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• 论著 •

复方利多卡因乳膏在肿瘤患儿腰椎穿刺术中的应用效果

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[摘要]目的:探讨复方利多卡因乳膏在白血病和淋巴瘤患儿腰椎穿刺术中的应用效果。方法:选取2014-2016年我院行腰椎穿刺术鞘内注射药物的白血病和淋巴瘤患儿292例,按随机数表法分为试验组和对照组各146例。试验组在以腰椎穿刺点为圆心、半径5 cm的局部皮肤涂抹0.5 mm厚的复方利多卡因乳膏,采用医用3M贴膜覆盖2 h,去除贴膜和乳膏常规消毒后行腰椎穿刺术;对照组操作时采用利多卡因注射液局部麻醉后行腰椎穿刺术。采用改良面部表情评分法(FLACC)量表和Wong-Baker面部表情分级量表评价患儿疼痛程度,记录患儿穿刺前后心率、呼吸、血压、穿刺成功率、患儿穿刺后不适感及家属满意度。结果:试验组疼痛程度、穿刺后不适感低于对照组($P < 0.05$)。对照组穿刺后心率、呼吸、收缩压均明显较穿刺前加快($P < 0.05$),试验组穿刺后心率、呼吸、收缩压与穿刺前比较差异无统计学意义($P > 0.05$)。两组穿刺成功率比较差异无统计学意义,但试验组患儿家属满意度明显高于对照组。结论:复方利多卡因乳膏可明显减轻肿瘤患儿治疗过程中反复穿刺带来的疼痛,提高了患儿生活质量和医师工作效率,值得临床推广应用。

[关键词]复方利多卡因乳膏;儿童;白血病;淋巴瘤;腰椎穿刺术

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Effects of Compound Lidocaine Cream on Lumbar Puncture in Children with Tumor

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[Abstract] Objective: To probe into the effects of compound lidocaine cream on lumbar puncture in children with tumor. Methods: A total of 292 children with leukemia and lymphoma received intrathecal injection of lumbar puncture from 2014 to 2016 in our hospital were extracted to be divided into the experimental group and the control group via the random number table, with 146 cases in each group. In the experimental group, with the lumbar puncture point as the center, the local skin with the radius of 5 cm was smeared with 0.5 mm compound lidocaine cream, covered with the medical 3M film for 2 h, and the film and cream were removed and routinely

disinfected before lumbar puncture. The control group received lumbar puncture after local anesthesia with lidocaine injection. Improved facial expression scoring (FLACC) scale and Wong-Baker facial expression scale were used to evaluate the pain degree of the children, and the heart rate, respiration, blood pressure, success rate of puncture, discomfort and family satisfaction were recorded before and after puncture. **Results:** The degree of pain and discomfort after puncture in the experimental group were lower than those in the control group ($P < 0.05$). After puncture, the heart rate, respiration and systolic blood pressure in the control group were significantly faster than those before puncture ($P < 0.05$), and the difference in heart rate, respiration and systolic blood pressure after puncture in the experimental group was not statistically significant ($P > 0.05$). There was no significant difference in success rate of puncture between two groups, yet the satisfaction of the family members in the experimental group was significantly higher than that of the control group.

Conclusion: Compound lidocaine cream can significantly reduce the pain caused by repeated puncture in the treatment of children with tumor, improve the quality of life of children and the efficiency of clinicians, and is worthy of clinical application.

