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Prescription Pattern Study Of Antidiabetic And Antihypertensive Drug To Diabetic Hypertensive Patients In Vimsar,Burla,Sambalpur,Odisha.

Dillip Kumar Mohapatra, Deepika Rani Panigrahi, Hitesh Kumar Sahu, Mahima Saraf.
Gayatri College of Pharmacy, Sambalpur, Odisha

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ABSTRACT: Objective :The present study was performed to improve the prescription quality on drug prescribing trend of anti-diabetic agents, antihypertensive and diabetic hypertensive, which was attempted to find out the frequently prescribed drugs by the doctors with the aim of rational use of drugs and to minimize the adverse drug reactions in different diabetic hypertensive patient in General Medicine Department of VIMSAR, Burla, Sambalpur, Odisha.

Methods:After explaining the purpose of the study to the respondents and obtaining their verbal consent, the researcher interviewed all the respondents by asking questions in sambalpuri, oriya and hindi prescriptions consisting of list of diseases and drugs prescribed with their dosing schedule and length. This study was carried out for the period of two months in the general medicine department ,Burla, Sambalpur. During this study period , total 200 patients were included and data were collected and analyzed .

Results:Total number of patients is 200. Among them number of male patients is 131 (65.5%) and number of female patients is 69 (34.5%) in different age groups 40 patients in 30-44 age group (20%), 56 patients in 45-59 age group (38%), 56 patients in 60-74 age group (28%), 27 patients in 75-89 age group (13.5%).However, in our study majority of the patients in our study were on monotherapy (70.32%) followed by dual-therapy (16.4%) and triple therapy (12%). Present study has shown that round 45.5% of hypertensives have co-existing type 2 diabetes mellitus. In our study, calcium channel blockers are most commonly used antihypertensive agents both in hypertension alone (47%) and with coexisting type 2 diabetes mellitus patients (38%). ACE inhibitors and ARB agents are preferred next to calcium channel blockers.

Conclusion:Combination therapy pattern for the treatment of diabetic patients suffering from cardiovascular diseases is stated in this study. We can reduce the risk of diabetes and cardiovascular disease by avoiding of tobacco use, reducing of salt in the diet, doing regular physical exercise, avoiding harmful use of alcohol. We can also prevent heart disease & stroke through healthy diet, choosing a diet rich in fruits and vegetables, maintaining a healthy body weight, avoiding obesity and avoiding foods that are high in fat, sugar and salt. Sulfonylureas, insulin and metformin are the most frequently used antidiabetic drugs, In individual drugs, ramipril was most common followed by telmisartan , hydrochlorothiazide , atenolol and amlodipine were frequently prescribed. In adjuvant drugs, antiplatelet and statins were common for HT pataint. Preventing or treating hypertension and raised blood lipids are also helpful to reduce the diabetic risk.

Key word: - Antidiabetic, Antihypertension, calcium channel blockers,insulin, metformin, sulfonylurea, ACE inhibitor,ARB agent.

I. INTRODUCTION:-

According to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India currently around 40.9 million, is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken [1]. Peoples with diabetes having a higher rate of cardiovascular risk and definitely with risk of hypertension. [2]. Patients with diabetic hypertension have a high prevalence of insulin resistance and substantially increased the risk of hyperglycaemia [3]. Diabetes co-existing with hypertension causes higher arterial stiffness and there is increased risk of cardiovascular, ophthalmic and renal complications in such patients. [4,5]. Although the exact cause of type 1 diabetes is unknown, factors that may signal an increased risk include family history, your risk increases if a parent or sibling has type 1 diabetes,

