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Research

Assessment of drug related problems in the patients of cardiology department in a teritiary rohini hospital

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Abstract

Cardiovascular diseases are the biggest killers in the world according to WHO, of which stroke and ischemic heart disease are main diseases, which nearly cause 15 million deaths. Drug Related Problems are defined as a circumstance or an event which involves the pharmacotherapy or the drug treatment that interferes with the optimum outcome of medical care of a patient. DRP'S are classified into 4 categories according to PCNE classification V.5.01 which are the Problems, Causes, Interventions and the Outcome of intervention. The main aim of the study is to detect the drug related problems among the patients with cardiovascular diseases admitted to the hospital in a tertiary Rohini hospital. A cross sectional observational study with a sample size of 100 patients in a period of 6 months was included as per inclusion criteria and exclusion criteria. All the case record sheets of patients above 18 years are collected to assess the drug related problems. Of all the 100 case records collected,44 DRP'S were found in 39 patients. The major DRP identified is Drug interactions-26 followed by ADR'S-15, Therapeutic duplication-2 and Wrong dose-1. Mainly the 33 DRP'S were found in 29 male patients with an incidence rate of 41.4% when compared to females,11 DRP'S in 10 patients with an incidence rate of 33.3%. The drug related problems have higher incidence rate in male patients than in female patients. Most common drug related problems observed are Drug Interactions followed by the Adverse Drug Reactions. Interventions are generally made at the prescriber level and the outcome of intervention in most of the cases is totally solved.

Keywords: Drug Related Problems, Cardiovascular Diseases, Drug Interactions, Adverse Drug Reactions.

INTRODUCTION

Cardiovascular illness (CVDs) area is unit bunch of disorders of the guts and blood vessels and that they embody arteria disease, vessel illness, peripheral blood vessel illness, rheumatic heart condition, inborn heart condition, deep vein occlusion and embolism and stroke(1).

Cardiovascular diseases (CVDs) have currently become the leading reason behind mortality in Asian nation. 1 / 4 of all mortality is as a result of CVD. Anaemia, heart condition and stroke area unit the predominant causes and area unit answerable for >80% of CVD deaths. The worldwide burden of illness study estimate of age-standardized CVD death rate of 272 per 100000 population in Asian nation is beyond the worldwide average of

235 per 100 000 population(2) . India has one in every of the best burdens of CVD worldwide. The annual range of deaths from CVD in Asian nation is projected to rise from a 2.26 million (1990) to 4.77 million (2020) . Coronary heart condition prevalence rates in Asian nation are calculable over the past many decades and have ranged from 1.6% to 7.4% in rural populations and from 1% to 13.2% in urban populations(3).

Risk factors for cardiovascular diseases

A number of risk factors like case history, diabetes, high blood pressure, obesity, diabetes, smoking and physical inactivity area unit answerable for a major proportion of the vessel risk. apparently, recent knowledge recommend there's a gradient within the incidence, morbidity and mortality of upset across the spectrum of socioeconomic standing, as this can be outlined by academic level, occupation or financial gain(4).

The presence of vessel risk factors such as tobacco use, an unhealthy diet and physical inactivity (which along result in obesity), elevated blood pressure (hypertension), abnormal blood lipids (dyslipidaemia) and elevated blood aldohexose (diabetes) and continuous exposure to them influences the progression of arteriosclerosis(5).

Drug related problems

Pharmacotherapy is very important in reducing morbidity and mortality associated with vessel diseases. However, these blessings area unit restricted by drug medical care issues which will impact on a patient's quality of life, prolong hospital stays, and increase the burden of attention expenditures(6).

Rational use of medication needs that patients receive medicines applicable to their clinical desires, in doses that meet their own individual necessities, for an adequate amount of your time, and at rock bottom price to them and their community". A patient would be same to own DRP if s/he practised any undesirable event that involves, or is suspected to involve drug medical care which interferes with achieving the required goals of medical care(7).

Drug-related issues embody medication errors (involving a slip-up within the method of prescribing, dispensing, or administering a drug, whether or not there area unit adverse consequences or not) and adverse drug reactions (any response to a drug that is deadly and unplanned, and that happens at doses unremarkably utilized in humans for bar, identification or medical care of illness, or for the modification of physiological function). Drug-related issues area unit comparatively common in hospitalised patients and may lead to patient morbidity and mortality, and raised prices(8).