[**Keywords**] compound lidocaine cream; children; leukemia; lymphoma; lumbar puncture

白血病和淋巴瘤是儿童常见的恶性肿瘤,在漫长的治疗过程中,腰椎穿刺鞘内注射化疗药物至关重要。儿童的腰椎棘突不明显、棘突间隙小,具有脊髓腔细、椎管内血管丰富等特点,腰椎穿刺术难度大,易穿刺失败或穿刺损伤,加之小儿惧怕疼痛、自控力差、紧张哭闹抵抗不合作,增加了儿童腰椎穿刺术的失败率和损伤风险^[1]。反复多次操作使患儿和家属承受着巨大的心理压力,甚至可能影响肿瘤的发生、发展和预后。因此,减轻患儿疼痛,缓解患儿紧张、焦虑情绪,提高患儿及家属满意度,已成为医务工作者临床工作的重点。本研究探讨了复方利多卡因乳膏在白血病和淋巴瘤患儿腰椎穿刺术鞘内注射中的应用效果,以减轻肿瘤患儿治疗过程中反复穿刺带来的疼痛,提高患儿生活质量和医师工作效率。

1 资料和方法

1.1 一般资料

选取 2014–2016 年我院行腰椎穿刺及鞘内注射的白血病和淋巴瘤患儿 292 例,其中男 186 例,女 106 例,男女比例 1.75 : 1,年龄(5.73±3.14)岁。参考儿童临床诊疗常规,采用常规腰椎穿刺方法治疗,操作均由同一高年资主治医师执行。排除标准:(1)对酰胺类局部麻醉药物过敏;(2)先天性或特发性高铁血红蛋白血症;(3)感觉异常;(4)不能配合研究。按随机数表法分为试验组和对照组各 146 例。两组患儿均意识清楚,年龄、性别、体质量、病情等一般资料比较差异无统计学意义($P > 0.05$),具有可比性。

1.2 方法

术前指导试验组家属协助患儿提前 2 h 将复方利多卡因乳膏(北京紫光制药有限公司,国药准字 H20063466)均匀涂抹于患儿第三、四腰椎椎间隙,以穿刺点为圆心、半径 5 cm 的局部皮肤,厚度 0.5 mm,采用医用 3M 贴膜密封覆盖 2 h。用量严格按照使用说明(> 1 岁儿童约 1.5 g/10 cm²)。到达穿刺室后,采用棉签擦去皮肤上的麻醉药膏,常规消毒铺巾后行腰椎穿刺术。

对照组直接进入操作室常规消毒铺巾,抽取 2% 的利多卡因注射液 2 mL,注射麻药前必须回抽,证实针头不在血管内时才能注射,以防麻药误注入血管内,注射完毕后轻柔局部皮肤,行腰椎穿刺术。

操作前由专职医师给予两组患儿心理辅导,分散患儿注意力,减轻紧张情绪,也可物质奖励减轻恐惧感,增强疼痛耐受性,提高依从性以使患儿能顺利配合操作^[2]。

1.3 评价标准

1.3.1 疼痛程度判定 对照组和试验组均由心理辅导专职医师指导疼痛评分,<3 岁患儿不能自我评价,采用改良面部表情评分法(FLACC)量表进行疼痛评分,见表 1。年龄≥3 岁患儿采用 Wong-Baker 面部表情分级量表评分。0 分为不痛,1~3 分轻度疼痛,4~8 分中度疼痛,8~10 分重度疼痛。

表 1 FLACC 疼痛评分标准

项目	0 分	1 分	2 分
面部表情	微笑或无特殊表情	偶尔出现痛苦表情、皱眉、不愿交流	经常或持续出现颧颤抖或紧咬下颚
腿部活动	放松或保持平常的姿势	不安、紧张、维持不舒服的姿势	踢腿或腿部拖动
体位	安静平躺,正常体位,轻松活动	扭动,翻来覆去,紧张	身体痉挛成弓形,僵硬
哭闹	不哭,清醒或睡眠中	呻吟、啜泣,偶尔诉痛	一直哭泣、尖叫,经常诉痛
可安慰度	满足,放松,无需安慰	偶尔抚摸拥抱和言语可安慰	很难安慰

1.3.2 心率、呼吸和血压 操作前 30 min 测量两组患儿平静状态下心率、呼吸、血压,血压测量采用袖带血压计,共测量 3 次,每次间隔 10 min,取均值。腰椎穿刺结束后立即测量患儿心率、呼吸、血压。

