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RESEARCH ARTICLE

"RETROSPECTIVE STUDY ON PRESCRIPTION PATTERN OF DRUGS USED TO TREAT PREGNANCY INDUCED HYPERTENSION AND OTHER COMPLICATIONS"

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Pregnancy Induced Hypertension(Pih), Gestational Diabetes Mellitus, Monotherapy, Nutritional Therapy

Abstract

Objective:To Identify Pregnancy induced complications.The Aim of this study is to Analyse Prescription patterns of the drugs to treat Pregnancy induced Hypertension and other complications among pregnant women.

Material And Methods Of The Study: This is a Retrospective Clinical Longitudinal Interventional study, conducted among 100 Pregnant Women at a study site of St. Joseph General Hospital. Relevant data such as Demographic details of patients, Risk factors Past medical history, Family history, Pregnancy Gravida, Last menstrual period and Last Child Birth were collected from previous one year old medical records.

Statistical Consideration: All the Raw data which had collected was entered in "**MICROSOFT EXCEL SHEET 2007"**version, the Statistical analysis was done through "**SAS** software **version 9.4"**by an appropriate Statistical methods continues variables are Presented as Mean values- Standard deviation and categorical variables are presented as Percentages.Wehad estimated the Incidence proportion of PIH by age,Gravida and also estimated the Incidence of other complications.

Results: Among 100 Patients, we estimated incidence proportion of PIH by age group of 26-30 years the incidence is 41.56% , Next category of age group is 21-25 years the incidence is 24.68%. And next PIH according to Gravida,58% had developed in Primi and 30% had developed in second gravida, also 8% in third gravid lastly 4% in fourth gravida.

Also,The incidence proportion in pregnancy induced complications are Gestational diabetes mellitus-53%, Pre-eclampsia-4%,Others-43%.

Conclusion: We conclude that among 100 Pregnant women most of them were having Pregnancy induced hypertension, the drug of choice is Labetolol-100mg,followed by Gestational diabetes mellitus and other complications Hypothyroidism, RH^{-ve} factor, Urinary tract infections, Anaemia ,Oligohydramnios.

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Introduction:-

Pregnant women undergoes extensive anatomical and physiological changes. So, that they can marriage with increased physical and metabolic demands of their pregnancies. Cardiovascular respiratory, haematological, renal, gastro intestinal and endocrine systems.

All the above systems undergo vital, physiological alterations and adaptations needed to allow development of foetus and to allow the mother and foetus to survive demands of child birth. Moreover understanding these alterations was crucial for every practicing obstetrician, as the pathological deviations from normal physiological changes may not be clear-cut until any adverse outcome had resulted.

1. Vascular Changes : cardiac output was calculated as product as stroke volume and heart rate. Stoke volume was increased by 20-30% during pregnancy. Early in pregnancy maternal heart rate increased, hiked maintained steady in third trimester during which 15-20 beats higher. Throughout the gestation, the blood flow to uterus and placenta constitute up-to 25% of the cardiac output and was dominant for development of offspring. Besides, the blood flow to the skin, kidney and breasts elevated.
2. Respiratory Changes: Besides a bigger neck circumference, there was increased oedema of upper respiratory tract i.e., pharynx and larynx. Blood vessels undertake vasodilation, as a result nose bleeding, rhinitis and nasal congestion. Due to amplification of uterus and increased abdominal pressure diaphragm was raised 4cm. Besides progesterone and relaxing lead ligaments connecting ribs to sternum to ease. As a result Subcostal angle of ribcage raised up to 68.5 to 103.5 degrees. Spirometry variables were normal during gravidity.
3. Endocrine Changes: Throughout the gestation period endocrine system go through alteration to cope with raised metabolic demands of mother and foetus. Gravidity was a state of Hypercortisolism. Carbohydrate and fat metabolism undertake changes such as fatty acids and glycerol were utilized for maternal energy, while glucose and amino acids were spared for offspring.
4. Haematological Changes: Plasma volume will increase 30-50% by 1200-1300ml in parturiency. This increase was higher in multigravidas compared to prim gravidas. Total body water content was raised byApproximately 6.5-8.0lits.Pregnancy was featured by prothrombotic state with a four-fold rise in risk of venous thromboembolism(Tan, 2013)

A full term pregnancy three trimesters and lasts up to 40 weeks-Starting from day one of last menstrual period. In each phase, the foetus meets some specific developmental milestones.