Drug-related issues (DRPs), outlined as 'an event or circumstance involving drug medical care that really or probably interferes with desired health outcomes', represent a frequent safety issue among hospitalised patients resulting in patient damage and raised health care costs(9).

An increase of DRPs imposes a significant economic burden on society, significantly in developing countries(10).

Evolution of drp classification

According to Hepler and Strand Classification, the DRPs area unit sorted into eight classifications as drug use while not indications, improper drug choice, drug interaction, adverse drug reaction, over dose, desires further drug medical care, sub therapeutic dose, improper drug choice and untreated indications. DRP's like ADRs, interactions, and probably inappropriate drug use area unit common and cause up to half-hour of hospitalizations among previous people(11) .

Definition of terms associated with DRP'S

Drugs could also be ineffective in older adults as a result of clinicians under-dose

(eg: attributable to raised concern concerning adverse effects) or as a result of adherence is poor (eg: attributable to money or psychological feature limitations) (12).

Unnecessary drug medical care—the drug therapy makes no sense as a result of the patient doesn't have a clinical indication at now(13).

Need for extra drug medical care—additional drug therapy is needed to treat or forestall a medical condition or ill health from developing, or the clinical condition needed initiation of drug medical care(13).

Ineffective drug—the drug product isn't being effective at manufacturing the required response or the medical condition is refractory to the drug product(13).

Inappropriate dosage—refers to dosages each too low and too high(13).

Dosage too high—indicates that the dose is just too high and leading to undesirable effects(13).

Dosage too low—refers to the dose is just too low to provide the required response(13).

Noncompliance—the patient isn't in a position or willing to require the drug medical care as supposed(13).

Drug–drug interaction—occurs once the impact of one drug is modified due to the presence of different co-administered medicine, food, or drinking substance(13).

Classification of drp's

The classification encompasses a data structure with six main classes (drug selection, dosing, adverse drug reaction, interaction, drug use and other) and twelve subcategories(14). Various classifications were concerned in drug connected issues like, ABC, yank Society of Hospital pill roller (ASHP),

Cipolle/Strand/Morley, urban center accord, Hanlon approach, Hepler – strand, Krska et al system, Mackie, NCC – MERP, Pharmaceutical Care Network Europe (PCNE), PI – Doc, Westerlund. Among that Hepler–Strand classification is wide followed(15).

Helper and strand classification

Hepler and Strand additionally introduced many classes of DRPs. during this approach, issues and causes weren't separated.

Untreated indication: will the patient have an untreated medical condition or indication which can have the benefit of drug medical care? once reviewing the indication for drug therapy, it's most important to contemplate whether or not the indication could also be an unrecognized ADR. For example: a patient World Health Organization complains concerning symptom could also be taking antibiotics or different medicine that causes to the current drawback.

Improper drug selection: will the patient have a medical condition that the wrong drug is being taken? to create certain that the foremost appropriate drug has been chosen to treat the patient's medical condition. For example: a brief course of a non-steroidal medicament agent is that the first- line treatment for acute gouty arthritis.

Sub therapeutic dosage: will the patient have medical condition that too little of the proper drug is being taken? The dose and dosing regime ought to be individualised supported the patient's medical condition.

Over dosage: will the patient have medical drawback that an excessive {amount of} amount of the proper drug is being taken? it's going to additionally manifest itself if a patient takes a drug for a extended amount than required.

Adverse drug reaction: will the patient have a medical condition that is that the results of an ADR? The detection of ADR is crucial within the management of any patient since failure to acknowledge an ADR mat end in continued patient morbidity.

Failure to receive drugs: will the patient have a medical condition that's the results of him/her not receiving a drug? it's going to because of several factors as well as non-adherence, poor administration technique, incomprehensible doses because of medication errors, sub-standard medicine, non-availability of prescribed

Drug interactions: will the patient have a medical condition that's the results of a drug-drug or drug-food interaction? It vary in their clinical significance.

Drug use while not an indication: is that the patient taking a drug that there's no valid indication? Care is required here, because the indication that a drug is employed might not be now obvious.

