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不同体位对肥胖产妇椎间隙定位的影响 *

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摘要 目的:探讨体位对肥胖产妇椎间隙定位准确性的影响。**方法:**选择 2018 年 1 月 -6 月在上海市同仁医院建卡并定期产检且预产期在此期间的 209 例肥胖产妇,根据不同穿刺体位按随机数字表法将其分为坐位组(n=104)和侧卧位组(n=105),采用超声检测作为金标准进行椎间隙定位,比较不同体位下触诊定位椎间隙的精准性,及肥胖程度与定位准确性的关系。**结果:**与侧卧位组比较,坐位组 L3-4 椎间隙定位时间显著缩短,皮肤至腰椎棘突距离、红色(手法定位)与黑色标记(超声定位)距离明显缩小($P<0.05$)。与侧卧位组比较,坐位组一次穿刺成功率明显升高,穿刺时间明显缩短($P<0.05$)。随着 BMI 的增加,椎间隙定位时间显著延长,皮肤至腰椎棘突距离、红色与黑色标记距离、节段误差率明显增加($P<0.05$)。**结论:**肥胖产妇椎间隙定位准确性与体位及肥胖程度密切相关,坐位下椎间隙触诊定位的准确性优于侧卧位。

关键词:体位;坐位;侧卧位;肥胖产妇;椎间隙定位

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Effects of Different Body Positions on the Accuracy of Intervertebral Space Localization in Obese Puerpera*

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ABSTRACT Objective: To explore the effect of body positions on intervertebral space localization of obese puerpera. **Methods:** 209 cases of obese puerpera who were received regular prenatal and due date within this period from January to June 2018 in Tongren Hospital of Shanghai were chosen. According to the different puncture position, all the patients were divided into sitting position group (n=104) and lateral position group (n=105) by random number table method. Ultrasonic examination was used as the gold standard for intervertebral space localization, and the accuracy of palpation localization of intervertebral space under different body positions was compared, as well as the relationship between obesity degree and localization accuracy. **Results:** Compared with the lateral position group, the time of L3-4 intervertebral space localization was significantly shortened in the sitting position group, and the distance between skin and lumbar spine, the distance between red marker (palpation positioning) and black marker (ultrasonic localization) were significantly reduced ($P<0.05$). Compared with the lateral position group, the success rate of first puncture was significantly increased and the puncture time was significantly shortened in the sitting position group ($P<0.05$). With the increase of BMI, the time of intervertebral space localization was significantly prolonged, the distance between skin and lumbar spine, the distance between red and black marks and segment error rate were significantly increased ($P<0.05$). **Conclusions:** The accuracy of intervertebral space localization of obese puerpera is closely related to body position and obesity degree. The accuracy of intervertebral space localization of sitting position is better than that of lateral position.

Key words: Body positions; Sitting position; Lateral position; Obese puerpera; Intervertebral space localization

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前言

椎管内麻醉是产科常用的麻醉技术,具有起效快、镇痛效果好、对产妇和胎儿影响小等优势,已在全球麻醉界形成广泛共识^[1-3]。目前,临床上多依靠解剖体表标志、韧带突破及阻力消失技术进行定位^[4,5]。随着生活方式的现代化、膳食结构的改变和体力活动的减少,超重和肥胖产妇愈发增多,体表标志不易

判断导致穿刺点确定困难,穿刺次数增加,穿刺时间延长,同时带来较高的并发症发生率,增加产科麻醉的风险^[6-8]。

近年来,有研究表明体位与椎管内麻醉效果存在关联,坐位椎管内麻醉对于肥胖产妇的剖宫产手术麻醉具有一定优势^[9,10],但是否与坐位下椎间隙的判断更准确有关尚缺乏相关研究。本研究拟对肥胖产妇在超声引导下分别采用坐位、横卧位实施椎管内麻醉,探讨体位对椎间隙定位的准确性的影响,

