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GYNAE SPECTRUM

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Gynae Spectrum Newsletter
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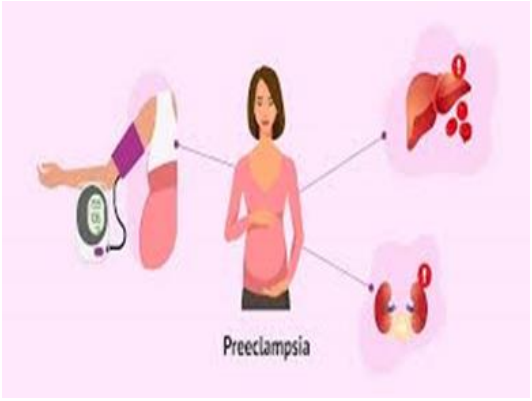
Association between early onset preeclampsia and the inflammatory indicators and the predictive nutritional index

Introduction



Preeclampsia (PE) is a significant contributor to maternal and perinatal illness and death globally, impacting around 7% of pregnancies. The clinical manifestation can range from being asymptomatic to severe enough to necessitate admission to intensive care. PE can be classified into two distinct types: late-onset and early-onset. Early-onset PE, or placental PE, manifests before 34 weeks of pregnancy. Early-onset PE in particular has been the subject of extensive study since it can be fatal for both the mother and the fetus, progresses more severely, and begins earlier than late-onset PE.[1] Although few studies specifically evaluate prognostic nutritional index (PNI) in early-onset PE, one study did look into the impact of PNI on PE. The study discovered that a high PNI score upon admission was associated with a lower in-hospital risk of adverse events in PE patients.[2] Additionally, the systemic inflammatory response reflex index (SIRI) and pan immune inflammatory value (PIV) may be useful tools for predicting the risk of PE in the first trimester, according to a study that evaluated the prediction of PE using markers examined from blood drawn during the first trimester.[3] This study examined the potential utility of the prognostic nutritional index (PNI) and pan-immune inflammatory value (PIV), which are utilized in recent research in the literature for disease prognosis and prediction, in predicting early-onset preeclampsia.

Methods

This retrospective case-control study analyzed patients with early-onset Preeclampsia and singleton normotensive pregnancies at similar gestational ages. Healthy pregnant women with a single, disease-free fetus between 24- and 34-weeks gestation made up the first group. Pregnant women with an early-onset preeclampsia diagnosis who did not have any other illnesses or fetal abnormalities during the same gestational week made up the second group. Patients with multiple pregnancies, pregnancies with anomalies or ex-foetuses, those diagnosed with abrupt onset with or without PE or chronic hypertension, and patients without blood analysis and follow-up data were excluded. PNI, neutrophil, lymphocyte, monocyte, thrombocyte, albumin, and PIV scores were noted.

Results

The study comprised 140 pregnant women in the normotensive (control) group and 70 patients with early-onset PE (case) group. In the early-onset PE group, the mean maternal age was 30.78±6.43 (18–44) years, while in the control group, it was 27.03±6.38 (18–43) years. There

were no discernible variations in the groups' parity (p=0.09) or age (p=0.6). The control group had a substantially higher mean PIV (1,011.13±990.70 vs. 782.66±841.40, p=0.04) than the early-onset PE group. The early-onset PE group's PNI was substantially lower than that of the normal pregnancy group (37.12±3.32 vs. 33.85±4.15, p<0.001) (Figure 1). Early-onset PE could be predicted with a PIV less than 637.19, although the area under the receiver operating characteristic (ROC) curve (AUC) was 0.37, p=0.04, and the sensitivity was only 31.1% with a specificity of 45%. Similarly, a PNI below 36.30 might predict early-onset PE with a low sensitivity of 31.1% and a specificity of 45%; the AUC was 0.24 (95% CI: 0.18–0.31), p<0.001. There was no significant difference (p=0.08) between the control and early-onset PE groups' mean SIRIs of 4.09±5.32 and 2.96±3.25, respectively.

