

doi: 10.13241/j.cnki.pmb.2021.16.039

宫颈口开大 2~3 cm 应用间苯三酚对初产妇产后心理状态、血清应激反应指标和母婴结局的影响*

钟美英¹ 唐征宇^{1△} 刘 婷¹ 王圆圆¹ 邓雅戈¹ 王永清²

(1 湖南省直中医医院 / 湖南中医药高等专科学校附属第一医院产科 湖南 株洲 412000;

2 湖南省第二人民医院妇产科 湖南 长沙 410000)

摘要 目的:观察宫颈口开大 2~3 cm 应用间苯三酚对初产妇产后心理状态、血清应激反应指标和母婴结局的影响。**方法:**对湖南中医药高等专科学校附属第一医院于 2019 年 1 月~2019 年 12 月期间收治的初产妇 200 例进行研究,将其按照随机数字表法分为对照组和研究组,各为 100 例。对照组分娩期间给予常规处理,研究组则在对照组基础上注射间苯三酚,观察两组第一产程、第二产程、总产程,记录两组分娩后心理状况、母婴结局情况及不良反应发生率,对比两组宫颈口开大 2~3 cm 时、分娩后的应激反应指标。**结果:**研究组的第一产程、第二产程均短于对照组,从而使总产程明显缩短,组间对比差异有统计学意义($P<0.05$)。研究组分娩后焦虑自评量表(SAS)与抑郁自评量表(SDS)评分均小于对照组,组间对比差异有统计学意义($P<0.05$)。两组分娩后胰岛素、皮质醇及血糖水平均高于分娩前($P<0.05$),但研究组胰岛素、皮质醇及血糖水平低于对照组($P<0.05$)。两组产后出血率、新生儿窒息率组间对比差异无统计学意义($P>0.05$),研究组的会阴裂伤(II)率、助产分娩率低于对照组,正常分娩率高于对照组($P<0.05$)。两组不良反应发生率对比无差异($P>0.05$)。**结论:**初产妇宫颈口开大 2~3 cm 时应用间苯三酚,可减轻分娩时产生的应激反应,改善母婴结局,减轻产后抑郁焦虑情况,且安全性好。

关键词:宫颈口开大 2~3 cm; 间苯三酚; 初产妇; 产后心理状态; 应激反应; 母婴结局

中图分类号:R715.3;R714 **文献标识码:**A **文章编号:**1673-6273(2021)16-3192-04

Effects of Phloroglucinol on Postpartum Psychological Status, Serum Stress Response Indexes and Maternal and Infant Outcomes of Primiparas with Cervical Opening 2-3 cm*

ZHONG Mei-ying¹, TANG Zheng-yu^{1△}, LIU Ting¹, WANG Yuan-yuan¹, DENG Ya-ge¹, WANG Yong-qing²

(1 Department of Obstetrics, Hunan Provincial Hospital of Traditional Chinese Medicine/The First Affiliated Hospital of Hunan College of Traditional Chinese Medicine, Zhuzhou, Hunan, 412000, China; 2 Department of Obstetrics and Gynecology,

The Second People's Hospital of Hunan Province, Changsha, Hunan, 410000, China)

