Research Article

Problem-Based Question Oriented Learning in Understanding the P Drug Concept among Medical Undergraduates

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ABSTRACT

Objective: To make a better understanding of P drug concept among undergraduates to bring out a better physician in a society is the main objective behind to include P drug in the curriculum which can only be made by including problem-based question learning among them.

Materials and Methods: An observational study was done by including case studies in their practical class of P drug.

Results: There was a better understanding of the selection of P drug among undergraduates, it was more convenient for them to understand how to select P drug on the basis of clinical cases.

Conclusion: More and more of the clinical case-based study should be included in the curriculum for better understanding and to bring the future physician with a good concept of rational use of medicine.

Keywords: P drug; Efficacy

INTRODUCTION

With the renewal of the syllabus of pharmacology, many new topics have been included in pharmacology practical curriculum. The concept of P drug is one of them which have been included, but for an undergraduate to give them the concept of P drug by just a lecture note is cumbersome and also less understood leading to deterioration of the importance of P drug among medical student.

What is P drug?

P drug also referred to as preferred or personal or priority choice of drugs [1]. These are the drugs which are being prescribed regularly by a physician for the particular indication helping to overcome the shortage of time which every physician has to face in his/her outdoor.

Listing of P drug varies between every individual physician due to the difference in [2]:

- Availability of drug.

- Cost of drug.

- Different national formularies and essential drug list.

- Medical culture.

- Individual interpretation of drug source information.

Every physician should compile his own list of P drugs and should not be in the influence of his role model teacher, senior colleagues or medical representatives due to the following reasons given below [3]:

- Every wellbeing patient is the responsibility of his/her individual physician and cannot be passed to others.

- By developing one's own set of P drugs one can learn how to handle pharmacological concepts and data.

- One can prescribe alternative when P drug cannot be used.

- It is not necessary that recent and the most expensive drug is always good.

  However the basic principle for selecting choice of P drug in rational way is same universally for any particular condition [4]:

- Drug dosage.

- Drug formulation.

- Drug schedule.

- Drug duration.

Steps for choosing P drug have been divided into 5 steps [5]

- Define the diagnosis.

- Specify the therapeutic objective.

- Selection of effective groups of drugs.

- Choose an effective group based on efficacy, safety, convenience.

- Choose a P drug-active substance, dosage form, standard dosage schedule and standard duration of treatment.

Define the diagnosis: More the knowledge, easier to choose P drug. Treating symptoms without really treating the underlying disease is called symptomatic treatment and when treating an individual patient, it should start by carefully defining the patient's problem and diagnosis.

Specify the therapeutic objective: It is to define exactly what we want to achieve with a drug, for example to decrease the diastolic blood pressure to certain level, to cure infectious disease, to decrease blood sugar level.

Selection of effective groups of drugs: Efficacy is the first criterion for selection. There are 2 ways to identify effective groups of drugs.

- Formularies or guidelines that exist in your hospital or health system or at national and international guidelines such as FDA/NIH/WHO/ICMR [6-9] treatment guideline for certain common disease group, or the WHO list of essential drugs [10,11].

- Check the index of good pharmacology reference book and determine which group is listed for confirmed diagnosis or therapeutic objective.

Choose an effective group based on efficacy, safety and convenience, cost

- Efficacy: Both pharmacokinetic as well as Pharmacodynamics should be taken into consideration. The therapeutic objective should be that drug should work as soon as possible.

- Safety: Incidence as well as severity of adverse reaction should be taken into consideration.

- Convenience: Certain contraindication related to patient as well as other illness make certain P drug impossible to use which are otherwise effective and safe. For example pregnancy, lactation, hepatic failure, renal failure. Also the drug dosage form should be taken into consideration in elderly and children such as tablet and liquid formulation which are easy to handle.

- Cost: Always consider total cost of treatment rather than individual cost. Also the drugs sold under generic names8 are cheaper than brand name products.

Choose a P drug

- Choose an active substances and a dosage form although active drug substances within one group share same mechanism of action but difference may exist in safety and suitability because of difference in kinetics. If 2 drugs are from the same group appear equal choose the one which has been standing safe long in the market or which drug is manufactured in the country. If 2 drugs are from the different group appear equal we can choose either, this will give us an alternative if one is not suitable to particular patient. Finally compare your selected drug with existing treatment guideline, national list of essential drug and who list of essential drug which are reviewed every 2 years.

- Choose a standard dosage schedule-if age, metabolism, absorption and excretion inpatient are all average, and if no other disease or other drugs are involved, the average dosage is adequate. More the patient varies from this average, the more likely the need for individualized dosage schedule.

