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子痫前期发病相关高危因素的 Logistic 回归分析 *

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摘要 目的：采用单因素和多因素 Logistic 回归方法分析本地区子痫前期发病相关高危因素。**方法：**选择 2014 年 1 月到 2017 年 4 月在我院进行分娩的子痫前期产妇 78 例作为观察组及同期在我院进行分娩的正常产妇 78 例作为对照组，比较两组产妇的一般情况、婚姻生育史、孕期保健情况、既往史、家族史、本次妊娠情况等。**结果：**两组产妇的年龄、孕次、产次、初检孕周、产前检查次数等比较差异无统计学意义(P>0.05)。观察组子痫前期首次发生的平均孕周为 38.26± 2.63 周。单因素分析显示自然流产史、子痫前期家族史、妊娠高血压、孕前 BMI、孕期尿路感染与子痫前期发病明显相关(P<0.05)；非条件 Logistic 回归多因素分析结果显示自然流产史、子痫前期家族史、妊娠高血压、孕前 BMI 为导致子痫前期发病的主要独立危险因素(P<0.05)。观察组以剖宫产为主要分娩方式，分娩孕周也明显长于对照组(P<0.05)；两组产妇都无死亡情况发生，但观察组的产后出血、胎盘早剥、心肝肾功能不全等并发症发生率明显高于对照组(P<0.05)。**结论：**自然流产史、子痫前期家族史、妊娠高血压、孕前 BMI 为导致子痫前期发病的主要独立危险因素，可导致不良妊娠结局的增加。

关键词：子痫前期；Logistic 回归分析；自然流产史；妊娠高血压

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Logistic Regression Analysis of High Risk Factors Related to Preeclampsia

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ABSTRACT Objective: To investigate the risk factors of preeclampsia in our region by single factor and multiple factor Logistic regression analysis. **Methods:** From January 2014 to April 2017, 78 cases of preeclampsia for delivery in our hospital were selected as the observation group, and the other 78 cases of normal delivery in our hospital were selected as the control group, the general situation, maternal marriage and childbearing history, prenatal care, medical history and family history the pregnancy situation of both groups were investigated. **Results:** There was no significant difference in the age, number of pregnancies, times of birth, initial pregnancy, and times of prenatal diagnosis between the two groups (P>0.05). The average gestational age for the first occurrence of preeclampsia in the observation group was 38.26± 2.63 weeks. Univariate analysis showed that history of spontaneous abortion, preeclampsia, gestational hypertension, family history of BMI before pregnancy and urinary tract infection and the pathogenesis were significantly correlated to the preeclampsia (P<0.05). Non conditional Logistic regression analysis showed that the history of spontaneous abortion, preeclampsia, pregnancy, family history of hypertension of pregnancy BMI leading were the independent risk of preeclampsia (P<0.05). More cesarean section was found in the observation group, the gestational weeks were significantly longer than that of the control group (P<0.05); no death occurred in both groups, but the incidence of postpartum hemorrhage, placental abruption, liver and kidney insufficiency in the observation group was higher than that of the control group (P<0.05). **Conclusion**: The history of spontaneous abortion, preeclampsia, gestational hypertension, family history of pregnancy BMI are the independent risk of preeclampsia may increase adverse pregnancy outcomes.

Key words: Preeclampsia; Logistic regression analysis; History of spontaneous abortion; Pregnancy induced hy- pertension

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前言

子痫前期指在妊娠 20 周后出现舒张压≥ 90 mmHg，收缩压≥ 140 mmH，并伴蛋白尿≥ 0.3 g/24 h 的临床疾病。随着病情继续发展，可发展为重度子痫前期，累及母体多脏器功能不全，也会引发胎儿并发症，是妊娠高血压疾病的一种状况，为妊娠期的一种特发疾病，发病率占全部妊娠的 4%左右，但其发病机制及病因目前尚不完全清楚[1,2]。

