A Clinical Study on Gestational Diabetes Mellitus and Pregnancy Induced Hypertension

THESIS

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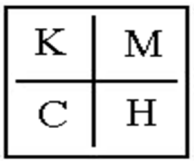

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8. Conclusion

Incidence of GDM in our study population was found to be high compared to PIH.

Prevalence of both the complications reduced from 2003 to 2012. Prevalence rate of GDM was 3.28% in 2003 which was reduced to 2.11% in 2012 and the prevalence rate of PIH was 2.87% in 2003 to 1.16% in 2012. But the incidence of both the complications was increasing from time. GDM and PIH were found to be increased from 24 to 60 and 21 to 33 cases respectively.

Age, BMI, gravidity (primigravida, multigravida), parity (nulliparity, primiparity), previous GDM, previous PIH, family history of DM and irregular menstrual cycle are found to be the risk factors for GDM or PIH.

Advancing age, advancing BMI, advancing gravidity and advancing parity are the important and common risk factors for causing GDM and PIH, and when this risk factor's values reaches the maximum greater the chances of developing both together.

The frequency patterns for development of both complications were similar, but the peak period for occurrence is varies with values of risk factors. (*For PIH, the higher frequency starts from younger age to elder age (from 20 to linearly increase to age 25) and for GDM the higher frequency starts from younger risky age to elder age (from 25 to linearly increase to age 29). The same kind of trend can be seen in BMI also; the frequency of PIH increases from lean to ideal body weight (BMI of 18 to 24.99 kg/$m^{2,}$), and frequency of GDM increases form overweight to obese (BMI of 25 to 29.99 kg/$m^{2,}$), when age and BMI reaches above 30 the frequency is higher to develop both complications together*).

Primigravida or the first pregnancy women are more prone to develop PIH, and when gravidity is increasing, the risks are more to develop GDM and both together. *(Significantly the average gravidity was less with PIH women compared to GDM or both group women. GDM+PIH group women have higher gravidity value than GDM or PIH alone women)*

Nulliparity and primiparity are significant risk factors to develop both GDM and PIH, but for a nulliparous woman the frequency is high to develop PIH first then GDM, and when parity is increases the frequency is more with GDM, for primiparous women the frequency is high to develop GDM than PIH. (*The average parity value is less with PIH women compare to GDM women)*

Women having the family history of DM are prone to develop both kind of complications, but the frequency is significantly high with GDM than PIH. Family history of hypertension is not influence the women to develop any complication. Paternal history of DM influences women more to develop GDM than maternal history of DM do with women.

The previous history of GDM or PIH may not be consider as significant risk but when combined with other risk factors this may enhance the risks for developing any complications. Previous history of PIH significantly causes the development both complications together.

Women having more number of risk factors are more prone to develop any complication. The increases in the number of risk factors may cause a parallel increase in the risks to develop PIH, GDM then GDM+PIH.

When the risk factors are increasing the addition of risk factor significantly changes the probability of developing complications. The increasing in number and values of risk factors would actually increases the risks of women to develop the complications early. Increase in number of risk factors may cause early development of GDM and not necessarily cause the early development of PIH.

Cesarean delivery is common in both complications, when a woman develops both complications the greater the chances of cesarean delivery. *(GDM alone women – 81% of cesarean delivery, PIH alone women – 94% cesarean delivery, GDM+PIH woman – 100% cesarean delivery.)*

All the new born babies were found to be normal and good in health. Two fetal deaths and one maternal death were occurred as a result of PIH complication. No neonatal birth injury was reported. The average baby weight of GDM women was within the normal range and below the normal range for PIH women. *(Average baby weight of GDM women was 2.67 ± 0.65 kg. Average baby weight of PIH women was 2.22 ± 0.73 kg and the same was 2.45 ± 0.81 kg for GDM+PIH women).*

Hypoglycemia and hyperbilirubinemia are very common in babies of GDM women. *(Around 60% of babies affected with both of above mentioned neonatal complications)*

The length or duration of GDM doesn't change the severity of perinatal outcome, whether it is developed early or late the outcome result will be similar.

The type of treatment, whether it is diet or along with insulin, depends on the blood glucose maintenance the perinatal outcome is similar for GDM women.

Pregnancy outcome was significantly improved with the GDM women who controlled the fasting blood glucose level with in the normal range. Strict control of blood glucose level under the normal range gives better pregnancy outcome in GDM. *(The following perinatal complications were improved in the GDM women who controlled fasting blood glucose level below 95 mg/dl, mode of delivery, term of delivery, LBW, NBW, LGA and week of delivery).*

Anti-hypertensive drugs nifidepine and methyldopa were significantly reducing the elevated blood pressure to normal range and reduce the perinatal complications also as well, and pregnancy outcome also same between these two drugs.

The increase in severity of PIH increases the perinatal complications as well. Greater the disease severity, poorer the pregnancy outcome.

The duration, treatment and development or severity of diseases doesn't produce significant changes in the outcome of pregnancy, but the strict control over the disease would definitely give the good outcome. The GDM women who strictly controlled the blood sugar level with in the normal range showed significant improvement in the pregnancy outcome, hence, regardless to the time of diagnosis and treatment of GDM, strict control of blood sugar level with in the normal range would give beneficial effect to pregnancy outcome. Same way the pregnancy outcome is worsening with the severity of PIH, and since the control of blood pressure improve the perinatal outcome, the adequate BP control by any antihypertensive drugs within the normal range would give a good pregnancy outcome.

The occurrence of GDM itself again act as a risk factor and causes PIH, the coexisting of these complications influences each other and further worsen the pregnancy outcome. Since both complications are having common risk factors and frequency of development, identifying the women early, initiating the treatment early and strict control over the diseases definitely improve the outcome of pregnancy.

9. Impact of the study

Gestational diabetes mellitus and pregnancy induced hypertension are the most commonly encountered problems that occur during pregnancy and may lead to serious complications. Maternal and neonatal morbidity and mortality were found to be high and potentially harm both the fetus and mother. The impact of diseases continues even after the delivery to both mother and child. The GDM affected women have 50% more chances to develop type 2 diabetes mellitus than normal women. The offspring's of GDM mother too affected with childhood obesity. The preterm birth and intra uterine growth retardation leaves some traces on child hood growth, those exposed children shows slow growth mentally and physically compared to non-exposed children. The maternal mortality rate is still high with hypertensive disorders than any other complications during pregnancy. But the recognition is still low to these complications.

First, this study would definitely create awareness about these complications in public. The awareness will draw complete attention and cooperation in the management of diseases. Our study suggests the possibilities of identifying the susceptible women by assessing the risk factors very early even before the pregnancy. Early detection and early treatment gives a complete understanding to health care professionals throughout the remaining pregnancy period. Awareness and education about this model to society will make the women knowledgeable and confident to fight against this illness.

We have aimed and developed a strategic tool to find out the susceptibility of women to have these complications. This is basically a prediction tool assessing the biological risk factors of women. Since the tool developed with small and single ethnic population it needs a widespread data from different ethnic to become an adoptive model as a screening tool. Once this model is successively developed, this will be an easy tool to screen the women in low resources settings and rural areas.

Currently there were no universally adopted guidelines for the management of these complications. This study results gives a broad idea about the progress and outcome of diseases. It also suggests that control in GDM and PIH would give beneficial effect in the outcome of pregnancy.

Education is a major part in the management of pregnancy complication which involves life style modification, weight management, knowledge of drugs and self-monitoring of blood glucose and blood pressure. Our study would give the information to women on all the areas of management of these complications.

Outcome of the study provide the knowledge on cost-effective management and patient education to the pharmacists.