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硬膜外腔麻醉对妊娠血小板减少症患者凝血功能的影响*

姚晓燕¹ 陈力勇¹ 赵田园¹ 连鑫艳¹ 曹宇飞^{2Δ}

(1 陆军军医大学大坪医院麻醉科 重庆 400042; 2 陆军军医大学第一附属医院麻醉科 重庆 400038)

摘要 目的:探讨硬膜外腔麻醉对妊娠血小板减少症患者凝血功能的影响。**方法:**选择陆军军医大学大坪医院麻醉科(我院)2018年6月至2019年6月收治的妊娠血小板减少症患者86例,按照随机数字表法分为研究组和对照组,每组各43例。研究组给予硬膜外腔麻醉,对照组给予全麻,观察和比较两组产妇麻醉前后凝血系统各项指标的变化情况。**结果:**研究组产妇在麻醉前、麻醉后0.5 h、术后0.5 h、术后24 h、术后48 h激活凝血酶时间(Activated partial thromboplastin time, APTT)长于对照组($P<0.05$)。两组产妇麻醉后纤维蛋白原(Fibrinogen, FIB)和D-二聚体水平(D-dimer, D-D)较麻醉前显著升高,且对照组明显高于研究组($P<0.05$)。两组产妇手术时间比较差异无统计学意义($P>0.05$),研究组产妇术后平均出血量和术后24 h平均出血量均明显少于对照组($P<0.05$)。两组新生儿出生1 min、5 min的Apgar评分比较差异无统计学意义($P>0.05$)。**结论:**硬膜外腔麻醉对妊娠血小板减少症产妇的凝血功能影响较小,但麻醉起效快、效果确切,且可一定程度减少患者手术和术后出血量。

关键词:妊娠血小板减少症;硬膜外腔麻醉;全身麻醉;凝血系统

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Effect of Epidural Anesthesia on the Coagulation Function of Patients with Pregnancy Thrombocytopenia*

YAO Xiao-yan¹, CHEN Li-yong¹, ZHAO Tian-yuan¹, LIAN Xin-yan¹, CAO Yu-fei^{2Δ}

(1 Department of Anesthesiology, Daping Hospital, Army Military Medical University, Chongqing, 400042, China;

2 Department of Anesthesiology, the First Affiliated Hospital of Military Medical University, Chongqing, 400038, China)

ABSTRACT Objective: To investigate the effect of epidural anesthesia on the coagulation function of patients with pregnancy thrombocytopenia. **Methods:** 86 patients with pregnancy-induced thrombocytopenia admitted to our hospital from June 2018 to June 2019 were enrolled in the study. According to the random number table method, divided into study group and control group, with 43 cases in each group. The study group was given epidural anesthesia, and the control group was given general anesthesia, the changes of various indicators of maternal coagulation system before and after anesthesia were observed and compared. **Results:** The APTT of the study group before the anesthesia, at 0.5 h after anesthesia, at 0.5 h, 24 h, and 48 h after surgery were longer than those of the control group ($P<0.05$). The levels of FIB and D-D in the two groups were significantly higher than those before anesthesia, which was significantly higher in the control group than that of the study group ($P<0.05$). There was no significant difference in the operation time between the two groups ($P>0.05$). The average blood loss and the average blood loss after 24 hours were significantly lower in the study group than in the control group ($P<0.05$). There was no significant difference in the Apgar scores between the two groups at 1 min and 5 min ($P>0.05$). **Conclusions:** Epidural anesthesia has little effect on the coagulation function of pregnant women with thrombocytopenia, but the anesthesia has a fast onset and effective effect, and can reduce the amount of surgery and postoperative bleeding to some extent.

