MICRO LABS LIMITED

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GYNAE SPECTRUM

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

This issue contains:

1. **Relationship between preeclampsia and maternal serum apelin-13 and apelin-36 concentrations**
2. **Identification of factors associated with neonatal respiratory distress (NRD) in early Gestational diabetes mellitus**
3. **Impact of Endometriosis on Patients with a Septate Uterus**
4. **Case Report on Solitary Fibrous Tumor Misdiagnosed as Ovarian Tumor**

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

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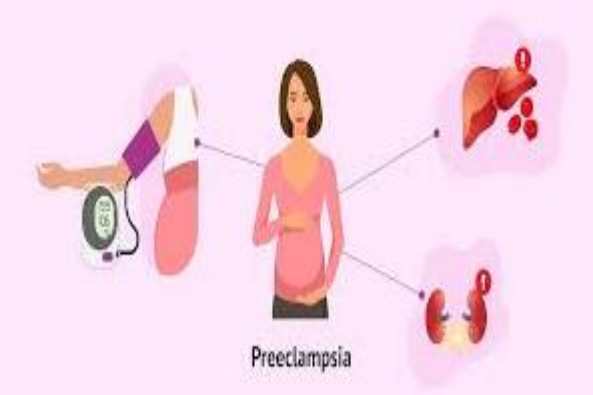
Relationship between preeclampsia and maternal serum apelin-13 and apelin-36 concentrations

Introduction



Preeclampsia affects 3–5% of pregnancies and is characterized by increased blood pressure and proteinuria which occurs most often after 20 weeks of gestation and frequently near term.[1] The exact cause remains unclear, though it is thought that insufficient placentation, maternal fetal immune maladaptation, increased vasoactive molecules, and oxidative stress contribute to its pathophysiology. Apelin and its receptor APJ (Angiotensin 2 receptor-like 1) have been shown to regulate blood pressure and are expressed in vascular endothelial cells.[2] So, this study aimed to investigate serum apelin-13 and apelin-36 concentrations in pregnant women with preeclampsia, hypothesizing that these peptides play a role in disease pathophysiology.

Methods

This was a prospective case-control study conducted on 80 pregnant women and included 40 preeclamptic pregnant women and 40 healthy pregnant women. Blood samples were taken from the participants at the time of diagnosis, and serum apelin-13 and apelin-36 levels were measured using Enzyme-Linked Immunosorbent Assay (ELISA) method. Ultrasound was used to measure subcutaneous adipose tissue thickness. Statistical analysis was used to evaluate results.

Results

Preeclamptic pregnant women had significantly higher systolic and diastolic blood pressure, high protein/ creatinine ratios and thicker epigastric and periumbilical subcutaneous adipose tissue compared to control group. Serum apelin-13 and apelin-36 levels were significantly lower in the preeclampsia group. Median maternal serum apelin-13 concentration in the preeclampsia group was 1635 pg/ml, whereas it was 1954 pg/ml in the control group ($p=0.005$) (Figure 1). In the preeclampsia group, the median maternal serum apelin-36 concentration was 735.7 pg/ml; in the control group, it was 1042.8 pg/ml ($p=0.001$) (Figure 2). Apelin-13 was lower in severe preeclampsia, while apelin-36 was lower in mild cases. Receiver operating curve (ROC) analysis showed that apelin-13 and apelin-36 levels could predict preeclampsia with moderate sensitivity and specificity.

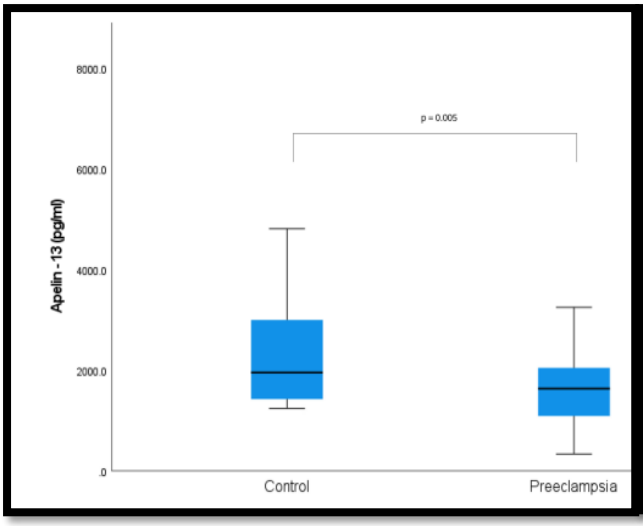


Figure 1. Serum Apelin-13 concentration of control and preeclampsia groups.

