



MICRO LABS LIMITED



GYNAE SPECTRUM

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Dear Doctor,
Greetings from Micro Labs. We are happy to bring you “Gynae Spectrum”, which contains latest and interesting news in the field of Obstetrics and Gynaecology.

This issue contains:

- Comparison of Factor XII levels in gestational diabetes, fetal macrosomia, and healthy pregnancies.
- A case of Adult giant hydronephrosis diagnosed in the second trimester of pregnancy.
- Heritable risk of pre-eclampsia connected to blood pressure and BMI

Should you require any article or, medical information, please feel free to contact us medicalservices@microlabs.in

Looking forward to your valuable feedback.

Best Regards,

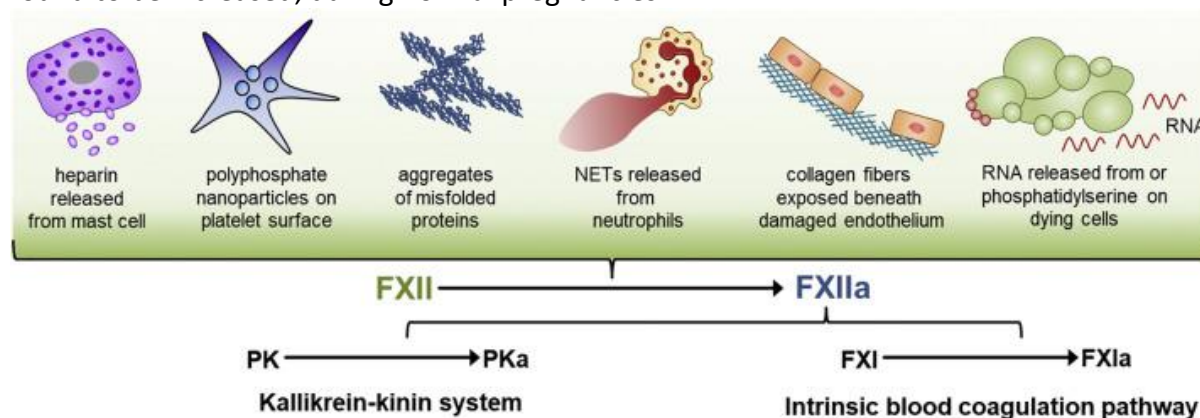
Medical Team, Micro Labs Limited



1. Comparison of Factor XII levels in gestational diabetes, fetal macrosomia, and healthy pregnancies.

INTRODUCTION

Gestational diabetes mellitus (GDM) is one of the usual pregnancy complication. It can cause complications during pregnancy such as macrosomia, preeclampsia, and fetal/neonatal mortality. Hypercoagulation is one of the contributing factors for GDM. Factor XII has been found to be increased, during normal pregnancies.



Current study evaluates the link between GDM with FXII, FXII (activated FXII) and other coagulation factor levels. GDM and macrosomia have a close relation, but it is unknown whether FXII could be an independent etiological factor for macrosomia.

MATERIALS AND METHODS

A prospective, non-randomized single centre study cohort study involving 70 term pregnant women with GDM, fetal macrosomia, or normal low-risk pregnancies were included in the study and the exclusion criteria was, patients less than 18 years old, had a preterm delivery (< 37 weeks of pregnancy), post-term delivery (> 42 weeks of pregnancy), high-risk pregnancy (preeclampsia, intrauterine growth retardation, placenta previa, placenta accreta, or oligohydramnios), or a diagnosis of gestational or pregestational systemic diseases (hypertension, liver disease, kidney disease, pulmonary disease, hematologic disorders such as inherited coagulation defects, or gestational hypertension).

Blood samples were drawn to determine the levels of FXII, FXIIa including other co-agulation factors.

Based on the results, pregnancies were categorized as GDM, non-diabetic with macrosomia (M), or healthy (C [Control]).

RESULTS

FXII concentration levels increased notably in GDM patients compared to M and C groups. The differences were not statistically significant when comparing FXIIa, activated partial thromboplastin time, prothrombin time (PT), and international normalized ratio. The GDM group displayed a remarkable negative correlation between FXII concentrations and maternal pregestational body mass index (BMI) and BMI before delivery. In the M group, there was a



positive correlation between FXII concentrations and newborn weight and newborn weight percentile.