ABSTRACT Objective: To observe the effect of phloroglucinol on postpartum psychological status, serum stress response index and maternal and infant outcomes of primiparas with cervical opening 2-3 cm. **Methods:** 200 cases of primiparas who were admitted to the First Affiliated Hospital of Hunan College of traditional Chinese medicine from January 2019 to December 2019 were studied, they were randomly divided into control group and study group by the random number table method, 100 cases in each group. The control group was given routine treatment during delivery, while the study group was injected with phloroglucinol on the basis of the control group. The first stage of labor, the second stage of labor and the total stage of labor were observed in the two groups. The psychological status, maternal and infant outcomes and the incidence rate of adverse reactions after delivery in the two groups were recorded. The stress reaction indexes in the two groups were compared when the cervix opening 2~3 cm larger and after delivery. **Results:** The first stage of labor and the second stage of labor in the study group were shorter than those in the control group, which significantly shortened the total stage of labor, and the difference between the two groups was statistically significant ($P<0.05$). The scores of self rating Anxiety Scale (SAS) and self rating Depression Scale (SDS) in the study group after delivery were lower than those in the control group, and the difference was statistically significant ($P<0.05$). The levels of insulin, cortisol and blood glucose in the two groups after delivery were higher than those before delivery ($P<0.05$), but the levels of insulin, cortisol and blood glucose in the study group were lower than those in the control group ($P<0.05$). There were no significant differences in postpartum hemorrhage rate and neonatal asphyxia rate between the two groups ($P>0.05$). The perineal laceration (II) rate and midwifery delivery rate in the study group were lower than those in the control group, and the normal delivery rate was higher than that in the control group ($P<0.05$). There was no difference in the incidence

* 基金项目:湖南省中医药科研计划项目(2016154)

作者简介:钟美英(1982-),女,硕士,副主任医师,研究方向:中西医结合产科,E-mail:doudou01012012@163.com

△ 通讯作者:唐征宇(1974-),女,本科,主任医师,研究方向:中西医结合妇产科,E-mail:626450228@qq.com

(收稿日期:2021-01-28 接受日期:2021-02-23)

of adverse reactions between the two groups ($P>0.05$). **Conclusion:** Phloroglucinol should be used when the cervix opening 2 ~ 3 cm larger, which can reduce the stress reaction during delivery, improve the maternal and infant outcomes, and reduce postpartum depression and anxiety, and with good safety.

Key words: Cervical opening 2 ~ 3 cm; Phloroglucinol; Primiparas; Postpartum psychological state; Stress response; Maternal and infant outcomes

Chinese Library Classification(CLC): R715.3; R714 **Document code:** A

Article ID: 1673-6273(2021)16-3192-04

前言

分娩是指胎儿脱离母体成为独立存在个体的时期与过程,是女性必经的生理过程。与经产妇相比,初产妇首次分娩,分娩经验缺乏,对分娩过程充满恐惧与担忧,易出现植物神经功能紊乱,导致宫颈水肿或坚韧,增加剖宫产的发生风险^[1,2]。分娩可分为 3 个过程,其中第一产程子宫出现规律性的收缩,子宫口逐渐开大,直到扩展到 10 厘米宽开始第二产程(胎儿娩出期)、第三产程(胎盘娩出期)^[3,4]。其中第一产程所占时间最长,通常需要 12~16 个小时,在此阶段,宫口未开全,产妇若在此时用力,会导致宫口肿胀、发紧,不易张开^[5]。那么如何正确地处理产程、减少分娩对母婴生理状况产生的不良影响、降低剖宫产率至关重要。间苯三酚是一种非胆碱能样平滑肌解痉剂,可有效缓解痉挛性疼痛^[6]。本研究在初产妇宫颈口开大 2~3 cm 时给予间苯三酚注射液,探讨其临床应用价值。

1 资料与方法

1.1 临床资料

对湖南中医药高等专科学校附属第一医院于 2019 年 1 月~2019 年 12 月期间收治的初产妇 200 例进行研究,研究经本院伦理医学委员会审批通过。200 例初产妇的年龄为 22~35 岁,平均(30.44±4.51)岁;;孕周 37~40 周,平均(38.71±1.73)周;孕妇体质量指数 24~34kg/m²,平均(30.64±1.04)kg/m²;产前胎儿 B 超估重 2.50~3.70kg,平均(3.09±0.56)kg。纳入标准:单胎头位,足月(孕周 37~40 周)正常初产妇;签署知情同意书;因自然临产或胎膜早破临产入产房;产前胎儿 B 超估重 2.50~3.70kg。排除标准:伴妊娠期严重合并症及并发症者;无法配合完成研究者;有精神病史者;存在阴道分娩禁忌证者;存在间苯三酚禁忌者。将本次研究的 200 例初产妇按照随机数字表法分为对照组和研究组,各为 100 例。对照组中,年龄 22~34 岁,平均(30.16±4.38)岁;孕周 37~39 周,平均(38.26±0.73)周;孕妇体质量指数 25~34kg/m²,平均(30.46±0.83)kg/m²;产前胎儿 B 超估重 2.50~3.65kg,平均(3.16±0.33)kg。研究组中,年龄