Additional breakdown of categories (17)

DRPs are often additional divided into following categories:

***Indication(sign)**

Additional Drug Treatment/Therapy: Untreated complaint

Prophylactic (preventative) Synergistic or Potentiating

Unnecessary Drug treatment/therapy: No clinical sign or medical indication Duplicate treatment

Indicated Non-drug medical care.

***Effectiveness (adequacy)**

demand of various drug product:

Effective drug that is offered

Inappropriate dose kind for a refractory condition

Ineffective in treating the disorder

Too low dosage

Incorrect dose

Inappropriate frequency

Interaction of the medicine

Inappropriate period of the drug

MATERIALS

STUDY DESIGN: This is a cross sectional observational study in the department of cardiology in a tertiary care hospital. This study is designed to determine the drug related problems in the patients suffering from cardiovascular diseases.

STUDY SITE: Rohini Hospitals, Hanamkonda, Hyderabad.

STUDY PERIOD: The time taken to gather and analyse the data was 6 months i.e., from January 2021 to June 2021.
STUDY POPULATION: Totally a number of 100 subjects were studied.
INCLUSION CRITERIA: *The patients who are suffering with cardiovascular diseases and are admitted to the hospital above the age of 18 years.

Method of collection of data

The data was collected from the patient's case records. A total of 100 case records of the patients are collected who are admitted in the hospital suffering from various cardiovascular diseases for 6 months and the data was analysed by using PCNE Classification for Drug Related Problems.

Analysis of data

The data which has been collected is analysed using the PCNE Classification V.5.01.

The collected data from the patients case records are analysed and are checked for having possible Drug-Drug Interactions. This process is done by using the interaction checker in the MEDSCAPE which is an updated software or Drugs.com. Statistical analysis is done by using SPSS which is an updated software.

Interventions of the pharmacists

The identified DRP'S by the clinical pharmacist after a very good review of all the sources of data are discussed with the doctor or the consultant and the interventions are proposed. The pharmacist will assist the doctor in knowing the significance given by him. Then the acceptance level of the interventions are recorded.

RESULTS AND DISCUSSION

In our present study we have collected 100 cases of the patients who are admitted in the cardiology department for treatment of their cardiac diseases. After collection of the cases all the drugs prescribed are checked thoroughly for any possible Drug Related Problems.

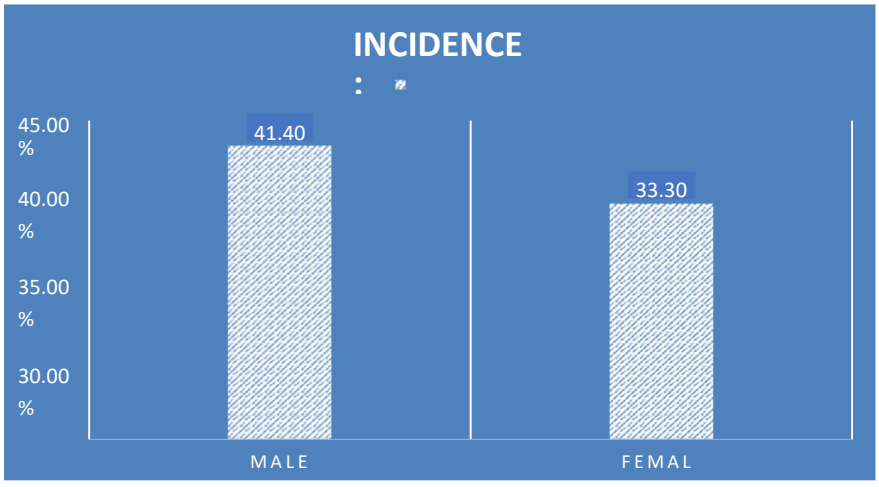
A total of 44 DRP'S were observed out of 100 cases in 39 patients during their treatment period in the hospital Of all the DRP'S observed in the study, Drug –Drug Interactions were found to occur mostly in the patients followed by ADR'S and then few other drug related problems.In this study out of the 44 cases, 26 drug interactions were found in the patients and then 15 ADR'S,1 Wrong dose of a drug, 2 Therapeutic duplication.