While 40weeks was usual time period, a full term baby could be born as early as 37 weeks and as late as 42 weeks. The office on Women's health defines the three trimesters as follows, though the time may vary:

1. First trimester:1-12 weeks
2. Second trimester:13-28 weeks
3. Third trimester:29-40 weeks.

Few Persons also talks about fourth trimester Which was 3-month transitional period after delivery.(Nicole galan, 2021)

FDA approved Teratogenic risk of medications by an A,B,C,D,X systems and let's see briefly about them,

1. Category A:Medications in this class are Vitamins and levothyroxine.
2. Category B:Examples-Nitrofurantoin, Metronidazole, Clindamycin, Cephalosporin and penicillin.
3. Category C: Examples-Sulfamethoxazole,Fluoroquinolones,Gabapentin,Lamotrigine and pregabalin.
4. Category D: Examples - Tetracycline,Aminoglycosides, Carbamazepine and Phenytoin.
5. Category X: Examples – (Contraindicated in pregnancy)-Thalidomide and Warfarin.(Dr.Johnson)

Pregnancy Induced Complications:

Hypertensive disorders were the most common medical complications of gravidity with a reported incidence range from 6-10%,the major types of Complications includes:-

1. Chronic hypertension:≥140/90mmhg
2. Preeclampsia -eclampsia: Hypertension, Proteinuria(≥0.3g/24hrs)
3. Gestational hypertension:≥140/90mmhg.(Divyashree N, 2017)(Shekhar, 2019)

4. Preeclampsia explained as a multiple disorder featured by outset of hypertension ≥140/90mmofHg arising after 20 weeks of gestation in a formerly normotensive women.(Sajith M, 2014)

Gestational diabetes mellitus:
It's a condition of elevated blood glucose level, found through Pregnancy period and become normal soon after delivery, resulting with long term effects to both mother and Child

This GDM long term consequences includes,High caesarean sections, preeclampsia and UTI in both neonate and mother,HTN,stroke,neonatalhypoglycaemia and jaundice.(Ganesan V, 2019)

ADA endorsed targets for women with type 1 or type 2:
1. Fasting <95mg/dL
2. One hour postprandial <140mg/dL
3. Two hour postprandial<120 mg /dL. (Management of diabetes in pregnancy, 2017)

Anemia:
Hemoglobin normal range:
1. HB 12-15.8 g/dL normal women
2. HB 11.6 - 13.9 g/dL first trimester
3. HB 9.7- 14.8g/dL second trimester
4. HB 9.5 - 15 g/dL third trimester. (Perinatology.com)

Thyroid disease :
According to American thyroid association:
1. Frist trimester Thyroid stimulating hormone (TSH) 0.02 - 3.78mIU/L Free thyroxine 13.93 to 26.4pmol/L Total thyroxine (TT4) 103.3- 319.43 nmol/L.
2. Second trimester TSH 0.43-3.89 pmol/L, FT4 12.33- 19.33pmol/L , TT4 92.28-234.58nmol/L.
3. Thrid trimester TSH 0.55- 4.91mIU/L , FT4 11.38- 19.21pmol/L, TT4 83.54- 258.13nmol/L. (Zhang, 2019)

Lower extremity hemodynamics in gravidity:
The lower extremity venous system was collected of a sequence ,deep and perforator veins , all of which act in concert to backup blood to heart.In a normal individual vascular system differs it's time in response to alterations in the cardiac output of heart and arterial supply to lower extremities was comparatively matched by venous system.(Tylor J H. G., 2018)

Aims And Objectives:-
AIM: The purpose of this study was to provide information about the prescription pattern of drugs to treat Pregnancy induced hypertension and other complications among pregnant women.
1. To identify the complications during pregnancy.
2. Prescribing pattern of antihypertensive drugs in patients with PIH.
3. To analyse determine which age groups are mostly affected
4. To determine risk of developing GDM in pregnancy, if family history having DM.
5. To determine in which gravida, they are developing PIH.