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结果报道如下。

1 资料与方法

1.1 一般资料

收集 2018 年 1 月 -6 月在上海市同仁医院建卡定期产检且预产期在此期间内的孕妇共 209 例。纳入标准:① 年龄 20 岁 -35 岁,孕周>36 周的单胎孕妇,未临产;② 美国麻醉医师协会分级标准(ASA)I-III, BMI>30 kg/m²;③ 签署知情同意书。排除标准:① 合并腰椎间盘突出、脊柱畸形等腰椎疾病者;② 参与其他临床研究,任何其他原因不适合参加。年龄 22~35 岁,平均(28.2±3.1)岁;体质量指数(BMI)30.1~44.1 kg/m²,平均(32.7±2.6)kg/m²。根据不同穿刺体位,按随机数字表法将 209 例孕妇分为坐位组(n=104)、侧卧位组(n=105)。两组年龄、BMI 等一般资料比较差异均无统计学意义($P>0.05$),具有可比性。本研究符合《赫尔辛基宣言》,获得患者或家属的知情同意。

1.2 方法

1.2.1 定位方法 进入手术室后,连接多功能监测仪连续监测心率、血压、脉搏氧饱和度及心电图等生命体征。开放上肢静脉通路。两组患者分别采用坐位、侧卧位,由富有经验的麻醉医师根据解剖标志及触诊定位 L3-4 椎间隙,测定皮肤至腰椎棘突的距离,并用红色标记所在节段的棘突连线中点,并记录定位所用时间。由另一位麻醉医师采用 SIEMES ACUSON X300 型超声诊断仪对已做标记的肥胖产妇进行超声成像检查,明确 L3-4 椎间隙实际位置,在该节段的棘突连线中点用黑色标记。对两标记进行测量,记录红色标记与黑色标记的实际距离。

1.2.2 穿刺方法 常规消毒铺巾,1%盐酸利多卡因 5 mL 对穿刺部位进行浸润麻醉,采用直入法穿刺,以垂直背部的方向缓慢刺入,抵达黄韧带后根据阻力消失法评估是否成功进入硬膜外隙。置入腰麻针,若见脑脊液回流,则提示穿刺成功,并记录穿刺时间。

1.3 观察指标

比较两组患者椎间隙定位时间、皮肤至腰椎棘突距离、红色(触诊定位)与黑色标记(超声定位)的距离、一次穿刺成功率、穿刺时间等指标,记录触诊出现节段误差的病例,包含向头端偏移、向尾端偏移。根据肥胖程度,将坐位组患者分为 30.0 kg/m²≤ BMI ≤ 34.9 kg/m²、35.0 kg/m²≤ BMI ≤ 39.9 kg/m²、BMI ≥ 40.0 kg/m²,比较不同肥胖程度产妇椎间隙定位时间、皮肤至腰椎棘突距离、红色与黑色标记的距离。

1.4 统计学方法

采用 SPSS 18.0 版统计软件包。计量资料以均数±标准差($\bar{x} \pm s$)表示,组间比较采用方差分析或 t 检验,计数资料用例数(%)表示,组间比较采用 χ^2 检验。以 $P<0.05$ 视为差异有统计学意义。

2 结果

2.1 两组椎间隙定位准确性的比较

与侧卧位组比较,坐位组 L3-4 椎间隙定位时间显著缩短,皮肤至腰椎棘突距离、红色(触诊定位)与黑色标记(超声定位)的距离、节段误差率明显缩小,差异均有统计学意义($P<0.05$)。见表 1。

表 1 两组椎间隙定位准确性的比较($\bar{x} \pm s$)

Table 1 Comparison of the accuracy of intervertebral space localization between the two groups($\bar{x} \pm s$)

Groups	N	Localization time of intervertebral space(min)	Distance from skin to lumbar spine(cm)	Distance between red and black(cm)	Segment error rate(%)
Sitting position group	104	1.68±0.53	5.11±0.90	1.28±0.29	14(13.5)
Lateral position group	105	2.52±0.76	5.56±0.41	1.64±0.37	28(26.7)
t		9.26	8.12	7.82	5.67
P		<0.001	<0.001	<0.001	0.017

2.2 两组穿刺情况比较

与侧卧位组比较,坐位组一次穿刺成功率明显升高,穿刺

时间明显缩短,差异均有统计学意义($P<0.05$)。见表 2。

表 2 两组穿刺情况的比较

Table 2 Comparison of the puncture conditions between the two groups

Groups	N	Success rate of first puncture(%)	Puncture time(min)
Sitting position group	104	94(90.3)	2.96±0.52
Lateral position group	105	83(79.0)	3.37±0.69
t/ χ^2		5.18	4.85
P		0.023	<0.001