23~35 岁,平均(30.72±3.76)岁;孕周 38~40 周,平均(39.15±0.24)周;孕妇体质量指数 24~33kg/m²,平均(30.82±0.97)kg/m²;产前胎儿 B 超估重 2.60~3.70kg,平均(3.02±0.27)kg。两组一般资料对比差异无统计学意义($P>0.05$)。

1.2 方法

初产妇出现规律子宫收缩,待宫颈口开大 2~3 cm 时,对照组按产科正常流程等待分娩。研究组给予注射用间苯三酚(湖北午时药业股份有限公司,生产批号:181224,规格 40 mg)160 mg,分 2 次静脉注射,间隔注射时间为 30 min。

1.3 评价指标

(1)两组均由专人观察各阶段产程进展,包括第一产程、第二产程、总产程。统计第一产程是指用药至宫口开全的时间。第二产程为胎儿娩出期。(2)分娩后采用焦虑自评量表(SAS)^[7]与抑郁自评量表(SDS)^[8]评定产妇心理状况,SAS、SDS 共 20 个条目,各项目评分总和所获粗分×1.25 即为标准分,分数越高,表示焦虑抑郁程度越高。(3)宫颈口开大 2~3 cm 时、分娩后次日取两组患者清晨空腹肘静脉血 6 mL,分离血清后采用 Mindray BS-420 全自动生化分析仪(深圳迈瑞生物医疗电子股份有限公司)检测应激反应指标胰岛素、皮质醇和血糖。(4)观察两组母婴结局,包括会阴裂伤(Ⅱ)、正常分娩、助产分娩、产后出血、新生儿窒息。(5)观察并记录两组产妇产后期间呼吸不畅、头晕、心率、血压、恶心呕吐等情况。

1.4 统计学方法

应用 SPSS25.0 软件进行数据统计分析,分娩产程、分娩后 SAS、SDS 评分等计量资料采用均数±标准差($\bar{x} \pm s$)表示,实施 t 检验。会阴裂伤(Ⅱ)率、正常分娩率、助产分娩率等计数资料采用率表示,比较采用卡方检验,所有统计均采用双侧检验, $\alpha=0.05$ 设置为检验水准。

2 结果

2.1 两组分娩产程对比

研究组的第一产程、第二产程均短于对照组,从而使总产程明显缩短($P<0.05$),如表 1 所示。

表 1 两组分娩产程对比($\bar{x} \pm s$, min)
Table 1 Comparison of delivery stage between the two groups($\bar{x} \pm s$, min)

Groups	First stage of labor	Second stage of labor	Total stage of labor
Control group(n=100)	522.08±19.26	112.91±16.85	634.99±28.35
Study group(n=100)	423.44±18.19	64.75±8.76	488.19±27.39
t	37.234	25.359	37.420
P	0.000	0.000	0.000

2.2 两组分娩后 SAS、SDS 评分对比

表 2 所示。

研究组分娩后 SAS、SDS 评分均低于对照组 ($P<0.05$), 如

表 2 两组分娩后 SAS、SDS 评分对比($\bar{x}\pm s$, 分)

Table 2 Comparison of SAS and SDS scores between the two groups after delivery($\bar{x}\pm s$, scores)

Groups	SAS score	SDS score
Control group(n=100)	52.14±9.87	50.37±10.72
Study group(n=100)	39.07±7.23	34.29±8.38
t	10.683	11.818
P	0.000	0.000