Methodology:-
Study Design:
This is a Retrospective,longitudinal study conducted in department of gynaecology and obstetrics in St. Joseph general hospital,Guntur.

Study Duration:
100 patients were observed during study period commencing from (i.e., April 2020 – March 2021).

Inclusion Criteria:
1. Age group-Pregnant women above 18years and below 40years are selected.
2. Conception type: Normal or others(IVF).

3. Patients having complications in pregnancy are selected.

Exclusion Criteria:
1. Pregnant women below18years and above 40years.
2. Pregnant women having twins and mentally retarded.
3. Patients already having hypertension before pregnancy are excluded.

Statistical Analysis:
1. Statistical analysis was done by using descriptive statistics. Data was collected in a predesigned **Microsoft R excel 2007**.Categorial variables were presented as percentages.
2. Statistics was done using **SAS University edition software**. We would estimate incidence proportion of PIH by age, gravida and length of material life.

Results And Analysis:-

We have conducted study on 100 pregnant women with complications in Pregnancy and other complications,the results are as follows :

Table 1.1:- Demographic Distribution Of Patients Based On Age Group.

AGE GROUP	NO. OF PATIENTS	PERCENTAGE
18-20 YEARS	9	11.69
21-25 YEARS	27	24.68
26-30 YEARS	44	41.56
31-35 YEARS	16	16.88
36 -40 YEARS	4	5.19

Figure 1.2:- Gravidity Wise Distribution Of Patients.

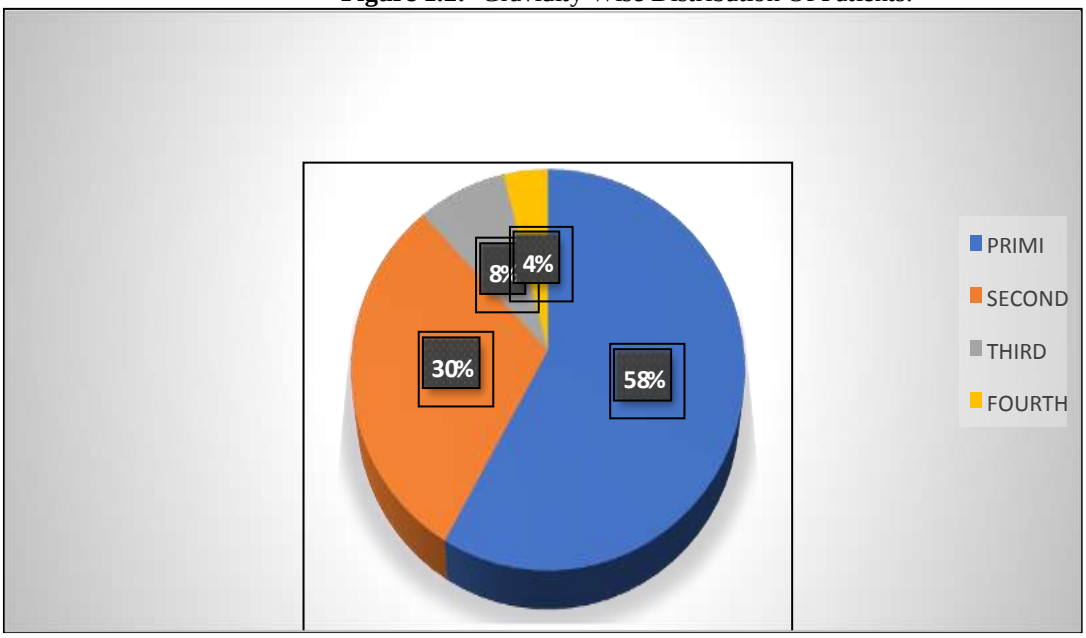
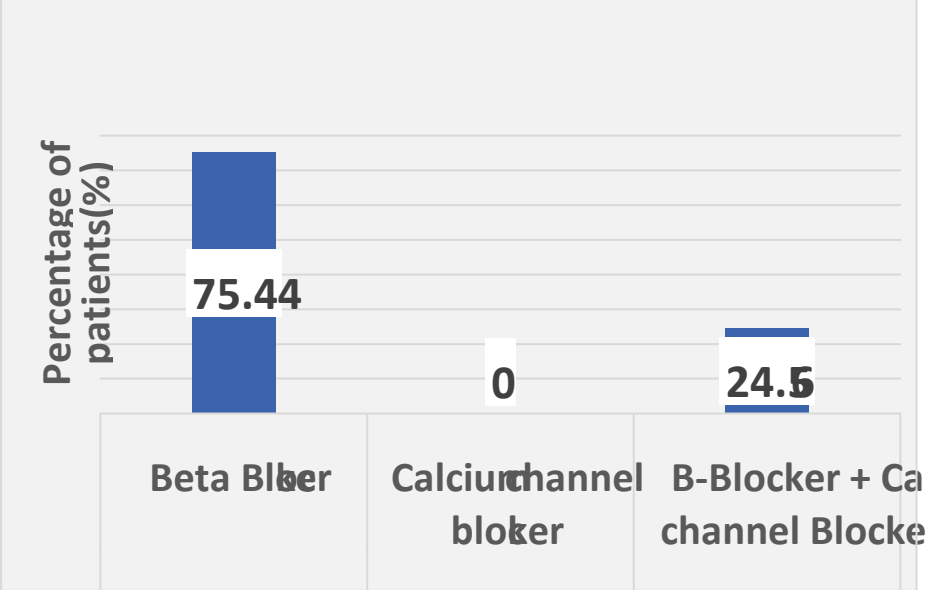


