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B超与X线定位微创经皮肾取石术治疗上尿路结石的随机对照研究*

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摘要 目的:比较B超与X线定位微创经皮肾取石术治疗上尿路结石的临床疗效。**方法:**选取2010年3月到2012年9月我院收治的上尿路结石患者190例,按照随机数字表法将患者分为研究组和对照组,每组95例;对照组给予X线定位微创经皮肾取石术,研究组给予B超定位微创经皮肾取石术治疗,两组再分为肥胖组和正常体型组;比较各组结石清除率、手术时间、术中出血量、住院时间、并发症发生率及穿刺定位时间。**结果:**研究组一期结石清除率高于对照组,两组比较差异具有统计学意义($X^2=10.751$, $P=0.024$);研究组手术时间、术中出血量、住院时间均显著优于对照组,两组比较差异具有统计学意义($t=9.214, 9.013, 10.012$, $P=0.012, 0.015, 0.009$);两组均无严重并发症发生,并发症发生率比较无统计学意义($X^2=3.120$, $P=0.120$),研究组中肥胖组定位时间明显长于正常体型组,差异有统计学意义($t=22.939$, $P=0.003$),也长于对照组的肥胖组,差异有统计学意义($t=10.979$, $P=0.009$)。**结论:**B超定位微创经皮肾取石术治疗上尿路结石具有较好的效果,结石的清除率高,对患者危害小,有利于患者康复。对于肥胖患者,B超定位相对于X线定位无优势。

关键词:B超;X线;微创经皮肾取石术;上尿路结石

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The Randomized Controlled Study of B-ultrasound and X-ray Locating Minimally Invasive Percutaneous Nephrolithotomy in Treatment of Urinary Tract Stones*

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ABSTRACT Objective: To compare the clinical effect of B-ultrasound and X-ray locating minimally invasive percutaneous nephrolithotomy in treatment of urinary tract stones. **Methods:** 190 cases with urinary tract stones were selected from our hospital from March 2010 to September 2012, and they were divided into the study group and the control group according to a random number table, with 95 cases in each group. The patients of the control group were treated with X-ray locating minimally invasive percutaneous nephrolithotomy, while the patients of the study group were treated with B-ultrasound locating minimally invasive percutaneous nephrolithotomy, and the two groups were each subdivided into obesity group and normal group, the stone clearance rate, the operative time, blood loss, length of stay, incidence of complications and puncture positioning time of the two groups were compared. **Results:** The stone clearance rate of the study group were significantly higher than that of the control group, the difference was statistically significant ($X^2=10.751$, $P=0.024$); The operative time, blood loss, length of stay of the study group were significantly better than that of the control group, the difference was statistically significant ($t=9.214, 9.013, 10.012$, $P=0.012, 0.015, 0.009$); There were no serious complications, the complication rate of the two groups was not statistically significant ($X^2=3.120$, $P=0.120$). The puncture locating time of obesity group of study group was significantly longer than the normal group, and the difference was statistically significant ($t=22.939$, $P=0.003$), and also longer than that of the obesity group of control group, and the difference was statistically significant($t=10.979$, $P=0.009$). **Conclusion:** B-ultrasound locating minimally invasive percutaneous nephrolithotomy has better effect, with high clearance rate and little harm to patients, and it is conducive to the rehabilitation of patients. For obese patients, ultrasound locating shows no advantage over the X-ray method.

