitoring of the quality of drug prescribing. Increasing use of irrationale use of antimicrobials cause increasing trends towards drug resistance.[5]

MATERIALS AND METHODS
This was an observational study carried out for 3 months [April-June 2017]. The study was approved by institutional ethical committee (IEC). Written inform consent was taken. The prescription data of 160 patients was finally analysed.

Data Analysis
The patient demographic data, WHO prescribing indicators (average number of medicines prescribed per patient encounter, percentage of drugs prescribed by generic name, percentage of encounters with an antibiotic prescribed, percentage of encounters with an injection prescribed and percentage of medicines prescribed from the NEML) and pharmacological classes of medicines prescribed were analyzed.
IRUD:

Each of the five prescribing indicators has an optimal index of 1(as shown in table 1) the closer to 1 the calculated index is, the more rational prescribing is considered to be. The index of polypharmacy was measured by the percentage of non polypharmacy prescriptions. In this study, those prescriptions with three or less medicines where considered as non polypharmacy. The generic name index and essential medicine index were measured by the percentage of drugs prescribed by generic name and from the NEML respectively. The index of rational antibiotic prescribing was defined as dividing the optimal level (30%) by the percentage of prescriptions including antibiotic. The index of safety injection was calculated by dividing the optimal level (10%) by the percentage of prescriptions including the injection. The IRDP, which has a maximum value of 5, can then be calculated by adding the indices.

TABLE 1: SHOWING WHO/ INRUD- DRUG PRESCRIBING INDICATORS:

Prescribing indicators	Optimal Level (%)	Optimal Index
Percentage of non-polypharmacy prescriptions	≤ 3	1
Percentage of drugs precribed by Generics	100	1
Percentage of Prescriptions including antibiotics	30	1
Percentage of Prescriptions including injections	10	1
Percentage of drugs prescribed from NEML/ Formulary	100	1
Drug prescribing performance scoring = 0 to 5		

RESULTS
In our study, prescription data of 160 patients was analysed out of which 48 patients were male whereas 112 patients were female. (As shown in Fig I) Patients were in age group of 15 to 65 years.

A total of 656 drugs were prescribed in total 160 prescriptions. So average drugs prescribed per prescription was 4.1 drugs.

Common neurological disorders (as shown in Fig II) were epilepsy, Headache, Trigeminal neuralgia, cerebrovascular episode, Parkinson's disease, hemiparesis, Quadriparesis, Tuberculoma, hemichorea and cerebral palsy.
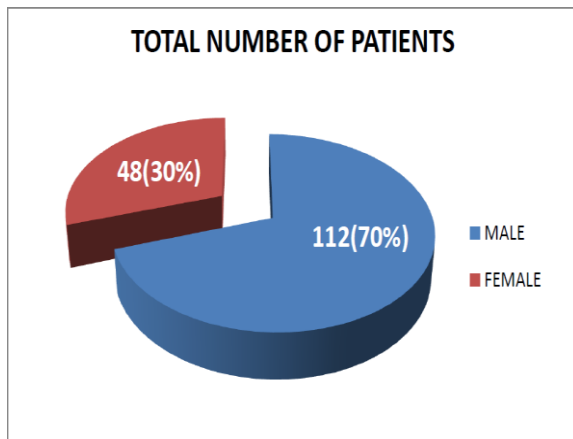
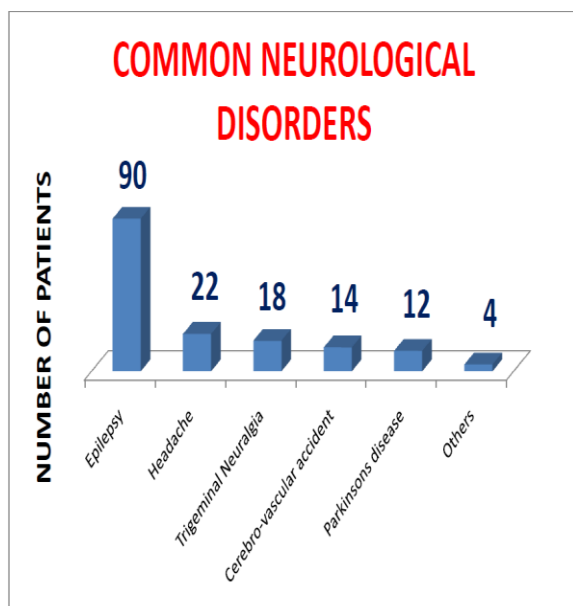**Figure I: showing Total number of patients**

FIGURE II: SHOWING COMMON NEUROLOGICAL DISORDERS

Commonest epilepsy was GTCS and sodium valproate was commonly prescribed followed by Phenytoin. For CPS, Carbamazepine was commonly prescribed followed by Phenytoin.(as shown in Fig III)

