Research Article

PERSONAL FORMULARY FOR ANXIETY DISORDER DEVELOPED BY POST GRADUATES OF PHARMACOLOGY

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ABSTRACT

Selection of a drug for disease requires proper skill. Physicians select drug for a disease on the basis of efficacy, safety, cost and availability of medicine. Unfortunately, selection is not always done carefully as it is often based on previous experience or promotional campaigns by pharmaceutical companies. Personal drug concept deals with selection of drugs for disease. Undergraduate medical students are the future doctors, who require proper training to develop personal formulary for disease. In 2001, 'Teachers' Guide to Good Prescribing' was developed as a companion volume to help medical teacher for teaching undergraduate medical students. Students are taught to develop a standard treatment for common disorders and a set of first-choice drugs called Personal or P-drugs or personal formulary. Students develop their set of P-drugs using National and International treatment guidelines, formularies, textbooks and other sources of drug information. It is a method of orienting students towards therapeutics and to expose them to a sequential decision-making process for developing prescribing skills. The faculty of department of Pharmacology of Kasturba Medical College took initiative to teach post graduate (PG) students regarding the development of personal formulary. The ultimate aim is to expand this exercise further to teach undergraduate medical students to develop their own personal formulary. This paper describes the teaching of development of personal formulary for anxiety disorders, which demonstrates the usefulness of P drug concept approach, relevance in understanding a particular topic and rational drug prescription.

Keywords: Personal Formulary, PG, Anxiety disorders.

INTRODUCTION

Selecting correct drugs for disease is not an easy task. It requires careful selection and repeated search for appropriate drugs. Physicians' are influenced by various factors like efficacy, safety, cost, and availability of medicine during the process of drug selection. Unfortunately, however, selection is not always done carefully as it is often based on previous experience or promotional campaigns by pharmaceutical companies.[1,2] Eventually, what really matters is the quality of therapeutic reasoning and prescribing skills. Currently, these skills are inadequate.[3]

In 1994, a manual on the principles of rational prescribing called 'Guide to Good Prescribing' was developed by the World Health Organization (WHO) Action Program on Essential Drugs.[4] In 2001, 'Teachers' Guide to Good Prescribing' was developed as a companion volume to help medical teachers better use the 'Guide to Good Prescribing' for teaching undergraduate medical students. Students are taught to develop a standard treatment for common disorders and a set of first-choice drugs called Personal or P-drugs or personal formulary. Students develop their set of P-drugs using National and International treatment guidelines, formularies, textbooks and other sources of drug information.[5] It is a method of orienting students towards therapeutics and

to expose them to a sequential decision-making process for developing prescribing skills.[6]

In Kasturba Medical College, Manipal, India, the students favor the use of visual aids mainly by Powerpoint presentation and blackboard during lectures which are conducted in well organized lecture hall complex named as Interact.[7] The practical classes are conducted in the departmental laboratory. They are conducted in small groups containing 10-12 students for 2 hrs. It consists of demonstration of animal experiments, prescription writing for common diseases and emergency conditions and problem based learning. The post graduate students work as tutors and are involved in taking practical classes. However we do not teach selection of P drug as per the method described by Joshi and Jayawickramarajah and "Guide for good prescribing" published by WHO. [5,6] Rai has recommended inclusion of P-drug concept in the undergraduate pharmacology practical curriculum in India.[8] However very few medical school of India have P drug selection exercises as part of their pharmacology practical curriculum.

The faculty of department of Pharmacology of Kasturba medical college took initiative to teach post graduate (PG) students regarding the development of personal formulary. The ultimate aim is to expand this exercise further to teach undergraduate medical students to

develop their own personal formulary. This paper describes the teaching of development of personal formulary for anxiety disorders, which demonstrates the usefulness of P drug concept approach, relevance in understanding a particular topic and rational drug prescription. It also brings in focus the utility of P drug concept in prescription writing.