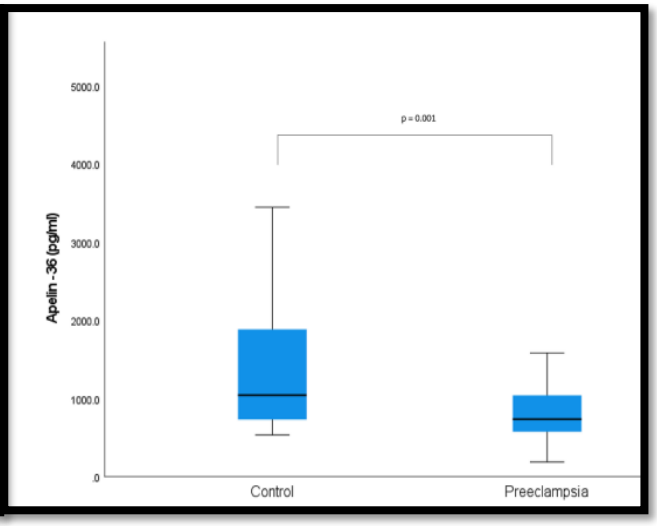


Figure 2. Serum Apelin-36 concentration of control and preeclampsia groups.

Discussion

This study focuses on the role of apelin in the context of preeclampsia and its potential impact on blood pressure and vascular function. Serum apelin-13 and apelin-36 levels were significantly lower in the preeclamptic women, especially in those with early onset and severe cases.[2] This study findings aligns with the previous results which stated that serum apelin concentrations of pregnant women with preeclampsia were significantly lower than those of healthy pregnant women.[3] Due to this results apelin-13 and apelin-36 levels can be used to predict preeclampsia with moderate sensitivity and specificity.[2]

Conclusion

Serum apelin-13 and apelin-36 concentrations were significantly lower in preeclamptic pregnancies, with the most marked decrease seen in early onset and severe preeclampsia.

Lower serum apelin-13 and apelin-36 levels were significantly associated with preeclampsia.

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Identification of factors associated with neonatal respiratory distress (NRD) in early Gestational diabetes mellitus

Introduction

Neonatal respiratory distress (NRD) affects up to 7% of newborns with the common causes including transient tachypnoea of the newborn (TTN) and severe respiratory distress syndrome (RDS).[1] NRD is associated with long term risks including 1.7-fold increased chance of asthma within 9 years. Pregnancies complicated by diabetes, particularly gestational diabetes mellitus (GDM) and pre-gestational diabetes (PGD), are linked to higher risks of NRD. Previous studies have established a link between maternal diabetes in pregnancy and increased NRD risks, with odds ratios indicating a significantly higher incidence of RDS among infants of mothers with GDM.[2] So, this study investigated to identify factors associated with NRD in early Gestational diabetes mellitus (eGDM).

Methods

This nested case-control analysis was conducted within the Treatment of Booking Gestational Diabetes Mellitus (TOBOGM) multicenter RCT, which included participants diagnosed with early GDM using a standardized oral glucose tolerance test. Women were randomly assigned to immediate or deferred treatment group. Data on demographics, birth outcomes, and NRD were collected, with NRD defined as requiring over four hours of respiratory support. Statistical analyses were performed to compare outcomes between groups and to identify risk factors for NRD severity.

Results

Out of 793 participants, 99 (12.5%) experienced pregnancies complicated by NRD. Among the neonates, 64 (8.1%) were admitted to the nursery for over 24 hours due to NRD, while 35 (4.4%) had shorter admissions. RDS was observed in 15 neonates (2.0%) and 7 (1.8%) in the immediate treatment group. NRD was associated with maternal smoking, PCOS, and longer nursery stays correlated with higher initial glucose levels. Early treatment of eGDM halved the risk of NRD and NRD was associated with factors such as large for gestational age (LGA) infants, caesarean sections, and shorter gestation (Figure 1). Multivariable logistic regression revealed that early GDM treatment halved the likelihood of NRD.