2.3 两组分娩后应激反应指标对比

血糖水平均高于分娩前 ($P<0.05$), 但分娩后研究组胰岛素、皮

两组宫颈口开大 2~3 cm 时胰岛素、皮质醇及血糖水平比

质醇及血糖水平低于对照组 ($P<0.05$), 如表 3 所示。

较差异无统计学意义 ($P>0.05$), 两组分娩后胰岛素、皮质醇及

表 3 两组分娩后应激反应指标对比($\bar{x}\pm s$, mmol/L)

Table 3 Comparison of stress response indexes after delivery between the two groups($\bar{x}\pm s$, mmol/L)

Groups	Insulin		Cortisol		Blood glucose	
	When the cervix opening 2 ~ 3 cm	After delivery	When the cervix opening 2 ~ 3 cm	After delivery	When the cervix opening 2 ~ 3 cm	After delivery
	larger		larger		larger	
Control group (n=100)	6.79±0.48	9.15±0.56*	793.41±36.87	906.52±36.48*	5.27±0.41	6.61±0.59*
Study group(n=100)	6.83±0.57	8.02±0.74*	793.93±40.65	852.06±38.47*	5.31±0.53	5.58±0.76*
t	0.537	12.177	0.095	10.272	0.591	10.705
P	0.592	0.000	0.925	0.000	0.551	0.000

Note: Compared with when the cervix opening 2 ~ 3 cm larger, * $P<0.05$.

2.4 两组母婴结局情况对比

义 ($P>0.05$), 研究组的会阴裂伤(Ⅱ)率、助产分娩率低于对照

两组产后出血率、新生儿窒息率组间对比差异无统计学意

组, 正常分娩率高于对照组 ($P<0.05$), 如表 4 所示。

表 4 两组母婴结局情况对比【例(%)】

Table 4 Comparison of maternal and infant outcomes between the two groups[n(%)]

Groups	Perineal laceration(Ⅱ)	Normal delivery	Midwifery delivery	Postpartum hemorrhage	Neonatal asphyxia
Control group(n=100)	51(51.00)	36(36.00)	13(13.00)	3(3.00)	1(1.00)
Study group(n=100)	37(37.00)	61(61.00)	2(2.00)	1(1.00)	0(0.00)
χ^2	3.977	12.511	8.721	1.020	1.005
P	0.046	0.000	0.003	0.312	0.316

2.5 两组产妇不良反应发生情况对比

分娩期间, 两组均未出现心律不齐、血压升高或降低、呼吸不畅等不良反应。对照组产妇出现 1 例恶心呕吐, 而研究组产妇出现 2 例轻微头晕, 均不严重。两组不良反应发生率组间对比无明显差异 ($P<0.05$)。

3 讨论

受到家庭、社会、产妇个人等多因素影响, 不少孕妇选择剖宫产结束妊娠。截止到目前, 我国剖宫产率已达全球最高水平^[9]。我国不少地区已对剖宫产采取限制政策, 如北京、上海等一线城市, 但其他地区尚未对剖宫产手术作出明确规定^[10]。由

于剖宫产具有导致胎儿免疫力下降、哮喘风险增加、分娩时用的麻醉药可能危及胎儿生命等诸多缺点, 故临床工作者们一般建议符合要求的产妇自然娩出^[11,12]。初产妇对分娩缺乏了解, 极易产生恐惧、焦虑心理, 加上产妇妊娠期内各类激素产生变化, 生产时若未能较好的缓解产妇上述心态, 易导致中枢神经系统功能紊乱, 儿茶酚胺分泌增多, 子宫的正常收缩能力减弱, 第一产程、第二产程延长, 增加中剖宫产率^[13,14]。邢福祺^[15]的研究亦表明, 产妇在阴道分娩过程中, 当产妇产子宫颈水肿时, 难产几率增加。因而, 寻找一种能减轻痛苦、提高宫颈扩张效果、促进产程进展的方法对于帮助初产妇顺利娩出胎儿意义重大。

