



可视化超声技术在重症病人疑难血管穿刺中的应用

杨洋, 李业桂, 吴旭峰

引用本文:

杨洋, 李业桂, 吴旭峰. 可视化超声技术在重症病人疑难血管穿刺中的应用[J]. 蚌埠医学院学报, 2021, 46(8): 1146–1148.

在线阅读 View online: <https://doi.org/10.13898/j.cnki.issn.1000-2200.2021.08.040>

您可能感兴趣的其他文章

Articles you may be interested in

[改良超声引导技术在CT增强检查困难血管穿刺中的应用](#)

蚌埠医学院学报. 2020, 45(12): 1729–1731 <https://doi.org/10.13898/j.cnki.issn.1000-2200.2020.12.035>

[超声成像测定婴幼儿先天性心脏病患者颈内静脉横截面积及实时引导中心静脉置管术的临床意义](#)

Clinical significance of the cross-sectional area of internal jugular vein and peripherally inserted central catheter by real-time ultrasound-guiding in infants with congenital heart disease

蚌埠医学院学报. 2015(8): 1087–1090 <https://doi.org/10.13898/j.cnki.issn.1000-2200.2015.08.034>

[改良穿刺法对桡动脉穿刺一次性成功率的影响](#)

蚌埠医学院学报. 2017, 42(6): 828–829 <https://doi.org/10.13898/j.cnki.issn.1000-2200.2017.06.042>

[改良钝性分离技术在血小板减少病人PICC置管中的应用](#)

Application value of the improved blunt separation technique in peripherally inserted central catheter in thrombocytopenia patients

蚌埠医学院学报. 2020, 45(6): 836–839 <https://doi.org/10.13898/j.cnki.issn.1000-2200.2020.06.037>

[肢体垂吊法在老年患者静脉穿刺中的应用](#)

蚌埠医学院学报. 2016, 41(10): 1382–1383 <https://doi.org/10.13898/j.cnki.issn.1000-2200.2016.10.041>

可视化超声技术在重症病人疑难血管穿刺中的应用

杨 洋,李业桂,吴旭峰

[摘要] **目的:**探讨可视化超声技术在重症病人疑难血管穿刺中的应用。**方法:**收集 ICU 外周疑难血管穿刺病人 120 例,随机分为 2 组,60 例病人按照传统穿刺法为对照组,60 例病人按照可视化多普勒超声引导法穿刺作为观察组,观察对比 2 组的穿刺时间、一次性成功率、并发症发生率。**结果:**与对照组比较,观察组的一次性穿刺成功率和总成功率较高,皮下血肿、局部感染、神经损伤等并发症发生率较低,观察组穿刺成功所用时间较少($P < 0.01$)。**结论:**将可视化超声技术应用在重症病人疑难血管穿刺中,能够显著提高一次性和总体穿刺成功率、缩短穿刺时间,且并发症少。

[关键词] 超声技术;可视化;疑难血管穿刺

[中图分类号] R 445.1

[文献标志码] A

DOI:10.13898/j.cnki.issn.1000-2200.2021.08.040

Application value of the visualized ultrasound technology in difficult vascular puncture of severe patients

YANG Yang, LI Ye-gui, WU Xu-feng

(Department of Critical Medicine, Binhu Hospital, Hefei Anhui 230061, China)

[Abstract] **Objective:** To explore the application value of visualized ultrasound technology in difficult vascular puncture of severe patients. **Methods:** One hundred and twenty patients with difficult vascular puncture in ICU were randomly divided into the control group and observation group (60 cases in each group). The control group was treated with traditional puncture method, and the observation group was treated with Doppler ultrasound guiding peripheral vein puncture method. The puncture time, one-time success rate and incidence rate of complication were observed and compared between two groups. **Results:** Compared with the control group, the one-time success rate and total success rate of puncture in observation group were higher, the incidence rates of complications such as subcutaneous hematoma, local infection and nerve injury were lower, and the time of successful puncture was less in observation group ($P < 0.01$). **Conclusions:** The application of visualized ultrasound technology in difficult vascular puncture of severe patients can significantly improve the success rate of puncture, shorten the time of puncture, reduce the pain of patients.