Figure 1.3:- Maternal Complications In Pregnancy.

COMPLICATION	FREQUENCY	PERCENTAGE(%)
Gestational Hypertension	53	53.00
Pre-Eclampsia	4	4.00
Other Complications	43	43.00

From Table 5.3, We conclude that more than 50% of the patients developed Pregnancy Induced Hypertension (Major complication seen among pregnant women).

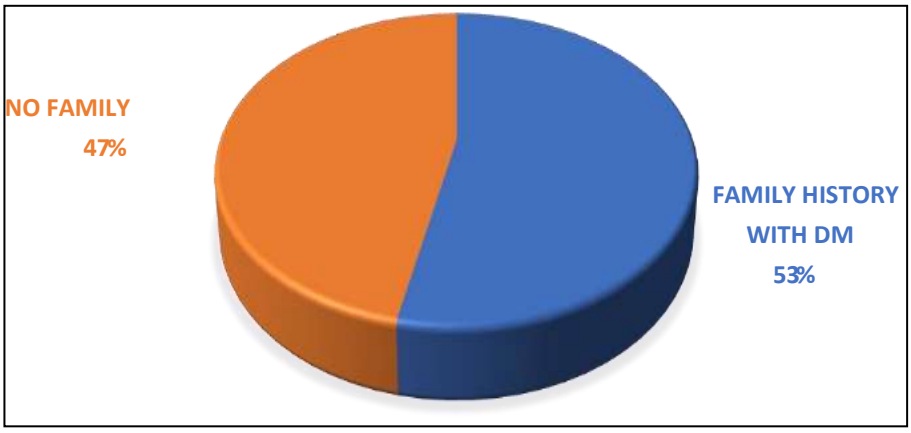
Figure 1.4:- Prescribing Pattern Of Antihypertensive Drugs In Patients With PIH.



LABETALOL (MONOTHERAPY)NIFEDIPINE (MONOTHERAPY)LABETALOL+NIFEDIPINE (COMBINAT

From Figure 5.4 We conclude that more number of patients were prescribed with Labetalol (Monotherapy) and then followed by combination therapy (Labetalol + Nifedipine). None of them were prescribed with Nifedipine.

Figure 1.5:-Percentage Of Patients Having Gdm With Family History Of DM.



From Figure 5.8, We see that more than 50% of patients having family history of DM, and developed GDM in their Pregnancy.

Figure 5.6:- Prescription Pattern Of Drugs To Treat Complications In Pregnancy.