	CONTROL (n = 25)	GDM (n = 22)	MACROSOMIA (n = 22)	p-value
FXII Conc. (ng/ml)	72,7 ± 23,24	93,9 ± 38,52	78,9 ± 33	0,029*
FXII Act. (%)	117,45 ± 57,54	116,58 ± 26,41	119,88 ± 33,46	0,521
APTT (sn)	25,01 ± 2,03	24,93 ± 1,54	24,98 ± 2,33	0,900
PT (sn)	10,19 ± 0,44	10,33 ± 0,44	10,42 ± 0,55	0,240
PT activity %	114,6 ± 9,06	109,88 ± 11,31	109,07 ± 12,24	0,173
INR	0,93 ± 0,05	0,95 ± 0,06	0,95 ± 0,05	0,619

Data was presented mean ± standard deviation

Haemostatic parameters of controls, GDM and non- diabetic pregnant with macrosomia

DISCUSSION

FXII is one of the key coagulation factors implicated to be increased in hypercoagulable state in diabetes. There is limited data regarding plasma levels of Factor XII in pregnant women with GDM. Plasma levels of Factor XII, have been found to be significantly increased in GDM.

Earlier studies suggest that, growth factor like (EGF-like) activities, can determine the liver growth and promote protein production in the liver, which might be responsible for the stimulation of production of FXII and hence other co-factors. The growth factor-like activity of FXII might possibly be the etiology of hypercoagulability and undesirable outcomes such as preeclampsia, macrosomia, birth trauma, and stillbirth in GDM. Though no significant increases in FXII levels in the non-diabetic macrosomia group was detected, a positive correlation was found between FXII levels and infant birth-weight. This leads to an understanding that, investigating the effects of FXII's zymogen could be of value, in pregnant women.

CONCLUSION

Factor XII levels increased in pregnant women with gestational diabetes. The relationship between coagulation parameters and GDM should be further studies to understand the definitive mechanisms of GDM and possible treatment options.

Reference:

Ozbasli E, Takmaz O et al. Comparison of factor XII levels in gestational diabetes, fetal macrosomia, and healthy pregnancies. BMC Pregnancy Childbirth. 2020 Dec 2;20(1):752.

2. A case of Adult giant hydronephrosis diagnosed in the second trimester of pregnancy.

Introduction

Adult giant hydronephrosis in a normally sited kidney is an unusual finding during pregnancy. The common etiology is congenital obstruction at the ureteropelvic junction. Ultrasound along with magnetic resonance imaging are the most useful tools of diagnosis, specifically



when the mass located in the abdomen is inclusive with respect to etiology.

Current is a case of giant hydronephrosis in pregnant women who showed up at 23 weeks of gestation with abdominal distension.

Case report

A 26-year old women, at 23 weeks presented with 1 week's history of left iliac pain. There was no symptoms of urinary frequency or dysuria. Urine output was normal and per-vaginal bleeding and uterine tightening were absent.

Her BMI was 28.2 kg/m^2 and she had gestational diabetes diagnosed in the initial duration of second trimester.

On examination a palpable mass was detected, which was 30 week size and spanned over the left-seprapubic area which extended till the left hypochondrium. The mass was cystic, non-mobile and tender.

Transabdominal ultrasound scan (fig.1) showed a single viable intrauterine fetus, which was moved to the right side by a huge cyst. MRI of the abdomen and pelvis showed a left hydronephrosis and a very thin (paper-thin) cortex of the kidney with the ureter collapsed Fig 2 and Fig 3). She was then managed conservatively.

The pregnancy, unfortunately was complicated by pre-eclampsia at 32-weeks of gestation, requiring the delivery by a caesarean on an emergency basis. The post-partum recovery was smooth and necessary imaging screening tests were performed before nephrectomy which was scheduled 12 months later



Fig. 1. Ultrasound of the abdomen and pelvis.



Fig. 2. MRI T2 image coronal view of the abdomen and pelvis.