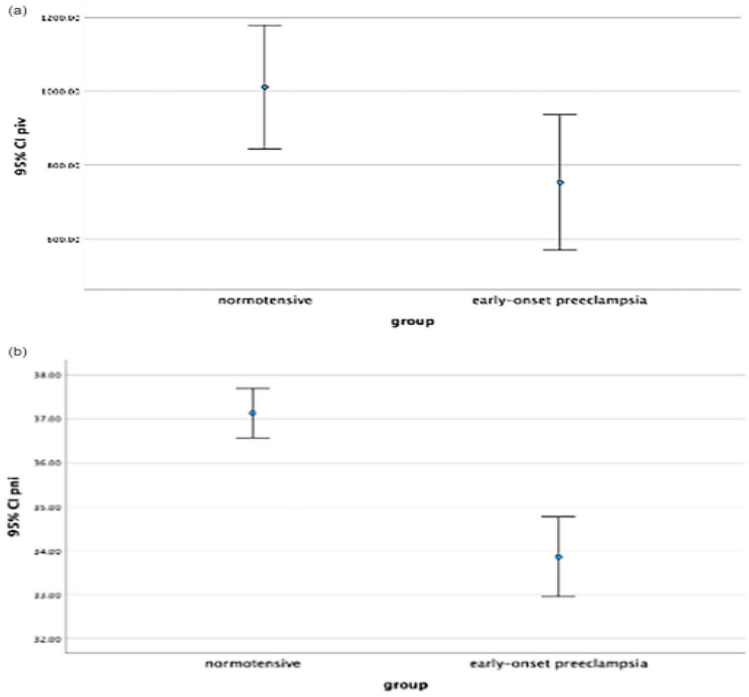


Figure 1. a) PIV value b) PNI value according to the groups

Discussion

The early-onset PE group in this study had a mean neutrophil count that was typically greater than that of the normotensive pregnancy group but the difference was not statistically significant (p=0.18). As this study only included 70 patients with the uncommon condition of early-onset PE, the comparatively small sample size may be the cause of this lack of statistical significance. According to an earlier study, patients with PE are predicted to have a significantly elevated neutrophil count. Additionally, as pregnancy goes on, the neutrophil count rises. Patients with early-onset PE are predicted to have a significantly higher neutrophil count than those with normal pregnancies, particularly if they have substantial placental injuries.[4] Pregnant women with low PNI had early-onset PE and poor maternal and fetal outcomes, and PNI levels were lower in patients with early-onset PE than in those with normal pregnancies. This study also revealed a similar finding that PNI was lower in patients with early-onset PE compared to pregnant individuals with normotension, suggesting inadequate nutritional status.[2]

Conclusion

Compared to pregnant individuals with normotension, patients with early onset PE have lower PNI, which indicates inadequate nutritional status.

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Lower PNI scores may indicate an increased risk of early-onset preeclampsia.

Evaluation of maternal and obstetric risk factors associated with retained placenta following singleton live vaginal births

Introduction

Risk assessment for retained placenta can be improved by early detection of risk factors like as endometriosis, macrosomia, and IVF.

One of the more frequent causes of obstetrical morbidity is retained placenta following vaginal delivery, which happens in approximately 1-3 percent of deliveries. It causes several complications such as endometritis, severe bleeding, and retained placental tissue, the latter of which may result in infection or delayed bleeding.[1] Preterm delivery, prior uterine surgery, miscarriage or curettage, grand multiparity (more than five prior deliveries), congenital uterine defects, and a history of retained placenta are risk factors for retained placenta.[2] There is limited information on additional potential risk factors for retained placenta. So, the current study sought to ascertain the incidence and identify labor, pregnancy, and maternal variables linked to placenta retention in women who had spontaneous vaginal birth.

Methods

This retrospective cohort study compared women who had simple vaginal deliveries in a 1:2 ratio to those who were identified with retained placenta following a singleton live vaginal birth at or after 24 weeks of gestation. Maternal age, gestational age, and parity were matched between the study and control groups. The primary endpoint was to assess the maternal and obstetrical risk variables (for retained placenta) in the absence of uterine surgery history. The

secondary endpoint was to evaluate maternal outcomes and delivery problems, such as the prevalence of endometritis, postpartum hemorrhage, blood transfusion requirements, hypovolemic shock, prolonged hospitalization (>4 days), and intrapartum fever exceeding 38°C. Potential risk factors for retained placenta were evaluated using multivariate regression analysis.

Results

In this study, 170 (1.1%) of the 15,260 women who gave birth were found to have retained placenta. The retained placenta group included ninety-nine women (0.65%) who were matched with 198 (1.3%) controls. Using multivariate logistic regression, risk factors for retained placenta were identified, including in vitro fertilization (OR 3.8, 95% CI 1.3-11.7, P=0.018), large-for-gestational-age fetuses (OR 28.2, 95% CI 5.4-148.5, P=0.029), and endometriosis (OR 8.2, 95% CI 0.92-20, P=0.024) (Table 1). Preeclampsia, labor induction, vacuum-assisted delivery, and prolonged second-stage labor were all additional risk factors.