间苯三酚可直接作用于泌尿生殖道平滑肌, 能抑制无效肌

性收缩,改善机体不协调性^[6]。本次研究结果显示,使用间苯三酚的初产妇其第一产程、第二产程均短于未使用间苯三酚者,从而使总产程明显缩短。国内外大量研究证实^[17-19],间苯三酚能缓解宫颈痉挛、水肿,促进产妇宫颈松弛,促进产程进展,论证了本研究结果。因产妇宫颈的成熟度与产程的长短、分娩情况密不可分,而间苯三酚注射液在协调宫缩、软化宫颈的同时,还不干扰平滑肌正常的生理收缩节律性与幅度,从而明显缩短宫颈扩张时间,缩短总产程^[20-22]。同时研究中发现使用间苯三酚的产妇其分娩后 SAS、SDS 评分更低。主要是因为使用间苯三酚可缩短总产程,帮助产妇顺利娩出胎儿,减轻产妇所受的分娩痛苦,产后情绪较为平缓,降低抑郁焦虑风险^[23,24]。

应激反应包括生理反应、心理反应两种,主要是指各种紧张性刺激物引起的个体非特异性反应^[25]。分娩过程中产妇受到疼痛、紧张、焦虑、恐惧等各种刺激,进而产生不同程度的身体应激,严重者将会对母婴结局产生不良影响^[26]。皮质醇提取自肾上腺皮质,可在肾上腺皮质线粒体中形成皮质素,参与着机体生理机能的有序进展^[27]。胰岛素是由胰腺内的胰岛 β 细胞分泌的一种应激物质,可有效反映机体应激程度^[28]。血糖是指血液中的葡萄糖,可为机体各细胞提供能量^[29]。上述应激反应指标在正常人体中表达水平较低,当受到应激反应时,会迅速升高。本研究中,宫颈口开大 2~3 cm 时应用间苯三酚,可减轻分娩时产生的应激反应。推测是与间苯三酚可促进胎儿顺利娩出,减少疼痛作用时间,从而减少应激反应程度有关^[30]。同时观察母婴结局、药物安全性可知,研究组的会阴裂伤(II)率、助产分娩率低于对照组,正常分娩率高于对照组,两组不良反应发生率对比无明显差异,再一次证实了间苯三酚可帮助产妇顺利娩出胎儿。间苯三酚可有效降低子宫平滑肌耗氧量,并不影响胎儿正常供氧^[31]。药理研究显示间苯三酚进入人体后可迅速分布到肾、肠等部位,其血浆半衰期约为 15 min,4h 内血药浓度会迅速降低,之后再缓慢下降,具有较好的安全性^[32]。

综上所述,间苯三酚应用于初产妇宫颈口开大 2~3 cm 时安全有效,可减轻产妇产时的应激反应和产后抑郁焦虑情况,且能改善母婴结局。

参考文献(References)

[1] Nakamura Y, Okada T, Morikawa M, et al. Perinatal depression and anxiety of primipara is higher than that of multipara in Japanese women[J]. *Sci Rep*, 2020, 10(1): 17060

[2] 吴小颖,陈彤华,邢增丽,等. 孕妇不良情绪、生活事件与妊娠结局以及分娩方式的关系研究 [J]. *现代生物医学进展*, 2019, 19(17): 3374-3378

[3] 苑运阁. 分娩方式与产程对新生儿窒息的影响[J]. *中国妇幼保健研究*, 2007, 18(2): 122-123

[4] Sehhati F, Najjarzadeh M, Seyyedrasouli A, et al. Effect of continuous midwifery care on length of labor[J]. *J Caring Sci*, 2012, 1(1): 47-52

[5] Rhoades JS, Cahill AG. Defining and Managing Normal and Abnormal First Stage of Labor [J]. *Obstet Gynecol Clin North Am*, 2017, 44(4): 535-545

[6] 徐高侠,周娟,魏霞霞. 间苯三酚注射液对产程活跃期宫颈水肿产妇的临床效果分析[J]. *广西医科大学学报*, 2016, 33(5): 873-875

[7] Samakouri M, Bouhos G, Kadoglou M, et al. Standardization of the Greek version of Zung's Self-rating Anxiety Scale (SAS) [J].