[Key words] ultrasound technology; visualization; difficult vascular puncture

外周静脉穿刺是临床上一种最为常见的护理操作,主要应用在采血、输液、输血治疗等。但临床上会由于各种不同的因素导致穿刺困难,疑难外周静脉是指穿刺时显示不清、摸不到静脉或经多次穿刺均失败,进一步影响病人及时治疗、增加不必要的耗材消耗、增加护士的护理时间和护理人员心理压力,特别是 ICU 重症病人,由于休克、水肿、年龄等因素,疑难血管更是多见。此外,由于穿刺次数的增加,既导致了病人痛苦、焦虑,也增加感染、局部血肿、神经损伤等并发症发生风险^[1-2]。怎样能够解决以上问题,成了当代医学特别是重症医学护理研究的方向。基于这样的背景,可视化超声技术起到了重要作用,多普勒超声引导凭借可视化的优势,大大地提高了疑难血管穿刺成功率。我科护士将可视化超声技术用于重症病人的疑难静脉穿刺,并取得

良好的效果。现作报道。

1 对象与方法

1.1 研究对象 疑难外周静脉穿刺的病人 120 例随机分为 2 组,60 例采用传统穿刺法为对照组,60 例采用可视化超声引导下外周静脉穿刺法作为观察组。入组标准:疑难血管穿刺是因肥胖、低蛋白血症、皮下水肿、年老体弱、脱水或血管畸形、血管病变等原因,血管在体表显示不清、触摸不良致穿刺困难。2 组的年龄、性别、收缩压(SBP)、体质指数(BMI)、血清白蛋白等方面比较差异均无统计学意义($P > 0.05$)(见表 1),具有可比性。

1.2 研究方法 观察组均由经专业培训的护理人员使用超声定位引导法,具体穿刺方法为:根据病人病情及输注药物的需要,选择合适部位,再使用超声仪器(迈瑞 M7)的高频线阵探头进行血管筛查,筛查内容为血管深度、血流信号及血管形态走向,若该部位未发现合适穿刺血管,则更换另一部位重新筛

查合适血管进行穿刺。穿刺前选择合适进针位置,并标记清楚,常规消毒,铺治疗巾,线阵探头使用无菌保护套,在可视化超声引导下进行血管穿刺。

表 1 2 组临床资料的比较 ($\bar{x} \pm s$)

分组	n	男	女	年龄/岁	SBP/mmHg	BMI/(kg/m ²)	白蛋白/(g/L)
观察组	60	32	28	63.5 ± 13.8	144.9 ± 9.8	28.5 ± 2.5	25.3 ± 3.8
对照组	60	33	27	62.4 ± 11.3	145.8 ± 8.4	28.2 ± 2.1	25.6 ± 4.4
t	—	0.03*	0.48	0.54	0.71	0.40	
P	—	>0.05	>0.05	>0.05	>0.05	>0.05	

*示 χ^2 值

对照组病人的穿刺方法都采用临床常规使用经验定位的方法,具体方法为:根据病人病情及输注药物需要,使用肉眼观察结合指触来选择合适血管,确定血管位置及血管的走向,并判断血管弹性及深浅位置,穿刺前常规消毒,铺治疗巾,再根据经验进行穿刺置管。

1.3 观察指标 观察并比较 2 组病人中的穿刺时间、一次性成功率、总成功率,以及并发症发生情况。

1.4 统计学方法 采用 t 检验和 χ^2 检验。

2 结果

2.1 2 组病人穿刺成功率以及并发症发生率的比较 与对照组比较,观察组的一次性穿刺成功率和总成功率较高,皮下血肿、局部感染、神经损伤等并发症发生率较低($P < 0.01$) (见表 2)。

表 2 2 组病人穿刺成功率以及并发症发生率的比较 [n; 百分率(%)]

分组	n	一次穿刺成功	总穿刺成功	穿刺并发症
观察组	60	58(96.67)	60(100.00)	0(0.00)
对照组	60	22(36.67)	38(63.33)	9(15.00)
χ^2	—	48.60	26.94	7.69
P	—	<0.01	<0.01	<0.01

2.2 2 组病人穿刺成功所需时间比较 与对照组(8.3 ± 2.1 min)比较,观察组(5.1 ± 2.5 min)穿刺成功所用时间较少($t = 7.59, P < 0.01$)。