Incidence of drp's

In the present study, the data showed that 39% incidence of DRP'S was observed in the patients. Reports shown that males have shown more DRP'S 33(75%) when compared to females 11(25%). Incidence of DRP'S was seen higher in males (41.4%) than in females (33.3%).
The below given shows the incidence of DRP'S in both the genders:

Table 1: Incidence of DRP'S

SNO	GENDER	DRP'S%	NO OF PATIENTS WITH DRP'S/TOTAL PATIENTS	INCIDENCE(%)
1	MALE	33(75%)	29/70	41.4%
2	FEMALE	11(25%)	10/30	33.3%
3	TOTAL	44(100)	39/100	39%



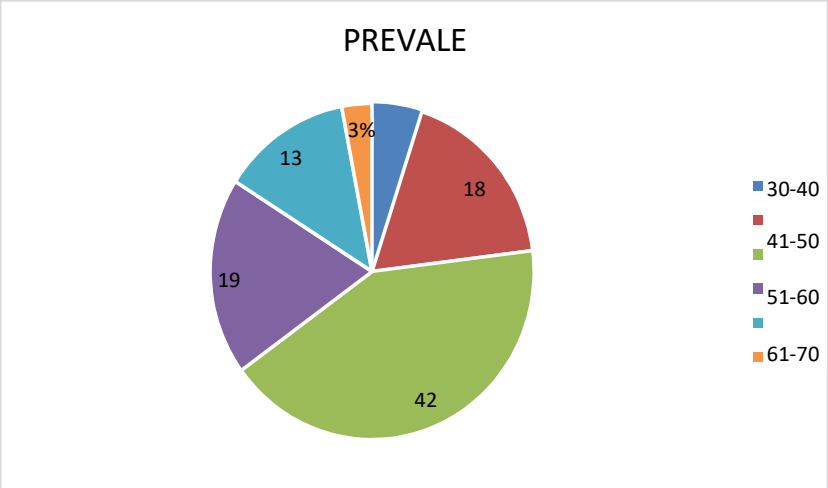
Graph 1: Incidence of DRP'S among males and females

Age wise distribution of patients admitted to hospital

Based on the age we have evaluated to know the prevalence. We categorized the patients according to the age group then frequency is found to know the prevalence.

Table 2: Age wise distribution of no. of patients admitted to the hospital

AGE IN YEARS	FREQUENCY	PERCENTAGE
30-40	5	5%
41-50	18	18%
51-60	42	42%
61-70	19	19%
71-80	13	13%
81-90	3	3%
TOTAL	100	100%



Graph 2: Age wise distribution of no. of patients admitted to hospital

Types of drug related problems according to pcne

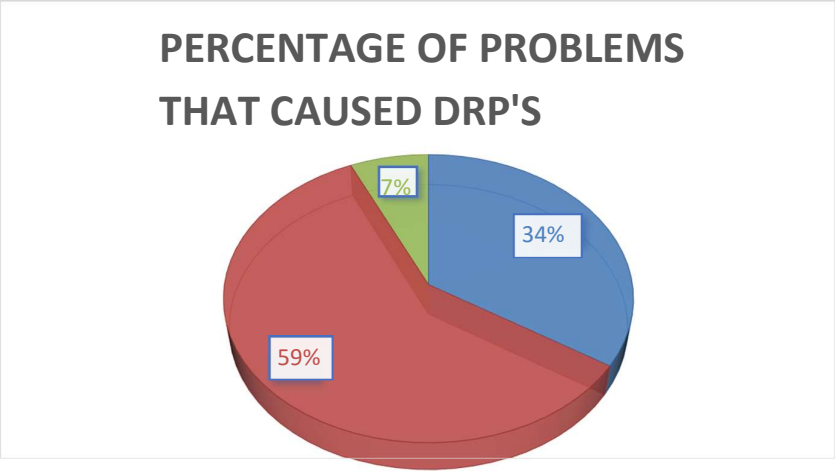
All the DRP'S that are obtained are classified according to the PCNE classification of drugs. In this study we have used V.5.01 to categorise the problems. It is generally divided into 4 classes which include problems, causes, interventions and outcome of interventions

Problems

The class problems of the PCNE classification are again sub divided into 6 categories i.e., P1, P2, P3, P4, P5, P6.DRP'S that are caused due to problem P1 are 15 which is ADR'S, P5 are 26 i.e., drug interactions and the 3 other problems that comes under the category P6.