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environmental factors, the presence of damaging immune system cells (autoantibodies), dietary factors, geography. Researchers don't fully understand why some people develop prediabetes and type 2 diabetes and others don't. It's clear that certain factors increase the risk, including weight. Inactivity.Familyhistory. Race. Age. Gest ational diabetes, Polycystic ovary syndrome., High blood pressure, Abnormal cholesterol and triglyceride levels. [6, 7, 8], Prevalence of HTN in T2DM is substantial and can be seen in more than 80% of patients.Presence of HTN in T2DM increases the risk of micro- and macro-vascular complications.[9,10,11]. Hypertensive patients co-exists with diabetes and has earlier been stated to be one of the complications of diabetes. More than 70% of adults with diabetes have blood pressure greater than 140/90 mmHg or use medication to treat diagnosed hypertension [12]. Hypertension and diabetes are connected together as both are caused by lifestyle, diet, and obesity; they are also linked metabolically because of resistance in the way in which the body reacts to insulin. High level of insulin in blood widens blood vessels which affect sympathetic nervous system and either directly or indirectly causes kidney retain salt and water causing hypertension. [13] Type 2 diabetes is the common form of idiopathic diabetes and is characterized by a lack of the need for insulin to prevent ketoacidosis. It is not an autoimmune disorder and the susceptible genes that predispose to NIDDM have not been identified in most patients. This could be due to the heterogeneity of the genes responsible for the susceptibility to NIDDM.[14,15]. Achievement of better control of HTN in patients with T2DM is possible with use of multiple anti-hypertensive medications. Among these, ACEIs/ARBs, CCBs and thiazide diuretics are recommended as first line agents in T2DM.[16] .The present study was performed to improve the prescription quality on drug prescribing trend of anti-diabetic agents, antihypertensive and diabetic hypertensive, which was attempted to find out the frequently prescribed drugs by the doctors with the aim of rational use of drugs and to minimize the adverse drug reactions in different diabetic hypertensive patient in General Medicine Department of VIMSAR, Burla, Sambalpur, Odisha.

Type of the study

The present study was performed on drug prescribing trend of anti-diabetic agents, antihypertensives and diabetic hypertensives which was attempted to find out the frequently prescribed drugs by the doctors in different diabetic patient.

Place of study

Veer Surendra Sai Institute of Medical Sciences and Research (VIMSAR), Burla, Sambalpur ,Odisha.

Study population

In the present study, all type of patients from both genders aging from 30 to 89, irrespective of their class and associated with types of diabetes diagnosed by the hospital physicians were included.

Study period

Study period was 2 months commencing from Nov 2019 to Dec 2019.

Sample size and sampling technique

In the present Study, Sample size consisted of 200 prescriptions which were sampled by using purposive sampling technique.

Data analysis

All the data were checked after collection. Then data were entered into computer and results were calculated with Microsoft® Excel 2010.

II. RESULT

Diabetes distribution profile on gender.

Gender	Patient	Percentage
Male	131	65.5%
Female	69	34.5%
Total	200	100%

Diabetic patients' distribution profile on age.

Age	Number of Patients	Percentage
30-44	40	20.00%
45-59	77	38.5%

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60-74	56	28%
75-89	27	13.5%
Total	200	100%

Distribution of the patients based on smoking habit.

Types	Percentage
smoker	28%
Non smoker	72%

Distribution based on doing exercise

Types of exercise	Percentage
Walking	58%
Other exercise (yoga, physiotherapy etc)	32%
Not doing exercise	10%

Distribution based on maintaining the food habit according to the prescription.

Types	Percentage
Maintaining	78%
Not maintaining	22%

Mostly prescribed drugs among diabetic patients

Drugs	**No. of patients**	**Percentage**
Metformin Hydrochloride	16	8%
Glibenclamide	20	10%
insulin	45	40%
Glimepiride	25	22.5%
Glipizide	13	6.5%
Pioglitazone	10	5%
Glimepiride + metformin FDC	12	6%
Glimepiride + pioglitazone FDC	8	4%
Gliclazide + metformin FDC	7	3.5%
Glimeperide+metformin+piogl-itazone	8	4%
Glimepiride + Metformin+ Voglibose	11	5.5%

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Sitagliptin+Metformin+ Glimeperide	7	3.5%
Glimeperide+metformin+piogl-itazone	6	3%
Insulin + sulfonylurea + biguanide + biguanide	7	4%
Insulin + sulfonylurea + biguanide + thiazolidinedione	8	4%

Use of drugs in diabetic patients suffering from HTN.