2.3 坐位组不同孕妇肥胖程度的定位准确性的比较

不同孕妇肥胖程度的定位准确性比较差异有统计学意义($P<0.05$)。随着 BMI 的增加,椎间隙定位时间显著延长,皮肤至腰椎棘突距离、红色与黑色标记距离明显增加,差异均有统计

学意义($P<0.05$)。见表 3。

3 讨论

由于产妇特殊的生理原因及麻醉药物对胎儿的影响,目前

表 3 坐位组不同孕妇肥胖程度的定位准确性比较

Table 3 Comparison of positioning accuracy of different obesity degree in pregnant women of the sitting group

Degree of obesity(kg/m ²)	N	Localization time of intervertebral space(min)	Distance from skin to lumbar spine(cm)	Distance between red and black(cm)
30.0≤ BMI≤ 34.9	67	1.55± 0.29	4.45± 0.24	1.07± 0.16
35.0≤ BMI≤ 39.9	27	1.70± 0.34	5.18± 0.33	1.26± 0.18
BMI≥ 40.0	10	1.92± 0.58	5.52± 0.42	1.34± 0.22
F		5.60	9.38	18.96
P		0.005	<0.001	<0.001

国内外普遍采用椎管内麻醉^[11-13]。我院年分娩量接近 2500 例,近年来 BMI>30 kg/m² 的肥胖孕妇占比超过 20%,其中需要产科麻醉干预的占比超过 70%。椎管内麻醉穿刺成功首先取决于穿刺点的定位,但肥胖产妇体表骨性标志不清,传统手触摸法穿刺难度大,平面不易控制,血流动力学变化大,易出现仰卧位低血压综合征,因此此类产妇的椎管内麻醉穿刺方法愈发引起学者的重视。麻醉前采用超声定位可准确固定椎间隙穿刺点,分辨黄韧带、硬膜及硬膜外腔,测量黄韧带至皮肤距离,同时优化进针路线,缩短穿刺时间,改善穿刺成功率,减少术后并发症的发生^[14-16]。但多数基层医疗机构尚未将超声作为常规麻醉必需设备进行配备,如何尽可能避免麻醉相关操作引起的损伤并发症,从而更安全地实施椎管内麻醉,一直是该领域研究的热点^[17-19]。

研究表明体位的选择对于肥胖孕妇的椎管内麻醉具有指导意义,肥胖产妇坐位椎管内麻醉时一次穿刺成功率明显高于侧卧位,且血流动力学更趋于平稳,仰卧位低血压综合征的发生率明显降低^[20,21]。Vitberg 等^[22]研究发现两种体位下椎管内液体量存在明显区别,但迄今为止国内对于两种体位下触诊椎间隙定位的准确性量化比较鲜有报道。本研究结果显示坐位组 L3-4 椎间隙定位时间较侧卧位组显著缩短,且皮肤至腰椎棘突距离、触诊定位与超声定位的实际距离、节段误差率明显缩小,与 Obasuyi 等^[23]研究结果基本相符,说明体位与触诊椎间隙定位准确性相关,坐位有助于提高肥胖产妇椎间隙定位的准确性,考虑其可能与坐位时身体两侧对称,臀裂有利于正中线的位置的判断有关。有研究显示坐位时皮肤至硬膜外腔的距离较侧卧位时短^[24-26]。

此外,与侧卧位组比较,坐位组一次穿刺成功率明显升高,穿刺时间明显缩短,与刘开敏等研究结果基本相符^[27],提示坐位椎间隙定位穿刺对于肥胖产妇的麻醉分娩具有较大的优势^[28]。Alobaidly 等^[29]研究认为当患者处于坐位时,棘突张开幅度更大,椎间隙暴露更为充分,尤其适用于肥胖患者。进一步分析发现随着 BMI 的增加,椎间隙定位时间显著延长,皮肤至腰椎棘突距离、触诊定位与超声定位的实际距离亦明显增加。由此可见,定位准确性与产妇肥胖程度呈显著负相关,尤其对 BMI≥ 40 的肥胖产妇应尽量选择超声引导下椎间隙定位穿刺,从而避免穿刺损伤并发症^[30]。

综上所述,肥胖产妇椎间隙定位准确性与体位及肥胖程度密切相关,坐位下椎间隙触诊定位的准确性优于侧卧位。

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