1.3.3 穿刺成功率 穿刺成功率=(一次穿刺成功例数+多次穿刺成功例数)/总例数×100%。失败 3 次以上为穿刺失败。

1.3.4 穿刺后不适评价标准 穿刺完成后,穿刺不适评价标准为患儿 24 h 内感觉到的所有腰部不适、腰部疼痛、头痛等。

1.3.5 家长满意度 操作结束后,对两组患儿家属发放满意度调查表,3 d 后收集调查表。

1.4 统计学方法

应用 SPSS 18.0 统计学软件,计量资料以 $\bar{x} \pm s$ 表示,等级资料比较采用 χ^2 检验,计量资料采用 t 检验, $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组患儿疼痛程度比较

根据 FALCC 量表和 Wong-Baker 面部表情分级量表进行疼痛程度评估, 试验组患儿无痛 138 例, 轻度 4 例, 中度 3 例, 重度 1 例, 对照组无痛 110 例, 轻度 16 例, 中度 14 例, 重度 6 例, 两组比较差异有统计学意义 ($\chi^2 = 560.63, P < 0.05$)。

2.2 两组患儿穿刺前后心率、呼吸和收缩压比较

对照组患儿穿刺后心率 ($t = 23.99, P < 0.05$)、呼吸 ($t = 25.94, P < 0.05$)、收缩压 ($t = 19.51, P < 0.05$) 较穿刺前均加快。试验组患儿穿刺后心率 ($t = 1.08, P > 0.05$)、呼吸 ($t = 0.98, P > 0.05$)、收缩压 ($t = 1.58, P > 0.05$) 与穿刺前比较差异均无统计学意义。

表 2 两组患儿穿刺前后心率、呼吸和收缩压比较

组别	心率/(次/分)	呼吸(次/分)	收缩压/mm Hg
试验组 穿刺前	91.65±9.78	22.9±2.64	93.86±7.22
穿刺后	98.37±7.60	23.05±2.81	94.27±7.27
对照组 穿刺前	88.00±11.82	22.58±3.49	98.00±6.61
穿刺后	102.86±16.22	30.98±6.02	105.67±6.97

2.3 两组患儿穿刺成功率、家长满意度、穿刺后不适感比较

试验组穿刺成功率与对照组比较差异无统计学意义 ($\chi^2 = 1.67, P > 0.05$), 见表 3。试验组患儿家属满意率为 96.6%, 高于对照组的 89.0%, 差异有统计学意义 ($\chi^2 = 8.23, P < 0.05$)。穿刺后, 试验组患儿无不适 112 例, 轻度不适 20 例, 中度不适 8 例, 重度不适 6 例, 对照组无不适 90 例, 轻度不适 24 例, 中度不适 16 例, 重度不适 16 例, 两组比较差异有统计学意义 ($\chi^2 = 9.97, P < 0.05$)。

表 3 试验组和对照组患儿穿刺成功率比较

组别	失败	1 次	2 次	3 次	成功率/%
试验组	7	115	17	7	93.8
对照组	6	109	19	12	93.1

2.4 不良反应

本研究中应用复方利多卡因乳膏及注射用利多卡因的患儿均未发生明显不良反应。

3 讨论

近年来, 儿童身心健康引起越来越多学者的关注, 在治疗白血病和淋巴瘤等肿瘤相关原发病的同时, 患儿心理健康、生活质量也是亟须重视的问题。有研究^[3,4]表明, 孕中期胎儿已能感知疼痛, 其疼痛传播和感觉神经传导通路已发育完善, 所以儿童和成人对疼痛的生理反应是相同的。白血病和淋巴瘤患儿需长期住院化疗, 治疗期间需反复进行腰椎穿刺和骨髓穿刺。传统麻醉方式为肌肉注射利多卡因, 而注射利多卡因作为一种有创的侵入性操作, 可能会引起皮肤出血、肿胀等, 用量过多可引起惊厥等不良反应。患儿情绪紧张, 哭闹抵抗, 极易产生心理阴影, 直接影响医师操作。目前, 复方利多卡因乳膏作为表面麻醉药物广泛应用于临床, 具有起