3 讨论

重症病人由于疾病危重、凶险,需积极精准治疗,而治疗的首要重点是建立病人的静脉通道,在接受血管穿刺和置管护理时,常常由于病人肥胖、低蛋白血症致下水肿、血管畸形或年老体弱、脱水等原因,静脉充盈不良,在体表显示不清晰,甚至触不到

血管,这些通常是护士用传统血管穿刺方法失败的最常见原因^[3]。传统的盲穿不仅穿刺失败率高,而且还会引起病人多样化的并发症,如局部血肿、感染、静脉炎、疼痛等。

现代医学的发展将可视化超声技术应用在重症护理领域中^[4-6],能够很好地将病人血管的结构图像清晰显示出来,可视化超声技术不但可以精准评估外周静脉血管的直径和深度,而且还可以根据测得血管的直径与深度来选择合适的进针角度^[7],指导护理人员更精准地选择适合的血管进行穿刺^[8]。可视化超声引导下的外周静脉血管穿刺方法,不仅能显示该穿刺血管的形态、走向及血管病变严重程度,对血管进行评估筛选、确定穿刺位置,还可以通过超声声像显示来指导穿刺针顺利进入血管,避开了周围血管和神经,减少损伤概率。将盲穿操作变为可视化操作,提高了穿刺的成功率。本研究结果显示,应用可视化超声技术可以提高疑难血管病人的穿刺成功率、减少穿刺所需时间,而且在并发症方面明显少于传统穿刺方法,这与之前国内学者^[9]研究一致。其中,穿刺时间不包括超声引导穿刺前所需评估的时间。因此,对于临床中需要抢救的危重症病人,需要 ICU 护理团队整体合作,掌握较熟练的超声技术,充分做好穿刺前超声引导的各项准备工作,以便减少穿刺过程不必要的失误。

综上所述,对于外周血管条件较差、穿刺困难的病人,可视化超声引导较传统穿刺方法有着一定的优势,可显著提高穿刺成功率,缩短穿刺时间,减少病人由于反复穿刺带来的痛苦及焦虑。此方法可在临床上推广,但操作者需参加相应超声规范化培训,具备较为熟练的超声应用技能,这样才可在可视化超声指导下进行客观、有效地评估血管和穿刺操作,提升疑难静脉穿刺成功率。

[参 考 文 献]

- [1] HEINRICHS J, FRITZE Z, VANDERMEER B, et al. Ultrasonographically guided peripheral intravenous cannulation of children and adults: a systematic review and meta-analysis[J]. Ann Emerg Med, 2013, 61(4): 444.
- [2] LIU YT, ALSAAWI A, BJORNSSON HM. Ultrasound-guided peripheral venous access: a systematic review of randomized-controlled trials[J]. Eur J Emerg Med, 2014, 21(1): 18.
- [3] 孙建华,李欣,张红彩,等. 超声引导下外周静脉穿刺的临床应用[J]. 中华现代护理杂志, 2014(12): 1487.
- [4] 王小亭,刘大为,于凯江,等. 中国重症超声专家共识[J]. 中华内科杂志, 2016, 55(11): 900.
- [5] 刘大为. 重症超声: 医学理念与技术结合的新乐章[J]. 中华内科杂志, 2016, 55(11): 831.