Table 3: Percentage of the problems and no. of encounters

SNO	PROBLEM	NUMBER OF ENCOUNTERS	PERCENTAGE
1	P1(ADR)	15	34%
2	P2(Drug choice problem)	0	0%
3	P3(Dosing problem)	0	0%
4	P4(Drug use problem)	0	0%
5	P5(Interactions)	26	59%
6	P6(Other)	3	6.8%



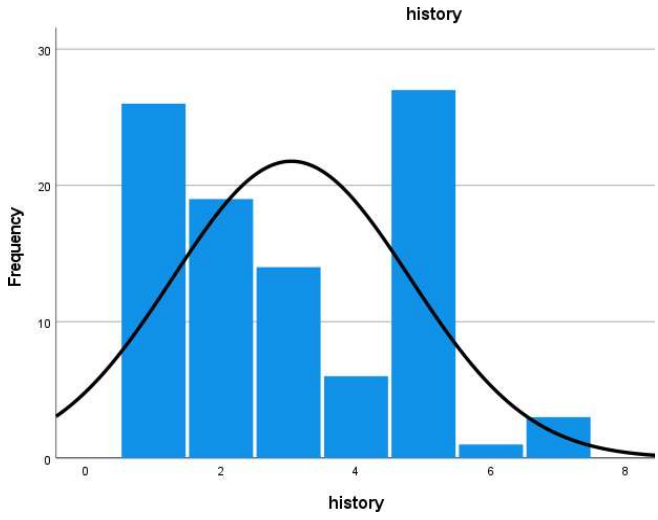
Graph 3: Percentage of problems that caused DRP'S

Frequency of past history in the patients

Table 4: Frequency of past history in the patients

History

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HTN	26	25.7	27.1	27.1
	DM	19	18.8	19.8	46.9
	Hypothyroid	14	13.9	14.6	61.5
	HTN,DM, Hypothyroid	6	5.9	6.3	67.7
	HTN, DM	27	26.7	28.1	95.8
	DM, Hypothyroid	1	1.0	1.0	96.9
	HTN, Hypothyroid	3	3.0	3.1	100.0
	Total	96	95.0	100.0	
Missing	System	5	5.0		
Total	101	100.0			



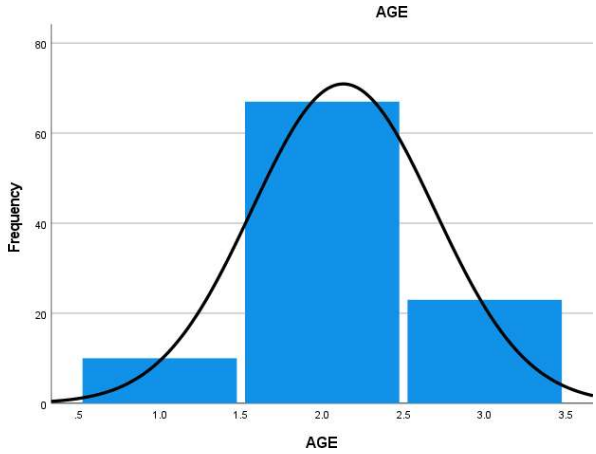
Graph 4: Frequency of past history of patients

Frequency table of age

Table 5: Frequency table of patients admitted according to age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-45	10	9.9	10.0	10.0
	46-65	67	66.3	67.0	77.0
	66-85	23	22.8	23.0	100.0
	Total	100	99.0	100.0	
Missing	System	1	1.0		
Total		101	100.0		