MATERIALS AND METHODS

The study was carried out among the PG medical students at Kasturba Medical College, Manipal, during the month of June 2010, after the permission from Head of department of pharmacology to develop personal formulary for anxiety disorder. Kasturba medical college, Manipal admits four PG students who are medical graduates and the course duration is of three years. Three batches containing 11 students out of 12 PG students were taught P drug concept and then they took part in development of personal formulary for anxiety disorder. They were taught for 1 hour regarding P-drug concept as per Joshi and Jayawickramarajah.[6] The three practical batches were made for next session for three hours to develop personal formulary for anxiety disorders. The admixture was done on the basis of year of admission, and gender, each batch having 3 or 4 students of both

genders. The PG students carried out the exercise in their groups using Current Index of Medical Specialities (CIMS) to determine cost of drugs[9] and they also used textbooks and reference materials available in the college and departmental library for other criteria.

RESULTS

Eleven PG students of the department of pharmacology participated in this study to develop personal formulary for anxiety disorders. The study was divided into two parts; first part is teaching of the P drug concept and second part to develop personal formulary for anxiety disorder.

In this study personal formulary was developed by using parameters like efficacy, safety, cost and convenience (Joshi and Jayawickramaraja).[6] The benzodiazepines as a group was chosen (Table 1) and among this group individual drug alprazolam emerged as Personal formulary for anxiety disorders (Table 2). The cost comparison of drugs was done by using CIMS (Table 3).

The personal formulary was developed for the P-drug alprazolam as a practical elaboration of the P-drug concept, which is shown in (Table 4).

Table 1: Selection of personal formulary from drug group for anxiety disorders

Drug/drug group	Efficacy (0.4)	Safety (0.3)	Cost (0.2)	Convenience (0.1)	Total
Benzodiazepines	8 (3.2)	6 (1.8)	8(1.6)	6 (0.6)	**7.2**
Azapirones	5 (2.0)	8 (2.4)	7 (1.4)	5 (0.3)	6.1
Sedatives Antihistaminics	4 (1.6)	6 (1.8)	6 (1.2)	5 (0.5)	4.5
β blocker	3 (1.2)	5 (1.5)	7 (1.4)	6 (0.6)	4.8
SSRIs	7(2.8)	6(1.8)	5(1.0)	8 (0.8)	6.4

Table 2: Selection of personal drug among benzodiazepines for anxiety disorders

Drug/drug group	Efficacy (0.4)	Safety (0.3)	Cost (0.2)	Convenience (0.1)	Total
Alprazolam	8 (3.2)	8 (2.4)	5(1.0)	7 (0.7)	**7.3**
Diazepam	7 (2.8)	6 (1.8)	8(1.6)	8 (0.8)	7.0
Lorazepam	6 (2.4)	7 (2.1)	8(1.6)	6 (0.6)	6.7
Oxazepam	6(2.4)	8 (2.4)	7 (1.4)	6 (0.6)	6.8

Table 3: Cost of drugs/drug group available in India used in treatment of anxiety disorders

Drug/Drug group	Dose range	No. of brands	Range of lowest dose cost of tab/day(INR)	Average cost of lowest dose, tab/30days (INR)
1.Benzodiazipines				
a. Diazepam	5 to 30mg	6	0.29 to 2.52	40.50
b. Chlordiazepoxide	20 to 100mg	3	3.00 to 5.80	91.50
c. Oxazepam	30 to 60mg	1	1.656	49.80
d. Lorazepam	1 to 6mg	13	0.75 to 1.85	33.30
e. Alprazolam	0.25 to 1mg (TDS)	51	1.53 to 5.58	87.60
2. Azapirones				
Buspirone	5-15mg(OD)	3	0.835 to 1.80	39.30
3. Sedative antihistaminic				
Hydroxyzine	50-200mg	4	2.58 to 3.20	85.50
4. β-blokers				
Propranolol	40 to 120mg	8	1.35 to 2.47	57.00
5. SSRIs				
a. Fluoxetine	20 to 60mg	17	2.30 to 3.90	86.10
b. Escitalopram	10 to 20mg	28	4.60 to 13.65	180.60
c. Paroxeteine	20 to 50mg	6	10.00 to 11.00	311.40

Table 4: Description of alprazolam as Personal Formulary for anxiety

Tablet 0.25, 0.5, 1mg	Anxiolytic	Alprazolam

DOSAGE :

   Anxiety disorder- In adults :0.25-0.5mg tid, increased to 3-4 mg daily if necessary

   In elderly: 0.25mg bid/tid

WHAT TO TELL THE PATIENT

Information

Anxiety disorder: Alprazolam when administered reduces the anxiety with little effect on other body systems. It has lower dependence producing liability, milder withdrawal syndrome.

