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Study on Urine Acetone during Pregnancy in Association with Gestational Diabetics

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Abstract: ***Ketone bodies are also known as ketones. They are the normal product of fat metabolism. Ketones are normally not detectable in blood or urine. Ketone bodies should be test routinely in any urine that is positive for glucose because they appear in urine of diabetics. Normal pregnant women has an increased rate of glucose utilisation and excretion which lead to the faster rate of reduction for blood glucose.30 urine samples of pregnant women in first trimester were selected and analysed for acetone. Higher rate of ketone body metabolism was found in pregnant women with GDM than those without GDM.***

Keywords: IQ, Intelligence quota, GDM, Gestational Diabetic mellitus, mmol/L-millimoles per litre, Ketonuria

1.Introduction

Ketonuria has been associated with adverse pregnancy outcomes in some but not all studies. The level of urinary maternal ketones that has been associated with these adverse pregnancy outcomes has been as low as 1-3 mmol/L, which equates to a trace to small level on a urine dipstick.

Ketones, which consist of a mixture of acetoacetate, acetone and beta-hydroxybutyrate are produced from the breakdown of lipids when the body's metabolic needs are not met by glucose. Any reduction in glucose supply, such as from decreased oral intake or a diet low in carbohydrate, will result in an increase in ketone levels.

Maternal ketones are supplied to the foetus through passive diffusion across the placenta. In pregnancy, the synthesis of ketones is accelerated, particularly in the third trimester, due to high-energy demands and increased maternal lipid metabolism in response to increased maternal insulin resistance.

Ketonuria may instead be a marker of maternal pathology that causes both an adverse foetal environment and elevated urinary ketone levels. Any pathology resulting in a decrease in glucose availability will lead to an increase in ketone levels. Likewise any pathology that leads to maternal dehydration will have the effect of increasing urinary ketone levels, secondary to a decrease in urinary volume.

Ketonuria may be associated with adverse foetal outcomes. This study aimed to determine the prevalence of ketonuria in pregnancy.

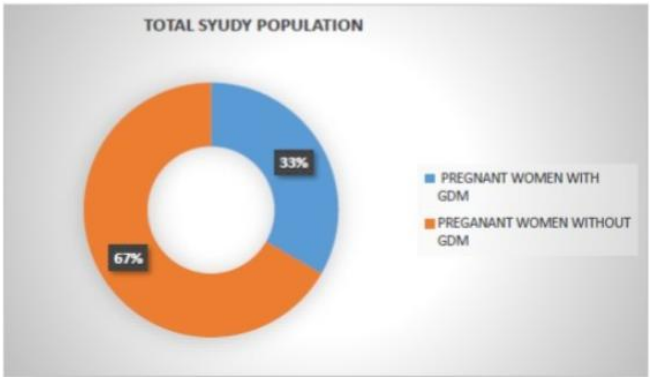
2.Method

The patient population recruited from inpatient department of gynaecology and obstetrics and further referred to clinical pathology laboratory. It is a retrospective study. The study population consists of 30 pregnant womens in first trimester. Dipstick assay is performed. A test strip for detection of ketone bodies, comprising an absorbing material, a heavy metal salt (sodium) and a nitroprusside salt. Patient is advised to collect urine in a wide mouth clean container. The strip changes colour as it reacts to the ketones.

3.Result

3.1 Total Number of Patient Sample Collected

	With GDM	Without GDM
Patients (Nos)	10	20
Percentage (%)	33 %	67 %

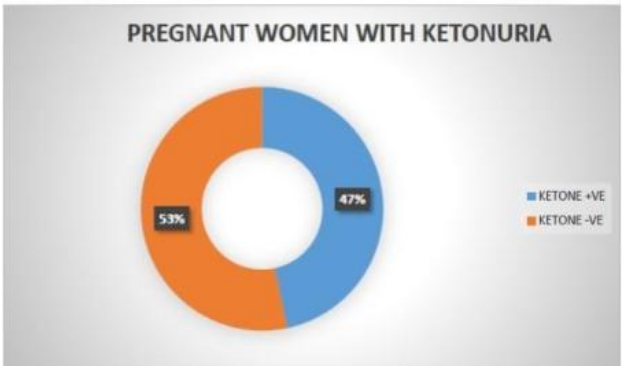


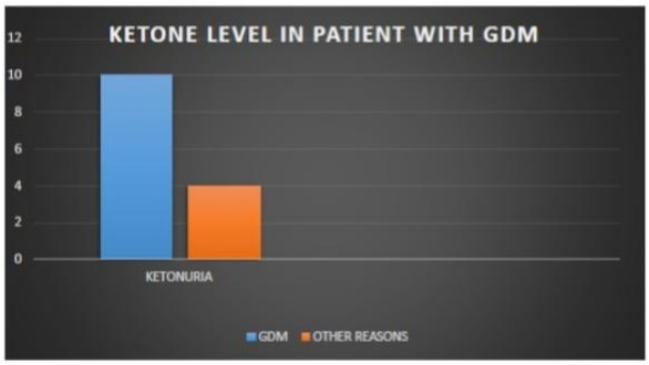
3.2 Total Number of Patient with Ketonuria

Patients (Nos)	14	16
Percentage (%)	47 %	53 %

3.3 Ketonuria in Patient with GDM

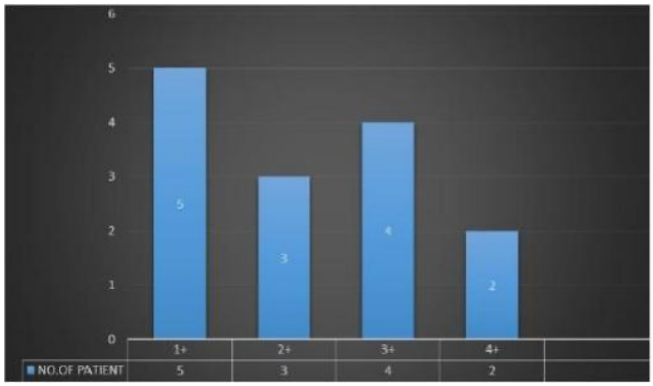
	GDM	Other Reasons
Ketonuria	10	4





3.4 Ketone Level Grading

Kentonuria Grading	Patient (Nos)
1+	5
2+	3
3+	4
4+	2



4.Conclusion

The present study concludes that 30 samples were selected out of that 10 of them were positive for GDM. Out of 30 samples 14 of them were positive for ketonuria. Out of 14 ketonuria patients 10 were due to GDM and 4 of them due to other reasons. Most of the patient showed 1+ degree of ketonuria. Mild transient ketosis may cause great harm to the health of pregnant women and the fetus in-utero if not identified in first trimester.

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