Drugs	**No. of patients**	**Percentaage %**
GlycerylTrinitrate	12	6%
Clopidogrel	26	13%
Ramipril	22	11%
Telmisartan	18	9%
Losartan	15	7.5%
Olmesartan	5	2.5%
Atenolol	20	10%
Metoprolol	26	13%
Carvedilol	4	2%
Amlodipine	15	7.5%
Nifedipine	1	0.5%

Use of drugs in diabetes suffering from cardiovascular disease.

Drugs	**No. of patients**	**Percentage %**
Aspirin	25	12.5
GlycerylTrinitrate	12	6
Ramipril	22	11
Other drugs	15	6

Shows prescription details of diabetes patients without co-existing hypertension.

Disease	**Number**	**Percentage**
Diabetes alone	91	45.5
Hypertension alone	16	8.0
Diabetes with Hypertension	93	46.5
Total	200	100

Out of 91 diabetes alone patients, 52 patients were on monotherapy, 28 patients were on dual therapy and remaining 10 patients were on triple antidiabetes therapy.

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the prescription details of antidiabetic agents in diabetic patients without co-existing hypertension.

Prescription type	Number	Percentage
Mono-therapy	64	70.32
Dual-therapy	15	16.4
Triple therapy	12	6.0
Total	91	100

Out of 91 diabetes patients, around 64 patients were on single drug for diabetes. And 15 individuals were prescribed dual antidiabetic agents. Whereas, remaining 12 patients were on triple anti-diabetic medications.

The prescription details of antihypertensive agents in all the hypertensive patients

Prescription type	Number	Percentage
Mono-therapy	74	67.88
Dual-therapy	25	22.93
Triple therapy	10	9.17
Total	109	100

A total of 140 antihypertensive drugs were prescribed for 109 hypertensive patients with co-existing type 2 diabetes mellitus. Among 140 antihypertensive drugs, 40 were calcium channel blocker (CCB), 36 were angiotensin converting enzyme inhibitors (ACEI), 28 (20.66%) were angiotensin receptor blockers (ARB), 10 (8.66%) were diuretics and remaining 14 were betablocker for the management of hypertension .

The details of antidiabetic agents in diabetic patients with co-existing hypertension.

Group	Number	Percentage
Calcium channel blockers	57	38
ACEI	40	26.66
ARB	31	20.66
Diuretics	13	8.66
Beta blockers	09	6
Total	150	100

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Similarly, a total of 206 antihypertensive drugs were prescribed for 164 hypertensive patients without any co-existing diseases. Among 206 antihypertensive drugs, 97 (47%) were calcium channel blocker (CCB), 37 (17.96%) were angiotensin converting enzyme inhibitors (ACEI), 31 (15%) were angiotensin receptor blockers (ARB), 26 (12.62%) were diuretics and remaining 15 (7.28%) were beta blocker for the management of hypertension .

Table 19. Table showing the details of antihypertensive agents in hypertension alone patients

Group	Number	Percentage
Calcium channel blockers	97	47
ACEI	37	17.96
ARB	31	15
Diuretics	26	12.62
Beta blockers	15	7.28
Total	206	100

III. DISCUSSION:-

Total number of patients is 200. Among them number of male patients is131 (65.5%) and number of female patients is 69 (34.5%).

40 patients in 30-44 age group (20%), 77 patients in 45-59 age group (38.5%), 56 patients in 60-74 age group (28%), 27 patients in 75-89 age group (13.5%). The number of total patients is 200.