Side effects: Nausea, vomiting, drowsiness, sedation, vertigo, blurring of vision, fatigue, muscle weakness, dependence, withdrawal syndrome.

Contraindications: Acute narrow angle glaucoma, respiratory depression, coma, acute pulmonary insufficiency, severe hepatic impairment, pregnancy, lactation.

Instructions

Take Tab. Alprazolam 0.25mg three times per day orally for 30 days.

Warnings

Anxiety disorder: Drug should be withdrawn slowly. Not to consume alcohol and not to smoke while on treatment.

Next appointment:

Anxiety disorder: review after 30 days

* FOLLOW-UP

Anxiety disorder: Review after 30 days for reassessment as these drugs should not be prescribed for more than 4 weeks at a time; otherwise risk of dependence is quite high & tolerance occurs. Gradually stop the treatment after one month and see the response.

DISCUSSION

Training of students in pharmacology should be in such a way that they are able to prescribe rationally for common diseases, calculate dosages depending upon age and sex and prevailing health status of individuals, administer the drug through appropriate route and also identify adverse drug reactions and interactions[10]. There is a need of developing patient oriented problem solving system of teaching in pharmacology in which students are oriented to learn rational use of drug by proper training.[11]

Rational use of drugs (RUD) entails that patients should receive medications appropriate to their specific clinical needs, proper dose and duration, with the lowest cost to them and their community.[12,13] The above requirements will be fulfilled by the WHO Guide to Good Prescribing which gives medical students a normative model for therapeutic reasoning and prescribing and provides a six-step guide to the process of rational prescribing: (1) define the patient's problem, (2) specify the therapeutic objective, (3) choose a (drug) treatment, (4) write the prescription and start the treatment, (5) give patient information and warnings, and (6) monitor the treatment. One of the key principles of the WHO approach is the division of step 3 into two steps; namely, Step 3a, consider the suitability of a standard (p-drug) treatment for the disease in general, and step 3b, verify its suitability for the particular patient and alter the drug if necessary.

Consequently, PG students, who as tutors teach the undergraduate students to develop a standard treatment for common disorders and develop a set of personal formulary by using National and International treatment guidelines, formularies, textbooks and other sources of drug information. The emphasis is that future doctors should master both steps of the drug-selection process, i.e. verification of suitability and alter the drug to individualize treatment.[14] The first author Lalit Mohan had experience in teaching P drug concept in the department of Pharmacology at the Manipal College of Medical Sciences (MCOMS), Pokhara, Nepal which concentrates on teaching rational use of medicines to medical students. We followed the method described by Joshi and Jayawickramarajah. The four criteria of efficacy, safety, cost and convenience are considered while selecting a P-Drug. For each drug group/drug a score was given between 1 and 10 (say x). For a particular disease, each of the four criterions was given a score between 0 and 1 (say y) depending on the importance of the criterion for the disease condition. The total scores of the four criteria should add up to one. Multiplied x and y to get a new value (say xy) for each drug for all four criteria, then for each drug, add all (xy) values get the total score. The drug with the highest score became the personal drug choice. Next step is to verify suitability for selected P drug for particular patient. Then the students wrote the prescription.[6,15,16]

The PG students taught regarding P-drug concept. The students carried out the exercise in their groups using reference materials, to determine cost of drugs using Current index of medical specialties (CIMS)[9] and textbooks available in the college and departmental library. The students worked on this exercise and then presented their findings. The presentation was followed by a discussion. For an anxiety disorder, each of the four criteria was given a score between 0 and 1 and further divided into by considering efficacy as more important parameter given score 0.4, safety 0.3, cost 0.2, and convenience 0.1. Then they determined drug/ drug group by using standard text book. [17]