Key words: B-ultrasound; X-ray; Minimally invasive percutaneous nephrolithotomy; Upper urinary tract calculi

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上尿路结石是指发生于肾和输尿管的结石,主要的临床表 现有疼痛和血尿^[1]。其疼痛和血尿的程度和结石的大小、部位有

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关,也和结石是否活动或者感染、梗阻有关^[2]。临床上治疗上尿路结石既往以开放手术为主,但是对患者的伤害较大,术后恢复也较慢^[3]。随着技术的发展,经皮肾镜手术也应用于上尿路结石的治疗,尤其是在 B 超或 X 线的定位下^[4]。本研究旨在分析 B 超与 X 线定位微创经皮肾取石术治疗上尿路结石的随机对照,现将结果报告如下。

1 资料与方法

1.1 一般资料

选取 2009 年 3 月到 2014 年 9 月我院收治的上尿路结石患者 190 例,所有患者均符合上尿路结石的诊断标准^[5],且均经超声检查确诊。按照随机数字表法将患者分为研究组和对照组,研究组 95 例,男性 60 例,肥胖者 35 例,女性 35 例;年龄介于 28-65 岁,平均年龄为(49.3±0.3)岁;结石直径介于 5-40 mm,平均直径为(27.8±1.4)mm。对照组 95 例,男性 59 例,肥胖者 21 例,女性 36 例;年龄介于 29-65 岁,平均年龄为(48.9±0.5)岁;结石直径介于 5-40 mm,平均直径为(27.6±2.1) mm。两组患者的年龄、性别以及结石直径均无显著差异($P>0.05$),具有可比性。研究经伦理委员会批准,所有患者均知情同意并签订知情同意书。

1.2 方法

研究组:应用腰-硬膜联合麻醉或者是全麻,患者取截石位,经过尿道膀胱镜将 5F 输尿管导管插入,将尿管留置,并且尿管和输尿管导管均固定,此时患者改俯卧位,将气枕垫在患者的腹下,铺消毒巾,然后在 B 超的定位下并且依据结石的部位,向选择的肾盏穿刺,穿刺前逆行注入生理盐水,使人工肾积

水形成,有助于成功穿刺。然后将导丝插入,将筋膜扩张器从 F7 缓慢扩张到 F20 或者是 F22,将 Peel-away 鞘鞘推入,使皮肾通道建立,然后将输尿管镜或者是肾镜通过,使之进入集合系统寻找结石,并利用超声吸附碎石机将结石打碎,较大的结石应用取石钳取出,打碎的结石应用 MCC 液压灌注泵冲出。手术结石以后进行 B 超检查,看是否存在残留的结石。留置 F14 或者 F16 肾造瘘管,5-7 天后拔出,拔管以前进行腹部平片检查,观察手术效果。常规留置 F6 双 J 管,2-4 周后拔出。对照组:在 X 线 C 臂的定位下并根据结石的部位进行穿刺,其他均和研究组相同。

1.3 观察指标

比较各组结石清除率、手术时间、术中出血量、住院时间、并发症发生率及穿刺定位时间。

1.4 统计学方法

全部数据均在 SPSS17.0 软件上统计,其中计量资料用($\bar{X} \pm S$)表示,应用 t 检验,计数资料应用 χ^2 检验,检验标准以 $P<0.05$ 表示有统计学意义。

2 结果

2.1 两组一期结石清除情况比较

研究组一期结石清除者有 84 例,结石清除率为 88.4%,对照组一期结石清除者为 64 例,结石清除率为 67.4%,两组比较差异具有统计学意义($\chi^2=10.751, P=0.024$)。

2.2 两组治疗情况比较

由表 1 可知,研究组手术时间、术中出血量、住院时间均显著优于对照组,两组比较差异具有统计学意义($P<0.05$)。

表 1 两组临床指标比较($\bar{x} \pm s$)

Table 1 Comparison of the clinical indexes in two groups($\bar{x} \pm s$)

组别 Groups	n	手术时间(min)Operative time	术中出血量(ml)Blood loss	住院时间(d)Hospitalization
对照组 Control group	95	86.9±12.3	93.2±21.4	8.9±0.4
研究组 Study group	95	73.8±11.8	83.6±11.7	7.4±0.3
t	-	9.214	9.013	10.012
P	-	0.012	0.015	0.009

2.3 两组并发症比较

两组均无严重并发症发生,研究组有 2 例发热,1 例术后出血,并发症发生率为 3.2%;对照组 3 例发热,1 例术后出血,并发症的发生率为 4.2%,并发症发生率比较无统计学意义($\chi^2=3.120, P=0.120$)。