Out of 90 patients of epilepsy, 49 patients received monotherapy. 44.9% of patients received sodium valproate, 30.6% of patients received phenytoin and 10.20% of patients received carbamazepine. 36 patients were on Dual anti-epileptic drugs. The combination consisted of carbamazepine with clobazam or clobazam with clonazepam or clobazam with valproate. 3.33% of patients received triple anti-epileptic drugs namely combination of clobazam, clonazepam and valproate or combination of phenytoin, clobazam and

valproate. Polytherapy with 4 drugs namely carbamazepine, clobazam, levetiracetam and Valproate was advocated in 2.22% of patients (as shown in Table 2)
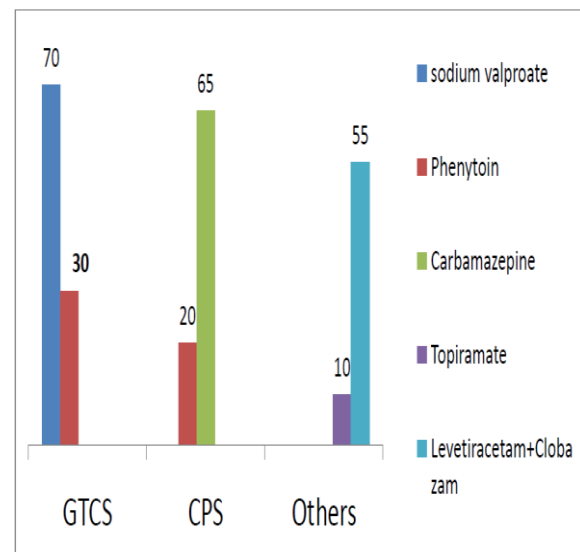

FIGURE III: SHOWING COMMON TYPES OF EPILEPSY WITH THEIR TREATMENT

TABLE 2: SHOWING TYPES OF THERAPY IN 90 PATIENTS OF EPILEPSY

TYPES OF THERAPY	Number of patients	Percentage (%)
Monotherapy (single AED)	49	54.44 %
Dual drug therapy	36	40 %
Triple therapy	3	3.33 %
Polytherapy	2	2.22 %

In patient of headache, migraine was the common disorder noticed. Drug prescribed were Etoricoxib, acetaminophen, Domperidone and Triptans [Rizatriptan and Zolmitriptan]. In patient of trigeminal neuralgia, carbamazepine was commonly prescribed. Pregabalin and topiramate was prescribed as add on therapy. In patient with Upper motor neuron Quadriparesis, Baclofen and Injectable Methylprednisolone was commonly prescribed (as shown in Fig V)

In patient of Extra-pyramidal syndrome, Trihexyphenidyl and Syndopa were commonly prescribed. In patients with hemiparesis with dementia, baclofen, thiocolchicoside, Donepezil and memantine were commonly prescribed. (as shown in Fig VI)
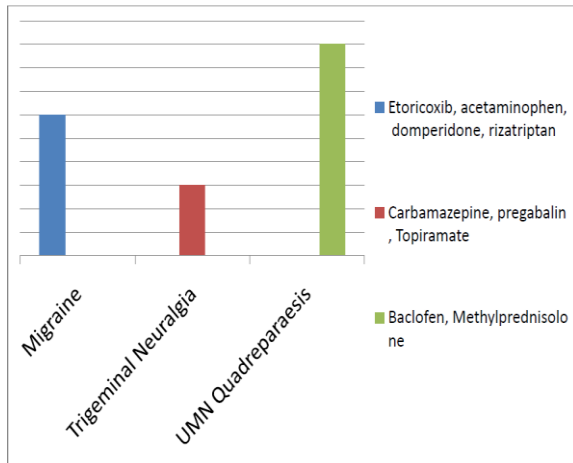
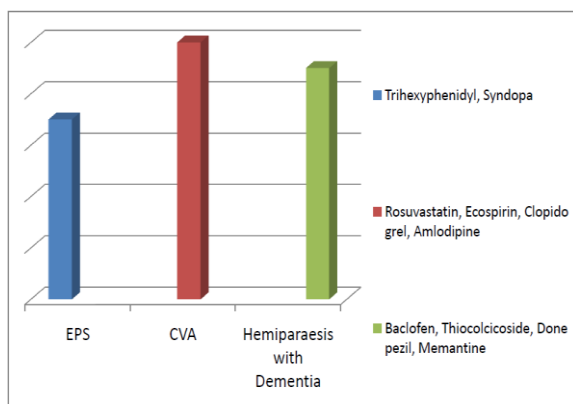**FIGURE V: SHOWING COMMONLY DRUGS USED IN DIFFERENT NEUROLOGICAL CONDITIONS**

- Etoricoxib, acetaminophen, domperidone, rizatriptan
- Carbamazepine, pregabalin, Topiramate
- Baclofen, Methylprednisolone