Psychiatriki, 2012, 23(3): 212-220

[8] Zung WW, Richards CB, Short MJ. Self-rating depression scale in an outpatient clinic. Further validation of the SDS [J]. *Arch Gen Psychiatry*, 1965, 13(6): 508-515

[9] 朱逸博,李宏田,张亚黎,等. 1993 至 2010 年中国部分地区单胎初产妇剖宫产和孕妇要求剖宫产率变化趋势 [J]. *中华医学杂志*, 2012, 92(25): 1734-1737

[10] 苏秀娟,李婷. 2000 年至 2009 年我国剖宫产率和剖宫产指征的变化[J]. *中华围产医学杂志*, 2012, 15(2): 85-90

[11] 沈瑶,林建华,林其德,等. 我国部分地区剖宫产率影响因素和指征分析[J]. *实用妇产科杂志*, 2011, 27(3): 183-187

[12] Malek J. Responding to refusal of recommended cesarean section: Promoting good parenting[J]. *Semin Perinatol*, 2016, 40(4): 216-221

[13] Lorenzon-Ojea AR, Yung HW, Burton GJ, et al. The potential contribution of stromal cell-derived factor 2 (SDF2) in endoplasmic reticulum stress response in severe preeclampsia and labor-onset[J]. *Biochim Biophys Acta Mol Basis Dis*, 2020, 1866(2): 165386

[14] Mitchell AM, Silhavy TJ. Envelope stress responses: balancing damage repair and toxicity[J]. *Nat Rev Microbiol*, 2019, 17(7): 417-428

[15] 邢福祺. 宫颈水肿的诊断与处理 [J]. *中国实用妇科与产科杂志*, 1995, 11(4): 245-246

[16] 章传华,刘双林,陈志强,等. 间苯三酚治疗肾绞痛的 multicenter 随机对照临床研究[J]. *中华泌尿外科杂志*, 2015, 36(4): 257-260

[17] Xu D, Zhang X, He J. A Prospective, Randomized Comparison of Intramuscular Phloroglucinol Versus Oral Misoprostol for Cervix Pretreatment Before Diagnostic Hysteroscopy [J]. *Int Surg*, 2015, 100(7-8): 1207-1211

[18] 何国梅,寇小莉,陈函函,等. 单球囊联合催产素、间苯三酚对晚期妊娠妇女宫颈成熟与妊娠结局的影响[J]. *中国妇幼保健*, 2018, 33(10): 2316-2318

[19] 翟瑶,张静,张姗姗,等. 间苯三酚在无痛人流术中软化宫颈作用的研究[J]. *中国妇幼保健研究*, 2021, 32(1): 97-101

[20] 马莉琼,毛飞君. 间苯三酚注射液在产程活跃期中的临床应用[J]. *中国医师杂志*, 2010, 12(4): 562-563

[21] 王玉英. 间苯三酚注射液对于促进产程进展作用的研究 [J]. *中国妇幼保健*, 2012, 27(17): 2700-2701

[22] Yu S, Guo L, Zhao L, et al. Metabolic engineering of *E. coli* for producing phloroglucinol from acetate[J]. *Appl Microbiol Biotechnol*, 2020, 104(18): 7787-7799

[23] Cao JQ, Tian HY, Li MM, et al. Rearranged Phloroglucinol-Monoterpenoid Adducts from *Callistemon rigidus* [J]. *J Nat Prod*, 2018, 81(1): 57-62

[24] 陈丽莹,胡小颖. 间苯三酚在产程中的应用对围产结局的影响观察[J]. *中国医师杂志*, 2015, 17(3): 457-458

[25] 李蓓,黄杰,童生元,等. 分娩镇痛对瘢痕子宫再次妊娠产妇应激反应及泌乳素分泌的影响 [J]. *实用医院临床杂志*, 2021, 18(1): 152-154