2.4 穿刺定位时间比较

研究组中肥胖组定位时间为(12.8±1.8) min,明显长于正常体型组的(5.3±1.2) min,两组比较差异具有统计学意义($t=22.939, P=0.003$);长于对照组中肥胖组的(6.9±2.3) min,两组比较差异具有统计学意义($t=10.979, P=0.009$)。

3 讨论

现阶段开放手术治疗上尿路结石仍然占较大比重,对于偏远地区、技术落后的地区显得更加突出^[5,6]。传统的开放手术

后残石率较高,而且创伤较大,患者术后住院时间较长,花费也相对较大,给患者带来较大的经济负担。随着技术的发展,微创技术的引进,小的通道配合管径较细的内镜治疗上尿路结石取得较好的效果,可以进入到更多更广泛的肾集合系统,使取石和碎石的成功率增加,对于复发性的结石也处理较好^[7-9]。微创经皮肾取石术可以在 X 线或者 B 超的检测定位下进行,可以显著减少结石的残存率^[10]。相比传统术中射片或者是透视,手术创伤较小,也减少漏诊和误诊的发生^[11]。1979 年首次应用 B 超定位微创经皮肾取石术,并且取得较大的成功^[12]。在 B 超的检测下具有直观性强、准确性的优势,且操作较方便,对患者无害,还可以动态检测手术情况^[13-15],该检测技术不仅仅可以清楚的显示内脏的结构,而且可以清晰的观察穿刺针的情况,可以使针尖准确的穿刺,进而达到目标位置^[16]。

手术中所建立的通道经过肾脏表面,可以直接进入结石所

在的位置,进而有效的减少对肾盏间血管的损害,还可以在B超的监视观察皮肾通道的扩张情况,可以提供皮肤到目标的距离,进而减少手术中的出血量,减少术后并发症的发生^[7]。X线定位则不可以比拟,B超对结石的敏感性强,可以清楚的发现肾内3-5mm的及时,取石以后再次进行B超检测,可以发现是否存在结石残留^[8]。本研究发现,研究组一期结石清除者有84例,结石清除率为88.4%,对照组一期结石清除者为64例,结石清除率为67.4%,和其他研究结果具有一致性^[9],提示B超定位微创经皮肾取石术治疗上尿路结石具有较好的一期结石清除率,能显著减少结石的残留率。且研究还发现,研究组手术时间、术中出血量、住院时间均显著优于对照组,提示B超定位微创经皮肾取石术治疗上尿路结石相比x线定位微创经皮肾取石术能显著减少手术时间,降低术中出血量,有利于患者术后康复,减少其住院时间。随机经皮肾取石手术的经验积累,手术时间也大大的减少,但是手术仍然是具有一定的创伤性的,难免会发生术后并发症。经皮肾微创取石术手术后常见的并发症有发热、水肿或者是出血,在碎石或者取石的时候需要保持一定的水压,进而容易引起细菌进入循环系统,引起术后感染^[10]。本研究发现,两组均无严重并发症发生,研究组有2例发热,1例术后出血,并发症3.2%,对照组3例发热,1例术后出血,并发症的发生率为4.2%,提示两组定位方式下微创经皮肾取石术治疗上尿路结石术后无严重并发症,具有一定的安全性。且研究组中肥胖组定位时间明显长于正常体型组,也长于对照组的肥胖组,差异均有统计学意义,提示对于肥胖患者,B超定位相对于X线定位无优势。

综上所述,B超定位微创经皮肾取石治疗上尿路结石具有一定的优势,可以清楚的观察到结石部位和大小,即使在水肿环境下也具有较高的一期结石清除率,且显著缩短手术时间,降低术中出血量。但B超定位在肥胖患者中与X线定位相比没有优势,因此应该根据患者实际情况或者手术者得技巧掌握情况选择不同定位方式。

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