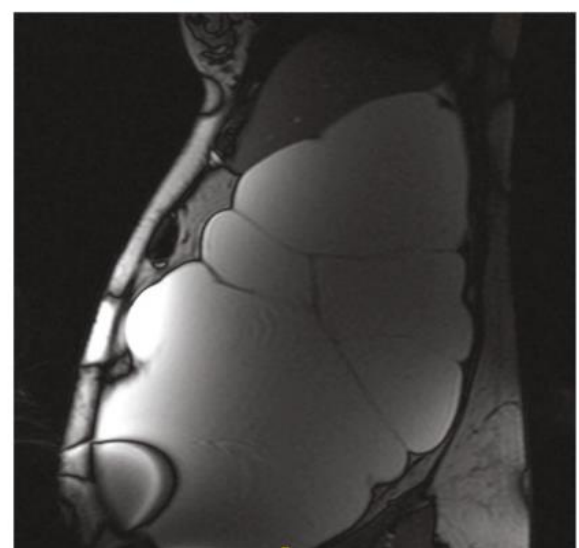


Fig. 3. MRI T2 image sagittal view of the abdomen and pelvis.

Discussion

Cases of giant hydronephrosis are unusual during pregnancy. Main cause of GH in this case



would be obstruction at the ureteropelvic junction, which was not detected prior to pregnancy. Patients often remain asymptomatic due to compensation by the collateral kidney.

Abdominal pain and mass are the frequent presentations of GH pregnancy. Since the signs and symptoms resembles the common pathophysiological effects of pregnancy, there are chances of GH being miss diagnosed as ovarian tumour and hydrosalpinx.

After diagnosis, urological intervention is necessary. Prophylaxis antibiotic is recommended to avoid the obstetric complications caused by UTIs.

Nephrectomy is the first line treatment for massive non-functioning renal tissue. Management during pregnancy depends on the renal functional status of the affected kidney. In this case, the patient was managed conservatively as there were no significant warning signs and the collateral kidney was functioning normally.

Other management options which have been proved to be successful include e pyeloplasty, insertion of a ureteric stent, percutaneous drainage of the GH, and nephrectomy during the first trimester.

The timing and the method of delivery in pregnancy complicated by GH is chiefly influenced by obstetric indication. In the present case, a paramedian incision was made collateral to the affected kidney.

Conclusion

GH is pregnancy is a rare finding. A conservative approach or decompression procedures are the reasonable options, while nephrectomy can be kept as a valuable option until postpartum period. The obstetric prognosis is good, however care should be taken during the delivery in order to avoid the urological complications.

Reference: Ramly F et al.. Adult giant hydronephrosis diagnosed in the second trimester of pregnancy: A case report and literature review. Case Reports in Women's Health. 2020;29(275):1-4.

IN FOCUS

3. Heritable risk of pre-eclampsia connected to blood pressure and BMI.

A study demonstrated that the genetic risk of pre-eclampsia- a fatal condition is linked to blood pressure and body mass index.¹

Pre-eclampsia leads to high risk of cardiovascular diseases among mothers and even affects the off-springs later in life. Genetic risk plays a greater role, than women developing the condition themselves.

The researchers studied the genetic patterns of 9,515 pre-eclamptic women and 157,719 control individuals.

The results, specified on the genetic variants such as ZNF831 and FTO genes carry the risk of pre-eclampsia. These genes have been known to be associated with blood pressure and BMI (FTO variant). Other blood pressure associated genetic variants such as MECOM, FGF5 and



SH2B3 were also found to play a role development of pre-eclampsia. Risk of pre-eclampsia is increased by 10-15% by these genetic variants.

Study also revealed that hereditary hypertension is one of the key risk factor for pre-eclampsia and numerous variants collectively play a role in contributing to the risk. Pre-existing studies, showed FLT-1 gene determines mothers' chances of developing pre-eclampsia.



The genetic variants identified so far is in parallel with the current knowledge that hypertension and obesity are the known risk factors of pre-eclampsia. The study reveals that the genetic associations can only partly explain the role of inherited predisposition in the development of pre-eclampsia. This would improve the understanding and contribute to effective prevention and management of pre-eclampsia in the near future which would improve the outcomes of healthy pregnancy and benefit both the mother and the child.²

Reference

1. Steinhorsdottir V, McGinnis R, Genetic predisposition to hypertension is associated with preeclampsia in European and Central Asian women. Nat Commun. 2020 Nov 25;11(1):5976.
2. Available at: <https://www.news-medical.net/news/20201125/Genetic-risk-of-pre-eclampsia-linked-to-blood-pressure-and-BMI-study-reveals.aspx> (Accessed on 7th December 2020).



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