[26] 黄科,欧明灵. 全产程分娩镇痛与第一产程分娩镇痛对母婴结局的影响对比[J]. *解放军医药杂志*, 2018, 30(1): 102-104

[27] Dalile B, Vervliet B, Bergonzelli G, et al. Colon-delivered short-chain fatty acids attenuate the cortisol response to psychosocial stress in healthy men: a randomized, placebo-controlled trial [J]. *Neuropsychopharmacology*, 2020, 45(13): 2257-2266

- Homocysteine levels are associated with bone resorption in pre-frail and frail Spanish women: The Toledo Study for Healthy Aging[J]. *Experimental Gerontology*, 2018, 108: 201-208
- [6] Kiran B S R, Mohanalakshmi T, Srikumar R, et al. C-reactive protein and other markers of inflammation in the prediction of cardiovascular disease in diabetes [J]. *International Journal of Research in Pharmaceutical Sciences*, 2017, 8(3): 476-479
- [7] Han Y, Wang J, Hong L, et al. Platelet-lymphocyte ratio is an independent prognostic factor in patients with ALK-positive non-small-cell lung cancer[J]. *Future Oncology*, 2017, 13(1): 51-61
- [8] 《中国高血压防治指南》修订委员会. 中国高血压防治指南 2018 年修订版[J]. *心脑血管病防治*, 2019, 019(001): 1-44
- [9] Bolmsj B B, Wolff M, Nymberg V M, et al. Text message-based lifestyle intervention in primary care patients with hypertension: a randomized controlled pilot trial[J]. *Scandinavian Journal of Primary Health Care*, 2020, 1-8
- [10] Aengevaeren V L, Mosterd A, Braber T L, et al. The Relationship Between Lifelong Exercise Volume and Coronary Atherosclerosis in Athletes[J]. *Circulation*, 2017, 136(2): 138-148
- [11] A C C, B T C, M. Hernández-Perez b, et al. The Barcelona-Asymptomatic Intracranial Atherosclerosis (AsIA) study: Subclinical cervico-cerebral stenosis and middle cerebral artery pulsatility index as predictors of long-term incident cognitive impairment [J]. *Atherosclerosis*, 2020, 312: 104-109
- [12] Alena G, Florian H, Eicke L. NLRP3 Inflammasome and the IL-1 Pathway in Atherosclerosis [J]. *Circulation Research*, 2018, 122(12): 1722-1740
- [13] Kojima M, Ozawa N, Mori Y, et al. Catestatin Prevents Macrophage-Driven Atherosclerosis but Not Arterial Injury-Induced Neointimal Hyperplasia[J]. *Thrombosis & Haemostasis*, 2018, 118(01): 182-194
- [14] Gao F, Chen J, Zhu H. A potential strategy for treating atherosclerosis: improving endothelial function via AMP-activated protein kinase[J]. *Science China Life Sciences*, 2018, 61(09): 1-6
- [15] Koyanagi A, D. Kuffó, Gresely L, et al. Relationships between serum concentrations of C-reactive protein and micronutrients, in patients with tuberculosis [J]. *Annals of Tropical Medicine & Parasitology*, 2017, 98(4): 391-399
- [16] 韩菲. H 型高血压冠心病患者血清 Hcy、β₂-MG 及 hs-CRP 检测的意义[J]. *医学信息*, 2018, 031(009): 152-154
- [17] 陆启勇, 刘亚萍, 宋文伟, 等. 彩色多普勒超声、HbA1c 及 hs-CRP 联合检测对动脉粥样硬化脑梗死的诊断价值[J]. *东南大学学报(医学版)*, 2018, 37(001): 60-63
- [18] 杨锡恒, 谢婷, 廖发荣, 等. H 型高血压患者血清 Hcy、Cyst-C 及 UA 水平与左心室肥厚的关系[J]. *重庆医学*, 2018, (5): 663-664
- [19] 汤兴芳. H 型高血压冠心病患者血清 Hcy, cy, 冠及 hs-CRP 检测的意义[J]. *心血管病防治知识*, 2018, 000(009): 5-7