Key words: Pregnancy thrombocytopenia; Epidural anesthesia; General anesthesia; Coagulation system

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前言

妊娠血小板减少症(Gestational thrombocytopenia, GT)是指妊娠前无血小板减少的病史,妊娠期首次发现血小板计数低于正常值($<100 \times 10^9/L$)^[1-3],抗血小板抗体阴性,肝肾功能及凝血功能正常,多发生于妊娠中晚期,多数患者血小板减少的程度较轻,妊娠结束后数周症状消失^[4,5]。一般认为血小板低于 $50 \times 10^9/L$

时,手术过程中会不可避免的出现创面渗血过多的现象^[6,7],将此标准作为手术禁忌症,血小板水平在 $20 \times 10^9/L$ 以下时不进行手术即可引起自发性出血,血小板减少对手术麻醉效果也会产生影响^[8,9]。本研究将我院近一年来收治的 GT 患者 86 例作为研究对象,将其随机分为两组后,分别给予硬膜外麻醉和全麻,观察和比较不同麻醉方式对患者凝血功能的影响,现将研究结果报告如下。

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作者简介:姚晓燕(1986-),女,本科,研究方向:临床麻醉,电话:15826181756, E-mail: XIAOYaoxiao0731@163.com

Δ 通讯作者:曹宇飞(1985-),男,本科,主治医师,研究方向:临床麻醉学,电话:15223453504, E-mail: 285460622@qq.com

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1 资料与方法

1.1 一般资料

选择我院 2018 年 6 月至 2019 年 6 月收治的妊娠血小板减少症患者 86 例,按照随机数字表法分为研究组和对照组,每组各 43 例。研究组年龄 20~38 岁,平均年龄 27.81 ± 3.29 岁,孕周 37~41 周,平均 38.64 ± 2.10 周;对照组年龄 19~39 岁,平均年龄 27.93 ± 3.36 岁,孕周 38~42 周,平均 38.57 ± 2.08 周。两组一般资料比较差异均无统计学意义,具有可比性。

1.2 纳入和排除标准

纳入标准:符合 GT 诊断标准,即血小板计数 $Plt < 100 \times 10^9/L$,其他身体机能和指征正常^[10,11]。

排除标准:存在凝血功能异常和出凝血病史、合并心肝肾功能障碍和恶性肿瘤的孕妇。

1.3 麻醉方法

对照组:患者给予全身麻醉,静脉注射 0.01 mg/kg 盐酸戊乙奎醚、2.5 mg/kg 丙泊酚、0.3 mg/kg 顺苯阿曲库铵、0.3 mg/kg 舒芬太尼静脉诱导麻醉,3 min 后行气管内插管,连接麻醉机进行机械控制通气,术中以七氟醚吸入维持麻醉深度,根据患者手术情况和需求,间断追加阿曲库铵剂量。

研究组:本组患者给予硬膜外腔麻醉,在 L3~4 椎间隙行硬膜外穿刺,注入 5 mL 1.5% 利多卡因,待麻醉平面稳定后行气管插管,麻醉诱导和维持用药、方法同对照组。

1.4 观察指标

凝血功能各项指标:使用全自动凝血分析仪及配套试剂盒检测两组患者麻醉前、麻醉后 0.5 h、术后 0.5 h、术后 24 h、术后 48 h 部分激活凝血酶时间(APTT)、纤维蛋白原(FIB)、凝血酶原时间(PT)和 D-二聚体(D-D)的水平。

两组产妇手术和出血情况、新生儿 Apgar 评分情况。

1.5 统计学方法

使用统计学软件 SPSS21.0 对获得这次研究中获得的数据处理,计数资料用(%)表示,组间用 χ^2 检验,计量资料用($\bar{x} \pm s$)表示,组间用 t 检验, $P < 0.05$ 为表示差异具有统计学意义。

2 结果

2.1 两组产妇凝血系统各项指标变化情况比较

研究组产妇在麻醉后 0.5 h、术后 0.5 h、术后 24 h 的 APTT 均长于对照组($P < 0.05$),两组产妇 FIB 和 D-D 水平较麻醉前升高,对照组明显高于研究组($P < 0.05$),见表 1。

表 1 两组产妇凝血系统各项指标的变化比较

Table 1 Comparison of the changes of various indicators of maternal coagulation system