Drug/drug group in anxiety disorders are benzodiazepines, azapirones, selective serotonin reuptake inhibitors (SSRIs), hydroxyzine, and propranolol. The decision of which drug class to prescribe for a particular indication depends upon the availability of different medications, on the basis of efficacy, safety, suitability and cost of each class making the choice much easy.[18] Further the parameters were taken up one by one and scoring was done. First we gave score for efficacy between drug groups, highest score was obtained by benzodiazepines which are very efficacious for different anxiety disorders like panic disorder, post traumatic stress disorder including generalized anxiety disorder, whereas, SSRIs are also effective in treatment of social phobia, generalized anxiety disorder. Buspirone (an azapirone) is generally less effective and slower in action than benzodiazepines, while remaining groups are less efficacious.[19] In safety considerations benzodiazepines have sedation and dependence liability, whereas SSRIs have little sedation, gastro intestinal disturbance, akathisia and anorgasmia. Azapirones do not produce significant sedation and physical dependence, got highest scores for the safety criteria. There is greater chance of side effects with propranolol compared to other groups. These comparative findings were helpful in allotting points (Table no-1).[17,19] Subsequently we determined cost of individual drugs considering the lowest effective dose and develop range of cost and average cost for 1 month and compared them. Benzodiazepines were cheapest with the highest score for this criterion (Table no -3).[9] For convenience we compared availability of drug, dosage form, dosages schedule, routes of administration[16] SSRIs are given once daily orally and got highest score.[17]

Benzodiazepines as group got highest scores (Table 1). Whenever there are large choices of agents is available, for same class, similar considerations are involved. Thus, choosing a particular drug from a class for therapy is very important.[20] So, we did comparison of individual agents in the benzodiazepine group. Among benzodiazepines, oxazepam has short duration of action and mainly used in short lasting anxiety and is preferred in elderly, whereas, lorazepam is the only benzodiazepine recommended for intramuscular use has been preferred for short lasting anxiety but is quite sedative. Alprazolam has to be given thrice daily, making it less convenient and more expensive as compared to diazepam. It has additional mood elevating properties, good response in panic disorder and claimed to cause less drowsiness. Ultimately after discussion and scoring of various parameters, alprazolam got highest score and emerged as personal formulary for anxiety disorders. (Table 2)[9,17] BM Maletzky also revealed that alprazolam was more effective than placebo and, on several parameters, more effective than diazepam as well. The incidence of side-effects was lowest in the alprazolam group and decreased steadily over the course of the study, whereas the incidence in the diazepam and placebo groups remained relatively unchanged.[21]

We verified the suitability of selected P drug for patient of anxiety disorder by using a problem solving exercise. Rajesh kumar, aged 25 years is a business executive, who is suffering from apprehension, mental tension before his social meeting. Verify of suitability for selected p drug for this condition and write the prescription for same. We followed same pattern as described by Shankar. [15] In this study, selected P drug is alprazolam suited for this patient, as it is less sedative and effect appears immediately. Propranolol is not required as the patient has prominence of psychological symptoms instead of physical symptoms.[17] After the selection of the P-drug ,personal formulary is developed which includes information in the form of loose-leaf notebook, containing details about the effects of the drug, side effects, instructions, warnings & next appointment according to Guide for Good prescribing (Table 4).[4] There are many difficulties during teaching or developing personal formulary, like large number of brands and their variation in cost, comparing efficacy, comparing among class as large number of drugs belong to same class. Our study had limitations like the contribution in development of personal formulary was only from three batches of 11 PG students. The selection of drug for anxiety disorder, there are not much difference in scores between diazepam and alprazolam. It was not possible to exactly pinpoint alprazolam as a P-drug for anxiety disorder. However we reduced this bias by using group consensus or majority vote to give values. There are differences in opinion and argument over choice for particular disease and the whole purpose of exercise is defeated by such argument. The basic motive of teaching P drug concept is that instead of memorizing, students can develop personal formulary after proper discussion and have know- how to prescribe rather than what to prescribe which is the goal of WHO.[16] Application of the WHO method has improved the prescribing skills of undergraduate medical students.[22] Consequently, undergraduate students are taught how to define their own P-drugs and are encouraged during their pharmacology teaching to develop a personal formulary.[2]

CONCLUSION

The teaching of P-drug concept to PG students will help them acquire proper skills in the development of personal formulary. The ultimate aim is to expand this exercise further and transfer the skills to undergraduate medical students. The whole exercise will be helpful in promoting rational use of medicines by students in their future career as doctors.

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