Table 1. Factors associated with retained placenta identified using multivariable logistic regression analysis.

RISK FACTORS	aOR	95% CI	P VALUE
Pre-eclampsia	4.5	1.1–17.5	0.031
Duration of second stage, h (>3 vs. <2)	3.9	1.0–15.1	<0.001
Labor induction	21.8	5.5–86.8	<0.001
Endometriosis	8.2	0.92–20	0.024
IVF	3.8	1.3–11.7	0.018
FETAL WEIGHT SGA vs AGA LGA vs AGA	 16.8 28.2	 2.7–103.7 5.4–148.5	 0.223 0.029
Type of delivery (vacuum vs. vaginal delivery)	2.3	1.2–4.5	0.010

(AGA, appropriate for gestational age; aOR, adjusted odds ratio; CI, confidence interval; IVF, in vitro fertilization; LGA, large for gestational age; SGA, small for gestational age.)

Discussion

Retained placenta has been associated with a number of risk factors, including macrosomia, IVF, and endometriosis, as well as previously reported risk factors like pre-eclampsia, labor induction, regional anesthesia, instrumental delivery, and prolonged second stage of labor. This study found that there was a higher risk of retained placenta in IVF pregnancies which was similar to Wertheimer et al. who discovered the challenges of the third stage of labor were more common in IVF pregnancies.[3] These findings imply that IVF may increase the incidence of retained placenta.[4]

Conclusion

The current study emphasized the significance of early detection of risk factors that have not been previously documented, such as endometriosis, IVF, and macrosomia. Although the study offers valuable insights, certain areas require further investigation.

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Assessment of the middle cerebral artery pulsatility index in predicting adverse perinatal outcome in pregnancies affected by idiopathic polyhydramnios

Introduction

Idiopathic polyhydramnios may increase neonatal risk due to foetal cerebral blood flow redistribution.

Polyhydramnios is a condition that occurs when the volume of amniotic fluid rises by more than two litres. Approximately 50% to 60% is idiopathic; in the others, it involves congenital problems, including fetal anemia, fetal neurologic or musculoskeletal disorders, diabetes, multiple gestations, and genetic syndromes.[1] Isolated polyhydramnios has been associated with adverse obstetrical and neonatal outcomes, such as an increased risk of caesarean deliveries (CD), extended first-stage labour, irregular fetal heart rate tracings, placental abruption, shoulder dystocia, and respiratory distress syndrome.[2] In prenatal medicine, fetal doppler sonography is used to monitor high-risk pregnancies. To rule out fetal anaemia in cases of polyhydramnios, the middle cerebral artery's peak systolic velocity is measured.[3] Women with idiopathic polyhydramnios reported lower values of the middle cerebral artery pulsatility index (MCA-PI) than women without polyhydramnios. This might be explained by possible redistribution of fetal blood flow brought on by persistent polyhydramnios and variations in amniotic fluid pressure.[4] So, this study was conducted to investigate the predictive value of the MCA-PI for adverse perinatal outcomes in pregnancies with idiopathic polyhydramnios.

Methods

This retrospective analysis comprised singleton pregnancies with idiopathic polyhydramnios that were diagnosed after 24 weeks. Only pregnancies with data for gestational diabetes screening, fetal abnormality screening at 20–24 weeks, first-trimester dates, and a repeated oral glucose tolerance test following polyhydramnios diagnosis were included in the study. The results were retrieved from the indirect Coombs test and serology for TORCH and parvovirus. Maternal parameters, such as mother age, parity, gravity, and the gestational age at which polyhydramniosis was diagnosed, were gathered from the electronic databases. Gestational age at delivery, delivery method, rate of CD or operative delivery because of fetal distress, birthweight, Apgar scores, UA pH, NICU hospitalization, respiratory morbidity, and fetal or neonatal death are the obstetrical data that were included. Pregnancies with MCA-PI values below the 10th percentile and those with values beyond the 10th percentile were compared for obstetrical and neonatal outcomes.