Groups	PT(s)	APTT(s)	FIB(g/L)	D-D($\mu g/L$)
Research group(43 cases)				
Before anesthesia	11.38 $\pm$ 1.12	35.87 $\pm$ 7.23	2.17 $\pm$ 0.32	66.71 $\pm$ 22.25
0.5 h after anesthesia	11.25 $\pm$ 1.10	36.58 $\pm$ 6.75 [#]	2.38 $\pm$ 0.36 ^{*#}	79.32 $\pm$ 23.41 ^{*#}
0.5 h after surgery	11.46 $\pm$ 1.13	36.01 $\pm$ 7.26 [#]	2.45 $\pm$ 0.34 ^{*#}	85.21 $\pm$ 21.05 ^{*#}
24 h after surgery	11.40 $\pm$ 1.12	35.91 $\pm$ 6.35 [#]	2.86 $\pm$ 0.30 ^{*#}	90.25 $\pm$ 19.63 ^{*#}
48 h after surgery	11.63 $\pm$ 1.15	35.87 $\pm$ 7.29 [#]	3.06 $\pm$ 0.34 ^{*#}	109.85 $\pm$ 25.45 ^{*#}
Control group (43 cases)				
Before anesthesia	11.37 $\pm$ 1.13	36.02 $\pm$ 7.41	2.16 $\pm$ 0.31	66.51 $\pm$ 21.03
0.5 h after anesthesia	11.36 $\pm$ 1.12	33.82 $\pm$ 7.42 [*]	2.78 $\pm$ 0.34 [*]	90.28 $\pm$ 27.86 [*]
0.5 h after surgery	11.46 $\pm$ 1.15	31.20 $\pm$ 6.25 [*]	2.86 $\pm$ 0.28 [*]	110.32 $\pm$ 24.51 [*]
24 h after surgery	11.48 $\pm$ 1.16	32.03 $\pm$ 6.34 [*]	3.07 $\pm$ 0.29 [*]	120.43 $\pm$ 21.58 [*]
48 h after surgery	11.52 $\pm$ 1.14	31.24 $\pm$ 6.25 [*]	3.28 $\pm$ 0.32 [*]	144.53 $\pm$ 31.25 [*]

Note: * $P < 0.05$ means comparison with pre-anesthesia, [#] $P < 0.05$ means simultaneous comparison with the control group.

2.2 两组产妇手术和出血情况的比较

两组产妇手术时间比较差异无统计学意义($P > 0.05$),研究

组产妇术后平均出血量和术后 24 h 平均出血量均明显少于对照组($P < 0.05$),见表 2。

表 2 两组产妇手术和出血情况比较

Table 2 Comparison of the maternal surgery and bleeding between the two groups

Groups	Cases	Average operation time (min)	Intraoperative mean bleeding volume(mL)	Average bleeding volume after 24 hours(mL)
Research group	43	54.38 $\pm$ 5.26	328.62 $\pm$ 102.35 [*]	53.32 $\pm$ 50.12 [*]
Control group	43	53.95 $\pm$ 5.18	366.84 $\pm$ 112.05	64.58 $\pm$ 53.47

Note: * $P < 0.05$ means comparison with the control group.

2.3 两组新生儿 Apgar 评分情况比较

两组新生儿出生 1 min、5 min 的 Apgar 评分比较差异无统

计学意义($P > 0.05$),见表 3。

表 3 两组新生儿 Apgar 评分情况比较

Table 3 Comparison of Apgar scores between the two groups of newborns

Groups	Cases	Freshman 1 min	Freshman 5 min
Research group	43	8.71± 1.32	9.02± 0.86
Control group	43	8.69± 1.30	9.23± 0.63