- [20] Shui X Z, Ji X W, Peng O Y Y, et al. Prognostic role of the pre-treatment platelet-lymphocyte ratio in pancreatic cancer: A meta-analysis[J]. *Oncotarget*, 2017, 8(58): 99003-99012
- [21] Mohit K, Rajat S. Neuroprotective Effect of Hydrogen Sulfide in Hyperhomocysteinemia Is Mediated Through Antioxidant Action Involving Nrf2[J]. *NeuroMolecular Medicine*, 2018, 20: 475-490
- [22] Shi H, Yang S, Lin N, et al. Study on Maternal SNPs of MTHFR Gene and HCY Level Related to Congenital Heart Diseases [J]. *Pediatric Cardiology*, 2020
- [23] Brennan P L R, Ian G, Michele G, et al. Data from: Evidence of phenotypic plasticity of penis morphology and delayed reproductive maturation in response to male competition in waterfowl [J]. *Auk*, 2017, 134(4): 882-893
- [24] Lai W, Ni W, Wang H, et al. Analysis of Average Packet Loss Rate in Multi-hop Broadcast for VANETs[J]. *IEEE Communications Letters*, 2018, 22(1): 157-160
- [25] Axelsson C, Jimenez-Herrera M, Holmén, Johan, et al. Could passive leg raising (PLR) during CPR improve survival in out-of-hospital cardiac arrest[J]. *Resuscitation*, 2017, 118: e20-e21
- [26] Seng J J B, Kwan Y H, Low L L, et al. Role of neutrophil to lymphocyte ratio (NLR), platelet to lymphocyte ratio (PLR) and mean platelet volume (MPV) in assessing disease control in Asian patients with axial spondyloarthritis[J]. *Biomarkers*, 2018, 23(1-8): 1-4
- [27] Dharmapuri S, Zbek U, Lin J Y, et al. Predictive value of neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR) in hepatocellular carcinoma (HCC) patients treated with nivolumab (N) [J]. *Annals of Oncology*, 2019, 30: v285-v286
- [28] Schwartz P B, Poultides G, Roggin K, et al. PLR and NLR Are Poor Predictors of Survival Outcomes in Sarcomas: A New Perspective From the USSC[J]. *Journal of Surgical Research*, 2020, 251: 228-238
- [29] Yongping Z, Sijin C, Hamid F A, et al. Prognostic value of platelet-to-lymphocyte ratio in pancreatic cancer: a comprehensive meta-analysis of 17 cohort studies [J]. *Oncotargets & Therapy*, 2018, 11: 1899-190
- [30] 孙晓兰, 陈敏. 基于 ROC 曲线分析 HCY、hs-CRP、PCSK-9 诊断原发性高血压患者颈动脉粥样硬化的价值 [J]. *海南医学*, 2018(2): 208-211

(上接第 3195 页)

- [28] 任丽芬, 张志平, 徐蓓, 等. 孕妇葡萄糖耐量和血清胰岛素及 C-肽释放水平检测对妊娠糖尿病的诊断研究 [J]. *现代检验医学杂志*, 2020, 35(6): 167-170
- [29] Rodbard D, Garg SK. Standardizing Reporting of Glucose and Insulin Data for Patients on Multiple Daily Injections Using Connected Insulin Pens and Continuous Glucose Monitoring [J]. *Diabetes Technol Ther*, 2021, 23(3): 221-226
- [30] 李媚娟, 徐琼, 李妹燕. 外周神经和肌肉刺激器联合间苯三酚用于分娩镇痛的效果和安全性 [J]. *中国妇幼保健*, 2020, 35(10): 1769-1773
- [31] Clara B, Paul V, Denis P, et al. Efficacy of phloroglucinol for the treatment of pain of gynaecologic or obstetrical origin: a systematic review of literature of randomised controlled trials [J]. *Eur J Clin Pharmacol*, 2020, 76(1): 1-6
- [32] 李健和, 易利丹, 彭六保, 等. 间苯三酚的药理作用与临床应用[J]. *中国新药与临床杂志*, 2011, 30(7): 494-499