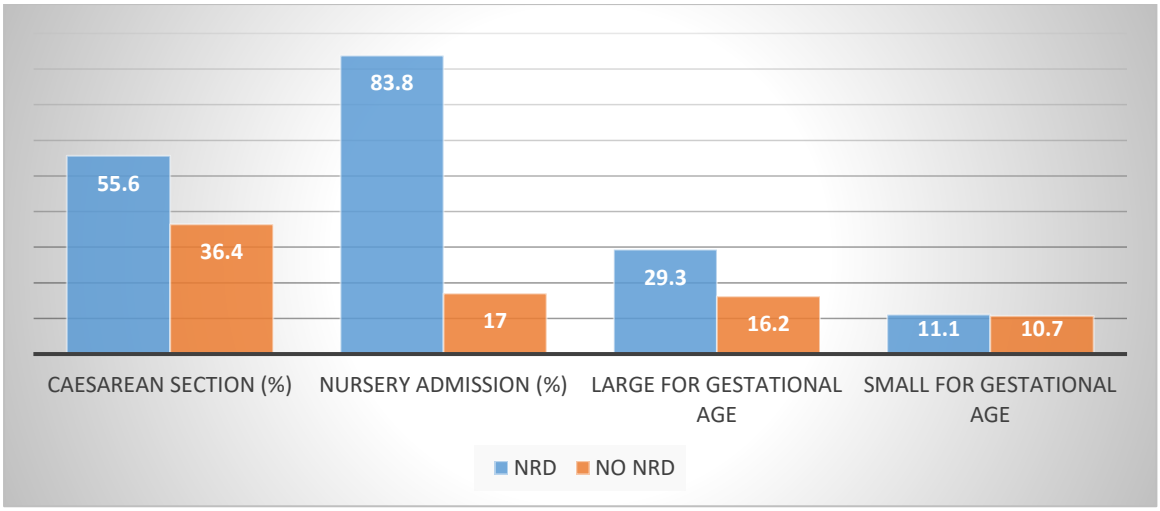

Figure 1. Comparison of results between two different groups

Discussion

These findings suggest that eGDM may be a distinct condition from late diagnosed GDM, with early treatment reducing the incidence of NRD. The TOBOGM study found that approximately one in eight neonates experienced NRD and the incidence of NRD in neonates was associated with early GDM. NRD was linked to larger birth weights and shorter gestational ages, but not to maternal BMI.[2] A previous study has reported 18.6% of babies had respiratory distress requiring surfactant or ventilation.[3] Compared to previous GDM trials, TOBOGM reported higher rates of NRD, potentially due to differences in the definitions of NRD used in earlier studies. Furthermore, the 1-hour glucose levels during early testing were associated with the severity of NRD, suggesting other metabolic factors at play. Overall, the study highlights the importance of early GDM treatment in reducing neonatal respiratory complications.[2]

Conclusion

Pregnancies complicated by eGDM were associated with significant NRD. Early treatment of pregnancies complicated by eGDM significantly reduces the incidence of NRD.

Early treatment of gestational diabetes mellitus reduces the risk of neonatal respiratory distress.

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Impact of Endometriosis on Patients with a Septate Uterus

Introduction

A septate uterus, the most prevalent structural uterine anomaly, arises from abnormal development of the Mullerian ducts during embryogenesis. It occurs in approximately 2% of women of reproductive age and is linked to poor reproductive outcomes, including recurrent miscarriages and infertility.[1] Endometriosis, characterized by the presence of endometrial-like tissue outside the uterus, is frequently seen in adolescents with obstructed reproductive tracts. The connection between a septate uterus and endometriosis may involve mechanisms such as menstrual blood reflux and Mullerian remnants.[2] So, this study investigated the clinical characteristics and treatment outcomes of women with a septate uterus complicated by endometriosis, focusing on their reproductive function.