- Choose a standard duration of the treatment- some diseases require a lifelong treatment while others depend on the prognosis and pathophysiology of the disease. If the duration of treatment is not known, the monitoring interval becomes important. For example in the case of newly diagnosed hypertensive patient prescribe the drug only for 2 weeks so that we can monitor blood pressure ad any side effect of treatment. 3 month should be maximum monitoring interval for drug treatment of chronic disease.

EXERCISES

Exercise 1

A 55 Years old man came to medicine OPD with the complaint

Table 1: Stable angina pectoris case report.

Sl. No.	Parameter	Summary
1	Diagnosis	Stable angina pectoris [11].
2	Therapeutic objective	a. Stop the attack. b. Reduce myocardial oxygen need-decrease preload, afterload, Decrease contractility, heart rate.
3	Effective drug groups	Nitrates, beta blockers, calcium channel blockers.
4	Choosing an effective group based on efficacy, safety, suitability and cost	Nitrates.
5	Choose a P drug	a. Glyceryl trinitrate tablet. b. Glyceryl trinitrate spray. c. Isosorbide dinitrate tablet. d. Isosorbide mononitrate tablet.
CONCLUSION		
The active substance, dosage form		Glyceryl trinitrate, Sublingual tablet 1 mg.
Dosage schedule		1 tablet as needed; 2nd tablet if pain persists.
Duration		Length of the monitoring interval.

of several attacks of suffocating chest pain, which begins during physical labour and disappeared quickly after taking rest. There is no history of smoking and drinking alcohol. He has a family history of death due to a heart attack of his father and elder brother. His medical history reveals he has not taken any drug apart from aspirin in the past year. Auscultation reveals a murmur over right carotid artery. Physical examination reveals no other abnormalities. Blood pressure, pulse and body weight is normal (Table 1).

Exercise 2

A 45-year-old female patient complains of bloody, mucoid stools and abdominal pain. There is no history of alcohol abuse. You have diagnosed it as a case of acute amoebic dysentery. Choose an appropriate drug and mention its dosage schedule and duration of treatment (Table 2).

Exercise 3

Khushi Kumari a 3-year-old girl suffering from acute watery diarrhoea with mild dehydration (Table 3).

Table 2: Acute amoebic dysentery case report.

Sl. No.	Parameter	Summary
1	Diagnosis	Acute amoebic dysentery.
2	Therapeutic objective	Eradicate disease.
		Prevent further transmission.
		Symptomatic treatment.
3	Effective drug groups	a. Nitroimidazoles.
		b. Alkaloids.
		c. Amide.
		d. 8-Hydroxyquinolines.
		e. Antibiotics.
4	Choosing an effective group based on efficacy, safety, suitability and cost.	1. Nitroimidazoles
		2. Alkaloids
		But the mean effective concentration for most susceptible protozoa ($\leq$ 8 μg/ml) is achieved within 0.25-4 hours with a single dose of metronidazole 400 mg
5	Choose a P drug	1. Metronidazole
		2. Tinidazole
		3. Secnidazole
		4. Ornidazole
		5. Satranidazole
CONCLUSION		
The active substance, dosage form		Metronidazole is the cheapest active agent. Oral tablet 400 mg. This should be followed by a luminal amoebicide to prevent carrier state (diloxanide furoate is the rational choice for this).
Dosage schedule		Metronidazole 400 mg three times a day is sufficient (plasma half-life of metronidazole is eight hours).
Duration		Duration of treatment for acute intestinal amoebiasis is usually 5-7 days with 400 mg metronidazole.

Table 3: Acute diarrhoea with mild dehydration case report.

Sl. No.	Parameter	Summary
1	Diagnosis	Acute diarrhoea with mild dehydration
2	Therapeutic objective	To prevent further dehydration and to rehydrate, the goal is not to cure the infection
3	Effective drug groups	1. ORS
		2. Rice water, homemade sugar/ salt solution, fruit juice
4	Choosing an effective group based on efficacy, safety, suitability and cost.	1. ORS
		2. Metronidazole and antibiotics will not be included as these are not effective in treating watery diarrhoea.
5	Choose a P drug	1. ORS
		2. Increased fluid intake in the form of rice water, sugar and salt solution etc.
CONCLUSION		
The active substance, dosage form		ORS in powdered dosage form, dissolved in 1 L of water, 250 ml to be sipped every hourly.
Dosage schedule		ORS packet need to be dissolved in 1 L of water and to be consumed within 24 hrs.
Duration		250 ml to be taken hourly till dehydration gets recovered.

CONCLUSION

The inclusion of P drug concept with clinical cases make the topic more interesting, more understanding and valuable. Also, it makes the future upcoming physician more responsible for a rational prescription. The above three examples also show that it is not always necessary that for every diagnosis there is drug treatment even non-drug treatment can be included in P drug.

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