COMPLICATION	TREATMENT
Pregnancy Induced Hypertension	Labetalol
	Nifedipine
Gestational Diabetes	T.Glycomet

	Human Mixtard
Hypothyroidism	Levothyroxine
Hyperthyroidism	Propylthiouracil
	Methimazole
Urinary tract infection	Nitrofurantoin
Anaemia	Folic Acid, Iron Supplements
Rh-ve Mother	Anti-D Immunoglobulin

From Table 5.7, We can see the drugs that are commonly prescribed to treat complications in pregnancy.

Discussion:-

1. In this study we tried to provide information regarding prescription pattern of drugs to treat "Pregnancy induced hypertension and other complication among pregnant women by visiting "Obstetrics &gynaecology department" in "St.Joseph's General Hospital",Guntur.
2. We gathered required information about "A total of 100 pregnancy patients were studied" by reviewing the findings of available studies of pregnancy induced hypertension and other complications like GDM, hypothyroidism, Rh-ve factor, Anaemia, Pedal oedema, UTI, Oligohydramnios, Menorrhagia.
3. We provided information regarding Pregnancy induced hypertension within age group of **26-30**years incidence is about **41.56%**and next age groups is about **21-25** years and the incidence is about **24.68%.**
4. We also determined to which gravida patients are developing PIH,So in a total of **100** percentile about **58%** of patients have developed Primigravida and about **30%** of patients have developed second gravida, also in third gravida**8%** of patients have developed and finally in fourth gravidaupto**4%** of patients have developed PIH.
5. Also according to no.of patients (sample size 100) the no.of patients that are developed PIH, So in a total of 100 percentile about **61%** of patients have developed "**Primigravid"** and about **28%** of patients have developed "**Second gravid"**, also in "**Third gravid"5%** of patients have developed and finally in "**fourth gravid**"upto**5%** of patients have developed **PIH**.
6. We have determined prescribing patterns of Antihypertensive drugs in patients with PIH. So, in the total categories of Beta blockers(Monotherapy) and calcium channel blockers and also combination therapy of Labetalol +Nifedipine, A total percentile of **75.44%**of Beta blockers - Labetalol had prescribed and also in the combination therapy about **24.56%** of Labetalol+Nifedipine had prescribedand in calcium channel blockers its about 0% that had prescribed.So, moreoverLabetalol is the drug that had prescribed in **Monotherapy**.
7. We have also determined patients **GDM** with family history of **DM** of about **53%** and without family history of **DM** of about **47%.**
8. Our study also determined about the no.of patients that have developed Maternal complications in Pregnancy(According to sample size 100):

1).Gestational Hypertension-**53**
2).Other complications-**43**
3).Pre-eclampsia-**4**

From the present scenario it was observed that Other maternal complications in pregnancy patientsin percentages are:
Gestational Diabetes-**28.57%**,Anaemia-**18.57%,**Hypothyroidism-**12.86%,**RH-Ve mother-**8.57%** and Pedal oedema and Urinary tract infections had scored same percentiles about **5.71%,**also Oligohydramnios and Premature rupture of membranes had scored about **2.86%** and Rest of the other complications such as Bronchial asthma, Acute kidney disease, HyperemesisGravidarum, Hyperthyroidism, these all have scored about **1.43%** among the patients

Conclusion:-

1. We concludethat among 100 pregnancy complications cases observed, Most of the Pregnant women were having Pregnancyinduced hypertension with almost 41.56%and then the most common choice of drug used to treat PIH is labetalol 100mg,also used as Monotherapy.
2. Other complications in pregnancy include Gestational diabetes mellitus, Hypothyroidism,RH-VE factor, Urinary tract infections, Oligohydraminos.
3. So among all these Hypertension and Gestational diabetes mellitus etc.,these are the major health challenges for both Pregnant mothers and child's.

4. The other drugs used to treat PIH include Nifedipine, Methyldopa. The common drugs used to treat other complications in HypothyroidismisThyronorm.
5. Mostly AGE GROUPS are seen with complications and complications are seen in Primigravida.So,theMajor risk factors for complications in Pregnancy includes obesity, age,Patients already having Hypertension and other health problems, Family history.

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