3 讨论

临床经验证实诸多因素会对患者围手术期凝血功能产生影响,麻醉是其中一个重要的因素,不同的麻醉方式会对患者凝血功能产生不同影响^[12,13]。国外研究证实使用硬膜外腔麻醉能够有效的防止术后血液出现高凝状态,同时也会降低术后血栓形成和肺栓塞的发生率^[14,15]。但是也有报道显示全麻和硬膜外腔麻醉的患者对患者的凝血功能产生的影响差异不大^[16,17]。对于围术期血小板减少症产妇而言,其麻醉管理具有一定的特殊性,这类患者在术前必须要明确血小板减少的原因,针对不同的病因要给予相应的术前处理^[18],其次患者在妊娠中晚期的血容量会增加 25%~50%,这其中血浆占 50%~60%,血细胞只占 10%~20%,因此血液比较稀释,对于非产科患者而言,当 $Plt < 50 \times 10^9/L$ 时会渗血,低于 $20 \times 10^9/L$ 时会有自发性出血的可能,对于孕晚期产妇则不能同等视之^[19,20]。针对孕晚期产妇,血常规检查发现血小板减少后,应进一步针对性的进行凝血指标监测以评估其危险性^[21,22],临床常用的指标有出血时间、毛细血管脆性试验、血块收缩时间等,如果这些基本指标无异常,即使血小板的指标低一点,应用椎管内麻醉也具有较高的安全性^[23,24]。

本次研究结果显示给予硬膜外腔麻醉或全身麻醉,两组产妇在不同时间点的 PT 水平差异不显著,可能是手术对产妇造成的损伤对外源性凝血途径产生的干扰较少,可以使产妇保持较为平稳的 PT 水平,研究组在不同时间点 APTT 和麻醉前比较差异不大,但是明显低于对照组,而对照组产妇 APTT 出现明显缩短的现象且维持在术后 48 h,可能是手术对患者下肢静脉血流速度产生影响,导致血液凝固状态增强^[25,26]。D-D 是交联纤维蛋白的特异降解产物,视为继发性纤溶的特异性指标,FIB 属于急性期产物,在应激状态下水平会升高,D-D 水平升高说明体内存在凝血和纤溶系统的激活,FIB 水平上升表示应激反应会导致高凝状态出现^[27,28],表明相较于全麻,硬膜外腔麻醉能够更为有效的改善 GT 患者的凝血状态,可能是硬膜外腔麻醉时局麻药物能够通过硬膜外腔部分吸收进入血液,减少血小板粘附、聚集和释放,从而达到抑制凝血的目的,而全面容易对血小板膜糖蛋白产生激活作用,导致血小板产生聚集^[29,30]。再者两组患者手术时间、新生儿 Apgar 评分比较差异无统计学意义,研究组产妇出血量指标更少,组间差异具有统计学意义。

综上所述,硬膜外腔麻醉对妊娠血小板减少症产妇的凝血功能影响较小,但麻醉起效快、效果确切,且可一定程度减少患者手术和术后出血量。

参考文献(References)

[1] Takita K, Uchida, Yosuke, et al. Co-existing liver disease increases the risk of postoperative thrombocytopenia in patients undergoing hepatic resection: implications for the risk of epidural hematoma associated with the removal of an epidural catheter [J]. J Anesth, 2014, 28(4):