效快、维持麻醉作用时间长的特点。为有效缓解疼痛, 本研究采用复方利多卡因乳膏外涂替代利多卡因注射, 其释放利多卡因和丙胺卡因两种局部麻醉成分到皮层和皮下层, 深达 5~6 mm, 通过阻滞神经冲动的产生和传导所需的离子流稳定神经细胞膜, 在痛觉感受器和神经末梢处达到局部麻醉作用。本研究结果显示, 试验组疼痛程度较对照组明显降低, 提示复方利多卡因乳膏一定程度上可降低患儿恐惧感, 缓解疼痛, 提高治疗依从性。在透皮吸收的麻醉药物中, 复方利多卡因毒性较低, 是世界上第一个能够渗透完整皮肤的浅表麻醉药物, 具有皮肤黏膜吸收快的特点^[5]。本研究结果显示, 试验组穿刺前后心率、呼吸和血压无明显变化, 对照组穿刺后心率、呼吸、血压较穿刺前明显升高, 提示复方利多卡因乳膏吸收快, 在进行操作时使患儿对穿刺进针的刺激无明显感觉, 提高了儿童腰椎穿刺术的成功率, 缩短了操作时间, 且缓解了患儿及家属的紧张焦虑情绪。

儿童腰椎穿刺术常需多名助手, 以使患儿保持固定姿势便于成功穿刺。临床上常因患儿紧张、害怕、哭闹、疼痛抵抗等不易保持体位导致穿刺失败。此外, 穿刺术操作时注射利多卡因局部麻醉和逐层浸润麻醉的方式本身就对椎间组织是一种损伤, 皮丘加上椎间组织肿胀导致很难再从体表确定椎体及椎间隙位置关系, 增加了穿刺难度, 且反复穿刺易对椎间组织造成损伤, 增加术后不适发生率^[6]。强行固定体位后, 易出现神经根刺激和脑脊液压力的改变, 亦可加重术后不适发生率。本研究结果显示, 试验组患儿家属满意度明显高于对照组, 差异有统计学意义 ($P < 0.05$), 提示采用复方利多卡因乳膏有效避免了上述原因导致的术后头痛、穿刺部位疼痛等不适感, 得到了患儿及家属的一致肯定。

复方利多卡因乳膏可提供无痛的肌肉和皮下组织局部麻醉, 操作方便, 简单易行, 在儿童白血病和淋巴瘤的治疗中可有效减轻各种穿刺引起的疼痛, 避免由于穿刺过程中患儿不配合造成的穿刺损伤和出血, 明显缩短操作时间, 减少头痛、腰部不适等穿刺后的不适反应, 提高患儿的舒适度和治疗依从性, 易被患儿和家属接受, 从而改善医患关系, 值得临床推广应用。