According to the result obtained male patients are more than that of the female, male patients account for 65.5% of the total data collected. This may be due to their social habits and lifestyle changes. There are more than 24% patients who are both alcoholic and smoker in the study population, smoking disturbs the blood flow and metabolic action in the body and may lead to serious diabetic complications. Poor blood flow in the legs and feet that can lead to infections, ulcers, and possible amputation (removal of a body part by surgery, such as toes or feet), retinopathy (an eye disease that can cause blindness), peripheral neuropathy (damaged nerves to the arms and legs that causes numbness, pain, weakness, and poor coordination) and people with diabetes who smoke are more likely than nonsmokers to have trouble with insulin dosing and with controlling their disease. Whereas tobacco use increases the blood sugar levels and lead to insulin resistance. The study also shows that maximum numbers of people were not aware of their health status and poor diagnosis leads to this condition.Moreover Diabetes mellitus with hypertension is associated with various complications and quite significantly leads to death.

Metformin is referred as an ideal first line agent in the management of type 2 diabetes mellitus. Apart from that Metformin is available at affordable cost and thus it makes economically very helpful to the patients. In addition sulfonylureas or insulin were given in combination to Metformin for uncontrolled diabetes mellitus cases. Combination therapy with Metformin is preferred to those patients with uncontrolled diabetes even with the help of diet and exercise. Metformin, on the other hand does not cause weight gain and weight reduction occurs in more cases.

The most commonly used antihypertensive drugs are ARBs and diuretics combinations. It showed that monotherapy with antihypertensive drugs was more common compared to combination therapy. Telmisartan is the most commonly used antihypertensive drug in this observational study. As per many studies, ARBs are better in diabetic hypertensive patients to protect from microvascular and macro vascular complications. A prescription based on study is considered to be one of the most effective methods to assess and evaluate drug utilization of medication. Prescription by the clinician may be taken as a reflection of his/her attitude towards the disease and role of the drug in treatment. It also provides insight on the nature of healthcare delivery system. The objectives of antihypertensive treatment are to control hypertension and also to

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reduce mortality and morbidity associated with hypertension. Most of the hypertensive individuals require two or more drugs for the proper control of blood pressure. Sometimes presence of co-existing disease affects the selection of antihypertensive drugs. [22]

The United States Joint National Committee on the prevention, detection, evaluation and treatment of high blood pressure states that in the absence of compelling or specific indications for another drug, a diuretic or β-blocker should be chosen as initial therapy for hypertension [23]. These recommendations were seconded by the British Hypertension Society [24].

Use of multiple drugs in combinations has become routine to control hypertension in patients with diabetes. Several hypertension could achieve and sustain adequate blood pressure control only with the use of multiple antihypertensive drugs [25]. However, in our study majority of the patients in our study were on monotherapy (followed by dual-therapy and triple therapy . These findings are similar to the previous studies done in India.[26] Several studies in India have shown an increasing trend in the prevalence of HTN among urban adults. HTN is responsible for 57% of all stroke mortality and 24% of all CAD mortality in India. [27] HTN substantially increases the risk of both macrovascular and microvascular complications in DM. Beta blockers and diuretics are less commonly used antihypertensive agents in our study.

IV. CONCLUSION:-

The leading cause of deaths in ODISHA people is hypertensive and diabetes. Combination therapy pattern for the treatment of diabetic patients suffering from cardiovascular diseases is stated in this study. We have observed that Diabetic patients with increased cardiac risk particularly with high risk of stroke and dyslipidaemia .We can reduce the risk of diabetes and cardiovascular disease by avoiding of tobacco use, reducing of salt in the diet, doing regular physical exercise, avoiding harmful use of alcohol. We can also prevent heart disease & stroke through healthy diet, choosing a diet rich in fruits and vegetables, maintaining a healthy body weight, avoiding obesity and avoiding foods that are high in fat, sugar and salt. Preventing or treating hypertension and raised blood lipids are also helpful to reduce the diabetic risk. And finally this study observed that the patients with both diabetes and hypertension required proper dietary control, life style modifications such as physical exercises, yoga, meditation and reduction in obese level.

In all, the prescribing pattern of antidiabetics in patients of HTN with T2DM ,ACEIs/ARBs are most common drugs prescribed with most of them being monotherapy or dual drug therapy is rational and is as per guideline recommendations.

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