“互联网 +”背景下 SPOC 与翻转课堂教学模式 在《内科学》教学中的构建与应用

杨艳丽, 耿英华, 李 骏, 李佳佳, 张平平, 刘 林, 朱 凯

[摘要] **目的:**探讨“互联网 +”背景下小规模限制性在线课程(SPOC)融合翻转课堂教学模式在《内科学》教学中的效果。**方法:**对蚌埠医学院2017级临床医学实验班60名学生采用“互联网 +”背景下SPOC融合翻转课堂的教学模式(观察组),按照“课前+课中+课后”模式进行实施,并与采用传统教学模式融合MOOC的2017级临床医学一附院班(对照组)进行为期一学期内科学教学,学习结束后根据理论考试、问卷调查、召开学生座谈会等对教学效果进行评价。**结果:**观察组学生理论考试成绩为(84.43 ± 4.58)分,明显高于对照组(81.27 ± 4.71)分($t = 3.98, P < 0.05$);观察组学生在学习效率、课堂学习的互动能力、自主学习能力、理论与实际相结合能力、基础知识掌握、临床创新思维能力及团队协作能力等方面明显优于对照组($P < 0.05$)。观察组学生对教学内容的理解程度、课堂激发学习兴趣、课后查阅文献及最终满意度均优于对照组($P < 0.05$)。**结论:**“互联网 +”背景下SPOC融合翻转课堂的混合教学模式有利于提高学生学习成绩和学习兴趣,锻炼临床思维,提高自主学习能力,对完善本校的慕课平台,构建及培养临床实用型医学人才将起着重要的作用。

[关键词] 医学教育;小规模限制性在线课程;翻转课堂;混合教学模式;临床思维

[中图分类号] R 192 **[文献标志码]** A **DOI:**10.13898/j.cnki.issn.1000-2200.2021.08.041

Construction and application of SPOC combined with flipped classroom teaching mode in the teaching of internal medicine under the background of "Internet +"

YANG Yan-li, GENG Ying-hua, LI Jun, LI Jia-jia, ZHANG Ping-ping, LIU Lin, ZHU Kai

(Department of Hematology, The First Affiliated Hospital of Bengbu Medical College, Bengbu Anhui 233004, China)

[Abstract] **Objective:** To explore the application effects of the small private online courses(SPOC) combined with flipped classroom teaching mode in the teaching of internal medicine under the background of "Internet +". **Methods:** Under the background of "Internet +", the teaching of internal medicine in 60 students from the clinical experiment class of grade 2017 (observation group) were taught by the SPOC combined with flipped classroom teaching mode, and the teaching course was implemented according to the "before class + in class + after class" mode. The teaching of internal medicine in the students from the affiliated hospital class of grade 2017 (control group) were taught by the traditional teaching mode combined with MOOC. Two groups were taught for a semester. After studying end, the teaching effects in two groups were evaluated using the theoretical examination, questionnaire survey and student symposium. **Results:** The score of the theoretical test in observation group [(84.43 ± 4.58) points] was significantly higher than that in control group [(81.27 ± 4.71) points] ($t = 3.98, P < 0.05$). The learning efficiency, interactive ability of classroom learning, autonomous learning ability, ability of combining theory with practice, mastery of basic knowledge, clinical innovative thinking ability and teamwork ability in observation group were significantly better than those in control group ($P < 0.05$). The understanding of teaching content, stimulating learning interest in class, consulting literature after class and final satisfaction in observation group were better than those in control group ($P < 0.05$). **Conclusions:** The mixed teaching mode of SPOC combined with flipping classroom under the background of

"Internet +" is conducive to improve students' academic achievement and interest, exercise clinical thinking and improve their autonomous learning ability, and which plays an important role in improving the MOOC platform, constructing and cultivating clinical practical medical talents.

[Key words] medical education; small private online

[收稿日期] 2020-08-12 [修回日期] 2021-03-15

[基金课题] 安徽省高等学校省级质量工程重点项目 (2019jyxm1031)

[作者单位] 蚌埠医学院第一附属医院 血液病科, 安徽 蚌埠 233004

[作者简介] 杨艳丽(1971-),女,硕士研究生导师,主任医师,副教授。

vein width and depth on ultrasound-guided peripheral intravenous success rates[J]. J Emerg Med, 2010, 39(1):70.

[6] 孙建华, 刘大为, 王小亭, 等. 超声技术在重症护理领域中的应用进展[J]. 中华护理杂志, 2016, 51(6):729.

[7] LEE D, KIM JY, KIM HS, et al. Ultrasound evaluation of the radial artery for arterial catheterization in healthy anesthetized patients[J]. J Clin Monit Comput, 2016, 30(2):215.

[9] 李玉峰, 李松梅, 杜长虹, 等. 多普勒超声引导在外周静脉穿刺困难病人中的应用[J]. 当代护士(中旬刊), 2017(5):117.

[8] WITTING MD, SCHENKEL SM, LAWNER BJ, et al. Effects of

(本文编辑 刘璐)