Graph 5: Frequency of patients admitted to hospital according to age

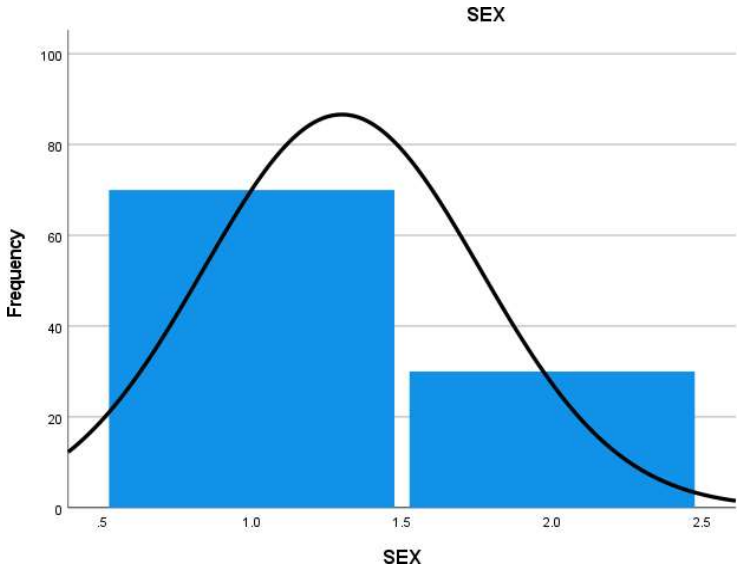
The above given frequency table shows that the DRP'S are much frequent in the age group 46-65(66.3%), 66-85(22.8%), 25-45(9.9%)

Frequency table of gender

Table 6: Frequency of patients admitted to hospital according to gender.

Gender

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	MALE	70	69.3	70.0	70.0
	FEMALE	30	29.7	30.0	100.0
	Total	100	99.0	100.0	
Missing	System	1	1.0		
Total		101	100.0		



Graph 6: Frequency of patients admitted to hospital in both the gender

Statistical analysis of the drp's caused due to problems according to the pcne classification

Table 7: Analysis of the problems according to PCNE

DRP'S	MALE	FEMALE	P VALUE
ADR'S(P1)	13	2	<0.001
Interactions(P5)	17	9	<0.001
Other Problems(P6)	3	0	<0.001

- SPSS version 27 is used for the statistical analysis in the present study by chi-square test. Frequencies of past history of patients, patients admitted to hospital according to gender and age were also performed.
- Statistical analysis of the DRP'S which are caused due to the problems according to the PCNE classification shows that the drug related problems are more significant in the patients with the problems of adverse reactions, drug interactions, therapeutic duplication and the wrong dose where as it is not much significant in drug choice problems, dosing problems, drug use problems.
- Interactions have more probability of occurrence than other problems like ADR'S and P6 category problems.
- Above table shows that the ADR'S, drug interactions and the other problems are said to be statistically significant in males than in females as the p value is <0.005.

DISCUSSION

A cross-sectional observational study-"Assessment of drug related problems in patients of cardiology department in a tertiary Rohini hospital".

Cardiovascular diseases are one of the biggest killers in the world which nearly caused 15 million deaths. Cardiovascular diseases mainly include coronary artery disease, Hypertension, cardiac arrest, angina pectoris, arrhythmias, peripheral vascular diseases. The major risk factors are age, sex, use of tobacco, family background of cardiovascular diseases etc.

Drug related problems are defined as the events that involves the pharmacotherapy which interferes with the optimum outcome of medical care of a patient.

In this study, 100 patients are studied who are admitted in the cardiology department of a tertiary care hospital taking at least two cardiac related drugs. All the patient case records are studied well including the demographics like age, gender, past medical history, laboratory values like BP, GRBS, Serum potassium levels, and the drugs prescribed to them by the doctors.

This study was conducted at Rohini hospitals, Hanamkonda for a period of 6 months from January 2021 to June 2021.All the data was entered in data collection forms. Patients were studied according to the inclusion criteria and exclusion criteria. All the drug related problems are classified according to PCNE classification V.5.01.

In this study a total of 44 DRP'S were identified out of 100 patients in which males were in higher proportion than females. Totally 70 male patients were admitted to the hospital compared to females. Out of 44 DRP'S registered 33(75%) DRP'S were found in 29 male patients with an incidence rate of 41.4%, where in females 11(25%) DRP'S in 10 female patients with an incidence rate of 33.3%.

CONCLUSION

This study concludes that the drug related problems have higher incidence rate in the patients admitted to the hospital. Male patients have higher incidence rate than female patients. Many people of age group between 46-65 are diagnosed with cardiovascular diseases. The common drug related problems that are seen in patients are the Drug Interactions followed by the Adverse drug reactions. Interventions are generally made at the prescriber level. In most cases the outcome of intervention is totally solved.

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