Methods

This was a retrospective study that included women diagnosed with a septate uterus and endometriosis, confirmed through three-dimensional color ultrasound and histological examination during laparoscopic procedures. Patients were classified based on the American Society for Reproductive Medicine (ASRM) criteria. Patient's characteristics with a septate uterus and endometriosis were collected and described in terms of preoperative and postoperative pregnancy outcomes. Data collected included demographics, type of septate uterus, pregnancy outcomes, and surgical interventions.

Results

About 73 patients were included, of these, 24 had a complete septate uterus, while 49 had an incomplete septate uterus. Most patients were diagnosed incidentally during gynecological ultrasounds. Endometriosis was primarily found in the ovaries, with 63% of cases, and 69 patients underwent surgical treatment. Preoperatively, 43 patients were pregnant, but only 6 had successful live births, yielding a low live birth rate of 11.6%. Post-surgery, 36 patients achieved pregnancy, with a live birth rate significantly improving to 83.3%, and the miscarriage rate decreased from 97.7% to 25% (Figure 1). Patients with a complex septate uterus due to endometriosis experienced a significant improvement in their reproductive function and a higher rate of live births after undergoing surgery.

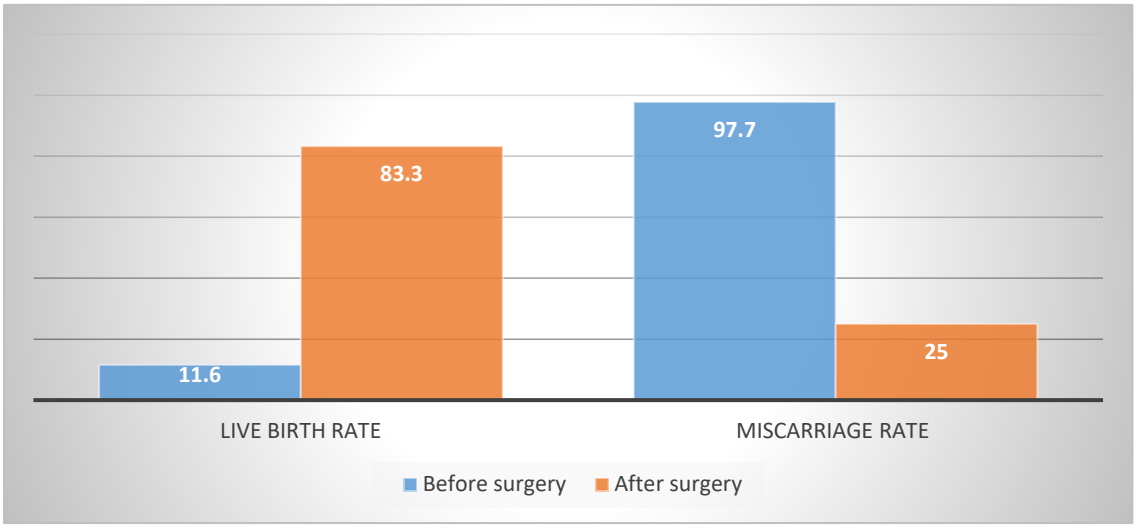

Figure 1. Pregnancy outcome of septate uterus complicated by endometriosis

Discussion

The study underscores the clinical challenges of diagnosing and managing a septate uterus, which often presents asymptomatically. It highlights that complete septate uterus cases were easier to identify than incomplete ones and that endometriosis frequently co-occurs, particularly affecting ovarian structures.[2] Preoperatively, live birth rate was 6.8% where a previous study reported 33.3% of live birth which suggested a need of more active treatment.[3] Surgical intervention markedly improved pregnancy outcomes, emphasizing the need for timely surgical treatment to reduce complications associated with both a septate uterus and endometriosis. The findings suggested a high miscarriage rate among this patient population and demonstrated that surgical correction can significantly enhance reproductive success.[2]

Conclusion

A septate uterus complicated by endometriosis has a more significant impact on reproductive function. Surgical intervention can notably enhance pregnancy outcomes for patients with a septate uterus and endometriosis. Timely diagnosis and intervention are crucial in mitigating adverse outcomes such as miscarriages and stillbirths.

Surgical intervention significantly improved reproductive function and had a higher rate of live births.