Results

The study included 45,459 women where 0.3% experienced isolated polyhydramnios, with 27 showing MCA-PI <10th percentile and 101 showing MCA-PI ≥10th percentile. Compared to the MCA-PI ≥10th percentile group, the median MCA-PI was substantially lower in the MCA-PI <10th percentile group. In the MCA-PI <10th percentile group, the median CPR was lower. However, the MCA-PI <10th percentile group had a greater risk of surgical delivery or emergent CD because of fetal distress. In the MCA-PI <10th percentile group, there was a higher prevalence of at least one poor perinatal outcome. The MCA-PI or CPR values did not correlate with the AFI or DVP readings. The MCA-PI percentile and 5-minute Apgar score showed a strong positive correlation, and the study also indicated a strong correlation with either operative or emergent CD, but no significant correlation with adverse perinatal outcomes. The results of the ROC Analysis are presented in Figure 1.

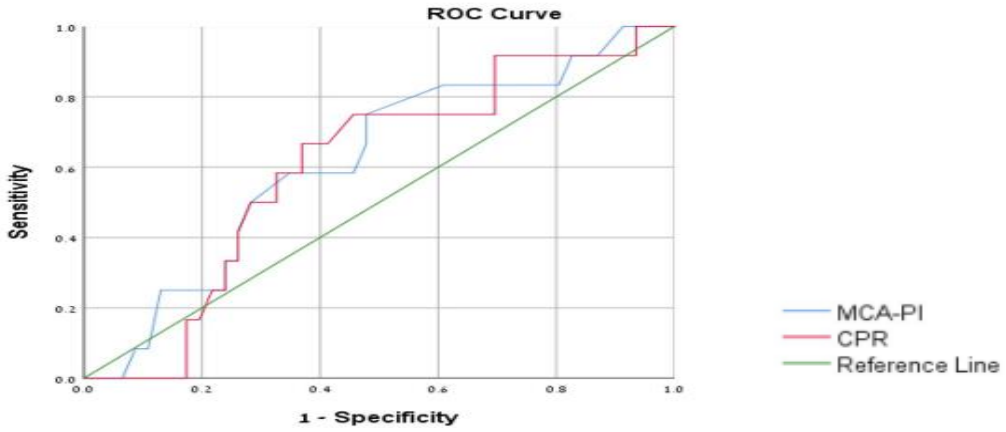

Figure 1. Graphical findings from the investigation of the receiver's operational characteristics curve.
Predictive performance of the cerebroplacental ratio (CPR, red line) and the middle cerebral artery pulsatility index (MCA-PI, blue line) for the incidence of (a) a poor perinatal outcome and (b) an emergency caesarean birth or surgical delivery

Discussion

Long-term polyhydramnios causes changes in fetal cerebral blood flow. Hershkovitz et al. found that lowering MCA-PI coincided with increased AFI in women with idiopathic

polyhydramnios, lending support to this hypothesis. This drop shows a possible redirection of blood to important organs, indicating fetal impairment.[4] In this study, AFI or DVP values did not significantly correlate with MCA-PI or CPR values. This difference from the prior study may be explained by the removal of pregnancies with fetal growth restriction, which could alter MCA-PI readings.

Conclusion

Idiopathic polyhydramnios may increase neonatal risk due to foetal cerebral blood flow redistribution. Further research is required on abnormal MCA-PI and foetal Doppler investigations in order to forecast perinatal outcomes.

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Case report on Giant Cystic Adenomatoid Tumor of the Uterus

Introduction

Giant cystic adenomatoid tumors are rare but benign and successful outcomes are guaranteed by a precise diagnosis and effective surgical treatment.

Adenomatoid tumors are uncommon, benign lesions of mesothelial origin that typically affect 0.12% to 1.2% of women.[1] They are most frequently found in the vaginal tract. Preoperative diagnosis is challenging because most patients do not exhibit any unusual clinical symptoms or indications. Many of these cases are incidental while treating individuals for other conditions. Microscopic analysis of tissues presented for various disorders, including ovarian cancer, tubal ligation, tubo-ovarian abscess, and uterine leiomyoma, is used to diagnose the majority of cases.[2] This case demonstrates the uncommon large cystic presentation of uterine adenomatoid tumors, for which immunohistochemistry and histopathology were essential in the diagnosis. Adenocarcinoma, vascular tumors, leiomyoma with cystic degeneration, and cystic endometriosis are the differential diagnosis for cystic adenomatoid tumors. Mesothelial lesions such as benign multicystic mesothelioma and well-differentiated papillary mesothelioma must also be recognized from them.