554-558

- [2] Bachmann KA, Trepte, Constantin JC, Tomk L, et al. Effects of thoracic epidural anesthesia on survival and microcirculation in severe acute pancreatitis: a randomized experimental trial[J]. Crit Care, 2013, 17(6): 281-283
- [3] Lockshin MD, Harpel PC, Druzin ML, et al. Lupus pregnancy. II. Unusual pattern of hypocomplementemia and thrombocytopenia in the pregnant patient[J]. Arthritis Rheum, 2014, 28(1): 58-66
- [4] Xu Q, Shi N, Zhang H, et al. Effects of combined general-epidural anesthesia and total intravenous anesthesia on cellular immunity and prognosis in patients with non-small cell lung cancer: A comparative study[J]. Mol Med Rep, 2017, 16(4): 4445-4454
- [5] Howard-Quigano K, Takamiya T, Dale E A, et al. Effect of Thoracic Epidural Anesthesia on Ventricular Excitability in a Porcine Model [J]. Anesthesiology, 2017, 126(6): 1096-1106
- [6] Haifang L, Rui C, Zaiqi Y, et al. Comparison of the postoperative effect between epidural anesthesia and continuous wound infiltration on patients with open surgeries: A meta-analysis[J]. J Clin Anesth, 2018, 51(23): 20-31
- [7] Xia Z, Zhiquan L, Kaiyu Y, et al. Effects of epidural anesthesia combined with inhalation anesthesia or intravenous anesthesia on intrapulmonary shunt and oxygenation in patients undergoing long term single lung ventilation[J]. Pak J Med Sci, 2018, 34(4): 799-803
- [8] Zhu Y, Zhao Y, Fan G, et al. Comparison of the effects of local anesthesia and epidural anesthesia for percutaneous transforaminal endoscopic discectomy in elderly patients over 65 years old [J]. Int J Surg, 2017, 48(12): 260-263
- [9] Yuan Y, Yong-Sheng WU, Hong-Xia Z, et al. Effect of epidural block combined intravenous general anesthesia stress on the stress response and T lymphocyte subsets in patients with breast cancer undergoing radical mastectomy[J]. J Hainan Med Univers, 2017, 23(18): 120-123
- [10] Skipper MT, Rubak, Peter, et al. Evaluation of platelet function in thrombocytopenia[J]. Platelets, 2018, 29(3): 1-7
- [11] Padmanabhan A, Jones CG, Pechauer SM, et al. IVIg for Treatment of Severe Refractory Heparin-Induced Thrombocytopenia [J]. Chest, 2017, 127(2 Suppl): 9S
- [12] Lefevre A, Schnepfer G. Development of Harlequin Syndrome following placement of thoracic epidural anesthesia in a pediatric patient undergoing Nuss procedure[J]. Clin Case Rep, 2017, 5(9): 1523-1525
- [13] Guan Y, Wang SX, Xue F, et al. Long-term results of splenectomy in adult chronic immune thrombocytopenia[J]. Eur J Haematol, 2017, 98(3): 235-241
- [14] Ray, Neil P. Can We Continue to Deny Neuraxial Anesthesia to Otherwise-Healthy Parturients With Thrombocytopenia[J]. Anesth Analg, 2017, 124(2): 704-705
- [15] Tew S, Fontes ML, Greene NH, et al. Natural history of nonimmune-mediated thrombocytopenia and acute kidney injury in pediatric

- open-heart surgery[J]. Paediatr Anaesth, 2017, 27(3): 305-313
- [16] Chen L, Liu Z, Liu T, et al. Neonatal alloimmune thrombocytopenia caused by anti-HPA antibodies in pregnant Chinese women: a study protocol for a multicentre, prospective cohort trial[J]. BMC Pregnancy Childbirth, 2017, 17(1): 281-289
- [17] Kong Z, Qin P, Xiao S, et al. A novel recombinant human thrombopoietin therapy for the management of immune thrombocytopenia in pregnancy[J]. Blood, 2017, 130(9): 1097-1103
- [18] Wang X, Xu Y, Luo W, et al. Thrombocytopenia in pregnancy with different diagnoses: Differential clinical features, treatments, and outcomes[J]. Medicine, 2017, 96(29): e7561
- [19] Care A, Pavord S, Knight M, et al. Severe Primary Autoimmune Thrombocytopenia (ITP) in Pregnancy: a National Cohort Study[J]. BJOG, 2018, 125(5): 629-630
- [20] Fikir A, Bamlaku E, Zegeye G. Prevalence of thrombocytopenia among pregnant women attending antenatal care service at Gondar University Teaching Hospital in 2014, northwest Ethiopia [J]. J Blood Med, 2017, 15(8): 61-66
- [21] Farm M, Bakchoul, Tamam, et al. Evaluation of a diagnostic algorithm for Heparin-Induced Thrombocytopenia[J]. Thromb Res, 2017, 152: 77-81
- [22] Lingling W, Xiaohui L, Yuzhu Y, et al. Effectiveness of acupuncture versus spinal-epidural anesthesia on labor pain: a randomized controlled trial[J]. J Tradit Chin Med, 2017, 37(5): 629-635
- [23] Sinan U, Turgut D, Muslu EV, et al. Combined spinal-epidural anesthesia in laparoscopic appendectomy: a prospective feasibility study [J]. Ann Surg Treat Res, 2017, 92(4): 208-210
- [24] Donmez T, Erdem VM, Uzman S, et al. Laparoscopic cholecystectomy under spinal-epidural anesthesia vs. general anaesthesia: A prospective randomised study [J]. Ann Surg Treat Res, 2017, 92(3): 136-142
- [25] Yoon HJ, Do SH, Yun YJ. Comparing epidural surgical anesthesia and spinal anesthesia following epidural labor analgesia for intrapartum cesarean section: a prospective randomized controlled trial[J]. Korean J Anesthesiol, 2017, 70(4): 412-419
- [26] Beisenova A, Issatayeva A, Tosi D, et al. Fiber-Optic Distributed Strain Sensing Needle for Real-Time Guidance in Epidural Anesthesia [J]. IEEE Sensors J, 2018, 18(19): 8034-8044
- [27] Xu Z, Shen F, Zhang Y, et al. Combined spinal-epidural anesthesia with hypobaric ropivacaine in sitting position significantly increases the incidence of hypotension in parturients undergoing cesarean section[J]. J Obstet Gynaecol Res, 2017, 43(4): 669-675
- [28] Maddali P, Moisi M, Page J, et al. Anatomical complications of epidural anesthesia: A comprehensive review [J]. Clin Anat, 2017, 30(3): 342-346
- [29] Suzuki S, Kakizaki E, Kobayashi R, et al. Risk factors for postpartum urinary retention after vaginal delivery at term without epidural anesthesia[J]. J Matern Fetal Neonatal Med, 2019, 32(20): 3470-3472
- [30] Nishida T, Nakajima M. A refractory head tremor appearing after volatile anesthesia combined with epidural anesthesia in a patient with spinocerebellar ataxia type 6 [J]. J Clin Reports, 2018, 4(1): 13-16