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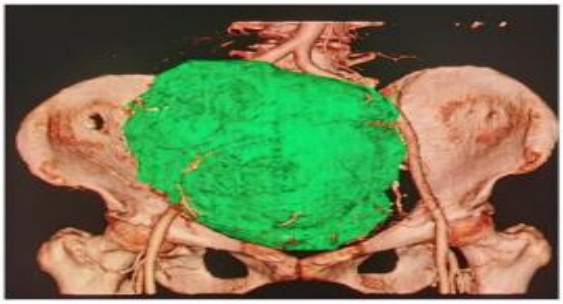
Case Report on Solitary Fibrous Tumor Misdiagnosed as Ovarian Tumor

Introduction

Solitary fibrous tumors (SFTs) are uncommon fibroblastic mesenchymal tumors, typically benign but with varying degrees of malignant potential. Originating from spindle cells, they can occur in any organ.[1] SFT incidence is approximately 0.1 per 100,000 person-years. First identified in pleural tumors in 1931, SFT can occur in extra thoracic sites, complicating diagnosis due to its atypical presentations.[2] This report described a case of a woman with a large abdominal mass misdiagnosed as an ovarian tumor.

Case Presentation

A 64-year-old female presented with a significant abdominal mass for more than 20 years, measuring approximately 15 cm in size, located in the right lower quadrant. Medical history included hypertension and diabetes, with no familial cancer history. Physical examination revealed a non-mobile mass and significant swelling of the right lower limb. Imaging studies, including Color Doppler Ultrasound of the blood vessels of lower limbs showed a substantial heterogeneous echo measuring 14.8 cm x 10.6 cm x 16.7 cm at the right iliac vein and CT scan showed a huge soft tissue density mass in the abdominal cavity measuring approximately 17 cm x 13 cm x 14 cm, which indicated a highly vascularized tumor closely associated with the external iliac blood vessels (Figure 1). Initially diagnosed as an ovarian tumor, the decision for exploratory laparotomy was made after thorough preoperative counselling. During surgery, a large tumor measuring 17 cm was found adhered to the right retroperitoneum, encompassing the external iliac artery and vein. Due to the tumor's extensive vascular involvement, a radical resection of tumor measuring 220 mm x 80 mm x 40 mm was performed, resulting in replacement of the external iliac vessels (Figure 2). Histopathological examination confirmed SFT, characterized by spindle-shaped cells and positive immunohistochemical markers for vimentin, CD34, and STAT6. Patient was treated with oral anticoagulant rivaroxaban and got recovered.



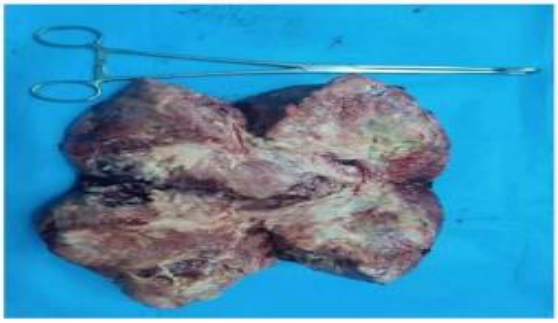


Figure 1. CT scan showing a huge abdominal mass	Figure 2. Macroscopic specimen

Discussion

The rarity and non-specific symptoms of SFT often lead to diagnostic challenges. In this case, the prolonged duration of the mass and its imaging characteristics complicated the preoperative diagnosis. The tumor's proximity to the ovary contributed to its misidentification as an ovarian tumor. SFT typically presents as a well-vascularized mass, exhibiting distinct imaging features, yet definitive diagnosis often relies on histopathology and immunohistochemical profiling.[2] Surgical management remains the cornerstone of treatment for retroperitoneal SFT, while previous studies have also stated radical resection is still the first-line treatment for retroperitoneal SFT.[3] In this case, the decision to excise the iliac vessels and perform vascular reconstruction was essential for complete tumor resection. The potential for complications necessitates careful preoperative planning, including the consideration of neoadjuvant therapies to minimize tumor size and vascular involvement.[2]

Conclusion

Surgical resection, even in challenging cases with vascular involvement, remains the primary treatment option. This case underscored the importance of recognizing the imaging characteristics of SFT and the critical role of histopathological evaluation in accurate diagnosis.

Solitary fibrous tumor can be diagnosed through preoperative imaging and pathological examination and can be treated with surgical resection.

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