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流行病学调查显示我国子痫发生率为0.2%左右，南方地区的发生率低于北方，占孕产妇死亡的8.0%左右，是孕产妇死亡和围产儿死亡的重要原因之一[3,4]。子痫前期的临床病理生理特点为血脂异常、高血压、高尿酸血症等，具体的发病原因尚不明确，可能与滋养层细胞侵袭、内皮功能紊乱、炎性反应等多种因素有关[5-7]。子痫前期的预防和控制始终未能达到良好效果，仍然严重危害着母婴安全和健康。根据社会医学、流行病学的观点，许多疾病的发生并非仅由单一因素所致，而是由行为和生活方式、生物学、心理、环境等多种因素所导致[8-10]。本研究采用Logistic回归方法分析子痫前期发病相关的高危因素，旨在为孕妇子痫前期制定干预措施提供参考依据。具体研究结果如下。

1 资料与方法

1.1 研究对象

选择2014年1月到2017年4月在我院进行分娩的子痫前期产妇78例作为观察组及同期在我院进行分娩的正常产妇78例作为对照组。纳入标准：年龄20-45岁；单胎妊娠；观察组符合子痫前期诊断标准；孕前无高血压病史；两组居住在同一个(或相邻)的区域(市县)；研究得到医院伦理委员会的批准。排除标准：临床资料不完整者。

1.2 调查内容

(1)一般情况：姓名、住址、体重指数、文化程度、职业。(2)婚姻生育史：结婚年龄、既往妊娠史。(3)孕期保健情况：首次产前检查孕周、产前检查次数。(4)既往史和家族史：既往子痫前期史、家族子痫前期史。(5)本次妊娠情况：孕次、产次、分娩方式、妊娠合并症和并发症。

1.3 调查方法

以医院住院病历登记为线索，进行面访为主，同时结合查阅病历资料及电话访问进行调查，填写子痫前期产妇医院调查表；根据医院调查表核对本地区围产保健手册，然后调查者对全部调查对象逐一进行电话或者走访调查，调查的有效率为100.0%。

1.4 统计学分析

选择SPSS20.00软件进行分析，并建立excel数据库，计量资料用均数± 标准差($\bar{x}$± s)表示，计数数据%表示，分别采用t检验、卡方检验、单因素分析与多因素logistic回归分析，以P<0.05为差异有统计学意义。

2 结果

2.1 两组一般情况的对比

两组产妇的年龄、孕次、产次、初检孕周、产前检查次数等对比差异均无统计学意义(P>0.05)。见表1。观察组子痫前期首次发生的平均孕周为38.26± 2.63周。

表1 两组产妇一般资料的对比(均数± 标准差)

Table 1 Comparison of the basic information between two groups

Group	n	Age	Gravidity (time)	Parity (time)	Initial Gestational Age(week)	Prenatal Diagnosis (time)
Observation group	78	26.33± 2.49	2.87± 1.42	1.66± 0.92	18.78± 2.22	4.93± 1.94
Control group	78	26.11± 2.10	2.71± 1.67	1.68± 0.67	18.82± 2.32	4.19± 1.19
P		>0.05	>0.05	>0.05	>0.05	>0.05

2.2 子痫前期发病相关高危因素的单因素分析

单因素分析孕妇子痫前期发病相关高危因素，结果显示自然流产史、子痫前期家族史、妊娠高血压、孕前BMI、孕期尿路感染与子痫前期发病明显相关(P<0.05)，见表2。

表2 子痫前期发病相关高危因素的单因素分析

Table 2 Single factor analysis of high risk factors related to preeclampsia

Variable	OR	95%CI	P
History of spontaneous abortion	4.111	1.690-9.983	0.002
Family history of pre-eclampsia	2.003	1.155-3.564	0.013
Pregnancy - induced hypertension	6.483	3.687-11.842	0.000
Progestation BMI	23.942	3.053-16.292	0.003
Urinary tract infection during pregnancy	2.535	1.093-6.024	0.036

2.3 子痫前期发病相关高危因素的多因素分析

通过非条件Logistic回归多因素分析2.2中与子痫前期发病明显相关的5个高危单因素，结果显示自然流产史、子痫前期家族史、妊娠高血压、孕前BMI为导致子痫前期发病的主要独立危险因素(P<0.05)。见表3。