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- [20] Burchiel KJ. A new classification for facial pain [J]. Neurosurgery, 2003, 53: 1164
- [21] Sandell T, Eide PK. Effect of microvascular decompression in trigeminal neuralgia patients with or without constant pain[J]. Neurosurgery, 2008, 63: 93
- [22] Jonathan M, Feridun A, Bronwyn H, et al. Preoperative visualization of neurovascular anatomy in trigeminal neuralgia [J]. Journal of Neurosurgery, 2008, 108: 477-482
- [23] Burchiel KJ, Slavin KV. On the natural history of trigeminal neuralgia[J]. Neurosurgery, 2000, 46: 152
- [24] Sindou M, Leston J, Howedy T, et al. Micro-vascular decompression for primary Trigeminal Neuralgia (typical or atypical). Long-term effectiveness on pain; prospective study with survival analysis in a consecutive series of 362 patients [J]. Acta Neurochirurgica, 2006, 148: 1235-1245
- [25] Inoue T, Hirai H, Shima A, et al. Diagnosis and management for trigeminal neuralgia caused solely by venous compression [J]. Acta Neurochirurgica, 2017, 159: 681-688
- [26] Shulev YA, Gordienko KS, Trashin AV, et al. Venous compression as a cause of trigeminal neuralgia[J]. Zhurnal Voprosy Neurokhirurgii Imeni N.n.burdenko, 2016, 80: 21
- [27] Zhong J, Li S, Sq, Wan L, et al. Management of petrosal veins during microvascular decompression for trigeminal neuralgia [J]. Neurological Research, 2008, 30: 697-700
- [28] Feng B, Zheng X, Wang X, et al. Management of different kinds of veins during microvascular decompression for trigeminal neuralgia: technique notes[J]. Neurological Research, 2015, 37: 1090-1095
- [29] Anichini G, Iqbal M, Rafiq NM, et al. Sacrificing the superior petrosal vein during microvascular decompression. Is it safe? Learning the hard way. Case report and review of literature[J]. Surgical Neurology International, 2016, 7: S415-S420
- [30] Xia L, Zhong J, Zhu J, et al. Effectiveness and Safety of Microvascular Decompression Surgery for Treatment of Trigeminal Neuralgia: A Systematic Review [J]. Journal of Craniofacial Surgery, 2014, 25: 1413