Case Presentation

A 51-year-old premenopausal female with a history of breast cancer was diagnosed with invasive ductal carcinoma Nottingham Grade 2/3 a year before her current symptoms. Her treatment included a lumpectomy, sentinel lymph node biopsy, and adjuvant radiotherapy. Her symptoms were pelvic tightness and vague pelvic pain. There were no changes in bowel or bladder habits, abnormal vaginal discharge, irregular menstrual periods, or excessive bleeding recorded. The patient had a strong family history of breast and ovarian cancer in several maternal relatives. Her BRCA1 and BRCA2 gene mutations were negative. The urethra, urinary bladder, cervix, vagina, and rectum were all found to be normal throughout the physical examination. Imaging examinations revealed an enlarged uterus with multiple heterogeneous-enhancing masses, most of which were intramural, indicating leiomyomas. The lesion of interest was primarily cystic and radiologically identified as a subserosal leiomyoma originating in the uterine fundus and reaching the left pelvis (Figure 1(a)). The patient had uterine masses that were initially assumed to be leiomyomas, but the surgical diagnosis revealed subserosal leiomyoma with cystic change and ovarian mucinous lesions. Bilateral salpingo-oophorectomy, total abdominal hysterectomy, open exploratory laparotomy, and cystic mass excision were performed on the patient. The uterus had grown to almost 20 cm and contained several fibroids. A giant mass attached to the uterine fundus was excised, with a frozen section pathology indicating a benign multicystic lesion. It was discovered that the removed uterine mass was a benign cystic adenomatoid tumor. The mass was multilocular, cystic, tan-pink, and filled with gelatinous fluid. On a background of fibrous and edematous stroma, mesothelial cells lining cystic branching spaces with localized areas of clustering were visible (Figures 1(b) and 1(c)). There were no signs of necrosis, atypia, or mitoses. In addition, the patient exhibited ovarian follicular and serous cysts, leiomyomas, and adenomyosis in the myometrium, benign proliferative endometrium, and endometriosis of the abdominal wall. According to the results of immunostaining, the cystic lesional cells were negative for PAX8, ER, ERG, CD31, CDX2, SATB2, and CK20 but positive for calretinin (Figure 1(d)), D2-40, CK7, BAP1, and WT1. There was no sign of a cystic adenomatoid tumor or recurrence of breast cancer following 48 months of routine CT scans and mammography.

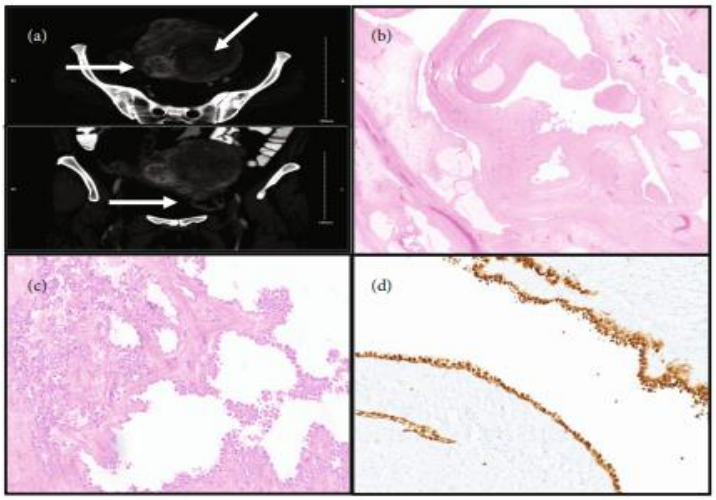

Figure 1. Radiologic and pathologic assessment of giant cystic adenomatoid tumor

Discussion

Despite its benign nature, cystic adenomatoid tumors can appear clinically as a variety of gynecological problems. Thus, extensive histological and immunohistochemical studies are required for a definitive diagnosis. The differential diagnosis of such tumors includes various benign disorders such as leiomyomas, adenomyosis, and ovarian mucinous cystadenoma, among others. Although the focus is on benign disorders, it is important to consider the possibility of malignant entities, especially given the patient's history of breast cancer. Metastatic carcinomas (including signet ring cell carcinoma), ovarian mucinous carcinoma, and malignant mesothelioma should all be evaluated in the differential diagnosis.[3,4]

Conclusion

The case highlights the necessity of a thorough pathological evaluation for bigger cystic adenomatoid tumors due to their complex gynecological history, which includes leiomyomas, endometriosis, and benign ovarian cysts.

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