(Migraine, Trigeminal Neuralgia, UMN Quadreparaesis)

FIGURE VI: SHOWING COMMONLY DRUGS USED IN DIFFERENT NEUROLOGICAL CONDITIONS

- Trihexyphenidyl, Syndopa
- Rosuvastatin, Ecospirin, Clopidogrel, Amlodipine
- Baclofen, Thiocolcicoside, Donepezil, Memantine

(EPS, CVA, Hemiparaesis with Dementia)

In patient of tuberculoma with seizures, 1st line anti-Tb drugs were prescribed along with Phenytoin, acetazolamide and dexamethasone. In patient with hemichorea, haloperidol, Syndopa, amitriptyline was prescribed. In patients with cerebral palsy with epilepsy, anti-epileptic drugs with folic acid was prescribed. (As shown in Fig VII)
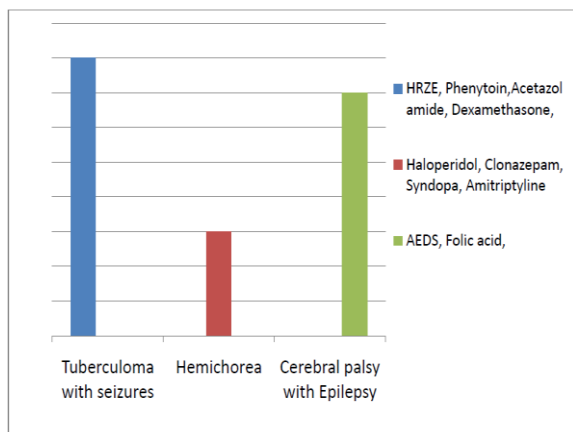

- HRZE, Phenytoin, Acetazolamide, Dexamethasone,
- Haloperidol, Clonazepam, Syndopa, Amitriptyline
- AEDS, Folic acid,

(Tuberculoma with seizures, Hemichorea, Cerebral palsy with Epilepsy)

FIGURE VII: SHOWING DRUGS USED IN TREATMENT OF TUBERCULOMA, HEMICHOREA AND CEREBRAL PALSY

TABLE 3: SHOWING BRAND NAME Vs GENERIC NAME PRESCRIPTIONS

BRAND NAME (% OF PATIENTS)	GENERIC NAME (% OF PATIENTS)
75	25

TABLE 4: SHOWING PRESCRIBING INDICATORS IN OUR STUDY

Prescribing indicators	Optimal Level(%)	Optimal Index calculated in our study
Percentage of non-polypharmacy prescriptions	≤ 3 %	656/160= 4.1 → 0.4
Percentage of drugs prescribed by Generics	100 %	25% → 0.25
Percentage of Prescriptions including antibiotics	30 %	22% → 1
Percentage of Prescriptions including injections	10 %	03% → 1
Percentage of drugs prescribed from NEML/ Formulary	100 %	90% → 0.9
Drug prescribing performance scoring = 3.55		

DISCUSSION

In our study, idiopathic generalized epilepsy was found to be the commonest type of epilepsy, with sodium valproate being the commonly prescribed drug in 44.9% of patients. These findings matched with the study done by Mathur S et al [6] where idiopathic generalized epilepsy was the commonest epilepsy. George J et al [7] and Meenakshi B [8] conducted a study in patients of epilepsy at tertiary level hospital and found that anti epileptic drugs were prescribed as monotherapy in 62.12% and 68% of patients. In our study also anti epileptic drugs were prescribed as monotherapy in 54.44% of patients. The results of the present study revealed that the average number of drugs per prescription was 3.55 which was considered to be good as per rational drug prescribing. Good prescribing is advocated to avoid wastage of medicines and to avoid possible adverse effects. Also, prescribing unnecessary medications to patients increases cost of overall treatment. WHO highly recommends prescribing medications by generic name (NPN name) as a safety precaution for patients because these names are used uniformly all over the world as per international agreement through WHO and allows better communication between health care providers. [9] The mean percentage of drugs was prescribed by generic name in

25% of patients which was similar to the study done by Fattouh R [10] in which drugs prescribed by generic name were 5.5%. In another study done by Naseeb TA [11] there was also low mean percentage of drugs prescribed by generic names in 14.3% of patients.

CONCLUSION

Epilepsy was the commonest type of neurological disorder noticed in our study and sodium valproate was the commonest prescribed drug. Our study also showed that there were more trends towards writing brand name of drugs rather than writing the generic name (NPN) of the drugs but this can only increase cost of treatment. Our study also revealed good prescribing pattern as per IRUD/INRUD which is a WHO scale of assessing the prescribing pattern of drugs. Further studies with large sample size are warranted so as to guide clinician towards rationale drug prescribing.

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