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· 论 著 ·

低蛋白血症患儿白蛋白水平对万古霉素血药浓度的影响

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[摘要]目的:探讨低蛋白血症患儿白蛋白水平对万古霉素血药浓度的影响,为临床低蛋白血症患儿个体化治疗提供参考。方法:收集2016年5月至2019年5月于四川省自贡市第一人民医院就诊并行万古霉素血药浓度监测的65例患儿临床资料,根据不同白蛋白水平分为低蛋白血症组30例(白蛋白浓度 <30 g/L)与正常对照组35例(白蛋白浓度 ≥ 30 g/L),观察两组患儿血浆白蛋白水平、万古霉素谷浓度,记录患儿在不同年龄段对万古霉素血药浓度监测结果的影响及患儿第5次用药后血药浓度在治疗窗内所占比例。采用多元线性回归分析患儿白蛋白水平与万古霉素血药浓度的相关性,观察不良反应发生情况。采用单因素分析与多因素 Logistic 回归分析万古霉素血药浓度不达标的相关因素。**结果:**低蛋白血症组患儿平均白蛋白水平、万古霉素谷浓度均低于正常对照组($P<0.05$);两组患儿 ≤ 28 d、29 d~1岁、1~3岁、3~6岁、6~12岁万古霉素谷浓度组间比较差异有统计学意义($P<0.05$),低蛋白血症组 >3 ~6岁、6~12岁万古霉素谷浓度低于正常对照组($P<0.05$),其中低蛋白血症组万古霉素谷浓度在治疗窗内为26.67%(8/30),正常对照组为42.86%(15/35),差异无统计学意义($P>0.05$)。Spearman 相关分析结果显示,患儿白蛋白水平与万古霉素血药浓度呈正相关($P<0.05$);7例患儿出现肝酶升高、3例皮疹、2例白细胞减少。多因素 Logistic 回归分析结果显示,药物用法用量不合理、合并基础疾病是导致万古霉素血药浓度不达标的独立危险因素($P<0.05$)。**结论:**低蛋白血症患儿受多因素影响,万古霉素血药浓度个体差异较大,临床应积极监测低蛋白血症患儿血药浓度,以调整用药。

[关键词]低蛋白血症;万古霉素;血药浓度**[中图分类号]**R969.3**[文献标识码]**A**[文章编号]**1672-108X(2021)10-0018-04

Effects of Albumin Levels on Blood Concentration of Vancomycin in Children with Hypoalbuminemia

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[Abstract] **Objective:** To explore the effects of albumin levels on blood concentration of vancomycin in children with hypoalbuminemia, so as to provide reference for individualized therapy in children with hypoproteinemia. **Methods:** Clinical data of 65 children with blood concentration monitoring of vancomycin in Sichuan Zigong First People's Hospital from May 2016 to May 2019 were collected. According to different albumin levels, all patients were divided into the hypoalbuminemia group (30 cases with albumin levels <30 g/L) and the normal control group (35 cases with albumin levels ≥ 30 g/L). The albumin levels and valley concentration of vancomycin in two groups were observed, and the effects of different ages on the monitoring results of blood concentration of vancomycin and proportion of the fifth drug concentration in the treatment window were recorded. Multiple linear regression was used to analyze the correlation between albumin levels and blood concentration of vancomycin in children, and the occurrence of adverse drug reactions were observed. Univariate analysis and multivariate Logistic regression were used to analyze the factors associated with non-attainment of blood drug concentration. **Results:** The mean albumin levels and valley concentration of vancomycin in the hypoproteinemia group were lower than those in the normal control group ($P<0.05$). The difference in valley concentration of vancomycin between two groups of children ≤ 28 d, from 29 d to 1 year old, >1 to 3 years old, >3 to 6 years old, and >6 to 12 years old was statistically significant ($P<0.05$). The valley concentration of vancomycin in the hypoalbuminemia group of children >3 to 6 years old, >6 to 12 years old was lower than that in the normal control group ($P<0.05$). The proportion of valley concentration of vancomycin within the treatment window was 26.67% (8/30) in the hypoalbuminemia group and 42.86% (15/35) in the normal control group, the difference was not statistically significant ($P>0.05$). Spearman correlation analysis showed the positive correlation between albumin levels and blood concentration of vancomycin in children ($P<0.05$). There were 7 cases of children had elevated liver enzymes, 3 cases of skin rash, and 2 cases of leukopenia. Multivariate logistic regression analysis showed that irrational drug usage and dosage, complicated with underlying diseases were independent risk factors for non-attainment of blood drug concentration of vancomycin ($P<0.05$). **Conclusion:** Children with hypoproteinemia are affected by multiple factors, and the blood concentration of vancomycin varies greatly among individuals. Clinical monitoring of blood concentration in children with hypoproteinemia should be actively performed to adjust the administration.

[Keywords] hypoproteinemia; vancomycin; blood concentration