2.4 两组预后情况的对比

观察组以剖宫产为主要分娩方式，分娩孕周也明显长于对照组(P<0.05)；两组产妇都无死亡情况发生，不过观察组的产后出血、胎盘早剥、心肝肾功能不全等并发症发生率明显高于对照组(P<0.05)，见表4。

3 讨论

子痫前期指孕妇在孕前血压正常而在妊娠20周以后出现高血压、蛋白尿等临床症状[11-13]，妊娠期特发疾病，影响孕妇及胎儿各器官系统，是导致孕产妇死亡的重要原因之一[14]。流行病学调查显示子痫前期与妊娠期高血压疾病的总发病率约

9%，围产儿死亡率在子痫前期及子痫患者中更高达 4%左右[15]。子痫前期的发病起源于胎盘的病理生理改变，在胎盘形成过程中，子宫螺旋动脉障碍、滋养细胞侵袭能力下降是子痫前期发病的中心环节，其发病机制与遗传、环境、生活方式、多器官功能障碍综合征、氧化应激等多种因素有关[16-18]。

表 3 子痫前期发病相关高危因素的多因素分析

Table 3 Multivariate analysis of risk factors associated with preeclampsia

Variable	B	Wald	P	OR	95%CI
History of spontaneous abortion	0.133	4.788	0.029	0.912	0.116-0.887
Family history of pre-eclampsia	0.530	6.928	0.008	0.664	0.098-0.713
Pregnancy - induced hypertension	2.563	9.924	0.002	9.892	2.274-43.298
Progestation BMI	2.176	8.740	0.003	8.815	2.083-37.492

表 4 两组预后情况的对比

Table 4 Comparison of the prognosis between two groups

Group	n	Caesarean	Labor gestational age	Postpartum hemorrhage	Placental abruption	Hepatic and renal dysfunction
Observation	78	64(82.1%)	34.53± 2.94	7(9.0%)	8(10.3%)	10(12.8%)
Control	78	22(28.2%)	39.20± 2.11	1(1.3%)	1(1.3%)	2(2.6%)
P		<0.05	<0.05		<0.05	

目前，子痫前期在发达国家已较少见，但我国仍严重威胁着母婴安全和健康的[19-21]。本研究结果显示自然流产史、子痫前期家族史、妊娠高血压、孕前 BMI 为导致子痫前期发病的主要独立危险因素。Verlohren 等发现妊娠高血压与血管内皮生长因子的异常表达相关，推测血管内皮生长因子影响滋养细胞的分化和增殖，导致滋养细胞侵袭机体，造成子痫前期的发生[22]。孕前 BMI 增加可导致孕妇容易出现高血脂、高胰岛素血症、水钠潴留等合并症，诱发胎盘发生病理生理改变，引起孕妇全身血管内皮损伤，全身小动脉痉挛导致子痫前期的发生[23]。有研究学生对孕妇进行终止妊娠两次和 1 次分娩所起的保护作用相同，可降低子痫前期的伤害。Arabin 等发现自然流产可能增加子痫前期的发生风险[24]；自然流产除胚胎染色体异常外，免疫功能异常也常见，从而诱发子痫前期发生[25]，本研究结果与上述观点基本一致。子痫前期家族史是子痫前期发病的主要独立危险因素，与子痫前期发病机制中遗传易感学说相互印证[26,27]。

本研究中，子痫前期产妇以剖宫产为主要分娩方式，分娩孕周也明显长于正常产妇，两组产妇都无死亡情况发生，但子痫前期产妇产后出血、胎盘早剥、心肝肾功能不全的发生率明显高于正常产妇。我们认为这一结果可能与子痫前期病因相关，患者全身血液循环不能适应子宫 - 胎盘的需要导致胎盘缺血，妊娠期高血压破坏了胎儿母体间免疫平衡，胎盘局部细胞免疫反应增强，引起脂质过氧化和氧自由基大量释放，破坏细胞结构，影响其功能，最终导致不良预后[28-30]。

总之，自然流产史、子痫前期家族史、妊娠高血压、孕前 BMI 为导致子痫前期发病的主要独立危险因素，可导致不良妊娠结局的增加。因此，应加强该人群的孕前和孕期保健，以减少不良妊娠结局。

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