

·临床研究 Clinical research·

3D 血管造影指导下超选择栓塞子宫肌瘤供血动脉 14 例

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【摘要】 目的 探讨 3D 血管造影指导下行超选择子宫肌瘤供血动脉栓塞术治疗子宫肌瘤的效果。**方法** 收集在郑州大学第三附属医院接受介入栓塞治疗的 14 例子宫肌瘤患者临床资料。其中 5 例子宫动脉 3D 血管造影明确子宫肌瘤供血动脉来源及走行后,接受微导管超选择栓塞肌瘤供血动脉(A 组),9 例因肌瘤血供复杂栓塞双侧子宫动脉至主干(B 组)。统计分析两组患者术前、术后 1 年子宫肌瘤可测量最大径线之和,并计算肌瘤缩小率。**结果** A 组患者术前、术后子宫肌瘤最大径线之和分别为 (85.00 ± 43.35) mm、 (35.20 ± 25.96) mm,差异有统计学意义($P=0.006$);B 组患者术前、术后肌瘤最大径线之和分别为 (65.00 ± 12.68) mm、 (49.44 ± 24.83) mm,差异无统计学意义($P=0.052$);A、B 组间术前、术后肌瘤最大径线之和差异无统计学意义($P=0.366$ 、 0.331)。A、B 组患者子宫肌瘤中位缩小率分别为 62%、25%,差异有统计学意义($P=0.031$)。**结论** 3D 血管造影指导下子宫肌瘤供血动脉超选择栓塞治疗子宫肌瘤的效果更佳。

【关键词】 子宫肌瘤; 3D 血管造影; 供血动脉; 超选择血管栓塞术

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【Abstract】 Objective To evaluate the efficacy of superselective embolization of the supplying arteries of uterine fibroids under the guidance of 3D angiography in treating uterine fibroids. **Methods** The clinical data of 14 patients with uterine fibroids, who received interventional embolization therapy at the Third Affiliated Hospital of Zhengzhou University of China, were retrospectively analyzed. Of the 14 patients, 5 received microcatheter superselective embolization of the supplying arteries of uterine fibroids after the origin and path of the supplying arteries were clarified by 3D uterine artery angiography (group A), and 9 received embolization of the bilateral uterine arteries up to their main trunks because the fibroids had complex blood supply (group B). The sums of the preoperative and postoperative one-year maximum diameter of uterine fibroids, and the reduction rate of fibroid were statistically analyzed. **Results** The mean sum of the preoperative and postoperative one-year maximum diameter of uterine fibroids in group A were (85.00 ± 43.35) mm and (35.20 ± 25.96) mm respectively, and the difference was statistically significant ($P=0.006$), which in group B were (65.00 ± 12.68) mm and (49.44 ± 24.83) mm respectively, and the difference was not statistically significant ($P=0.052$). There was no statistically significant differences in the mean sum of the preoperative maximum diameter of uterine fibroids and in the postoperative one-year maximum diameter of uterine fibroids between the two groups ($P=0.366$ and $P=0.331$). The median reduction rate of uterine fibroids in group A and group B was 62% and 25% respectively, and the difference was statistically significant ($P=0.031$). **Conclusion** For the treatment of uterine fibroids, 3D angiography-guided superselective embolization of the supplying arteries of uterine fibroids is superior to the embolization of the bilateral uterine arteries in clinical curative efficacy. (J Intervent Radiol, 2024, 33: 533-536)

【Key words】 uterine fibroids; 3D angiography; supplying artery; superselective vascular embolization

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子宫肌瘤好发于 30~50 岁育龄期妇女, 相关报道终身患病率高达 80%^[1-3]。常见临床症状为月经量增多甚至失血性贫血, 部分患者因肌瘤体积较大出现便秘、尿频等压迫症状。症状性子宫肌瘤传统治疗方式包括激素治疗、开放式子宫肌瘤剔除术、腹腔镜子宫肌瘤剔除术和子宫切除术^[1]。随着介入放射学发展, 子宫动脉栓塞因创伤小、恢复快、疗效明确、能保留子宫等优势在子宫肌瘤治疗中应用广泛。然而双侧子宫动脉栓塞术后部分患者子宫肌瘤体积缩小不尽如人意, 且存在卵巢功能降低、孕育功能受损等不良影响^[4]。本研究结合介入栓塞治疗子宫肌瘤机制, 通过 3D 血管造影明确子宫肌瘤供血动脉并予超选择插管栓塞, 以达到更好的治疗子宫肌瘤效果。现报道如下。

1 材料与方法

1.1 一般资料

收集在郑州大学第三附属医院接受介入栓塞治疗的 14 例子宫肌瘤患者临床资料。纳入标准: ①子宫肌瘤 ≤ 3 枚; ②肌瘤最大直径为 4~8 cm; ③肌壁间肌瘤或非带蒂浆膜下肌瘤。所有患者中位年龄 38.7 岁 (26~49 岁), 术前均经彩色多普勒超声及 MR 检查明确诊断为子宫肌瘤, 且排除伴发子宫腺肌症。记录术前患者可测量子宫肌瘤最大径线之和。根据栓塞方式不同, 将患者分为两组, A 组 5 例接受子宫肌瘤供血动脉超选择栓塞, B 组 9 例接受双侧子宫动脉栓塞。

1.2 栓塞方法

经皮穿刺右股动脉, 置入 5 F 动脉鞘, 引入 0.035 英寸亲水涂层导丝及 5 F Cobra 导管, 两者配合下插管至髂内动脉造影明确子宫动脉开口及走行, 导丝导管配合下插管至双侧子宫动脉行 3D 血管造影, 必要时配合微导管应用。A 组: 5 例患者经 3D 血管造影示 3 例肌瘤血供源于右子宫动脉, 2 例源于左子宫动脉; 肌瘤供血动脉为单支分支血管且能明

确肌瘤供血动脉与子宫动脉位置关系及走行; 根据肌瘤供血动脉最佳显示角度调整 DSA 球管至相应角度并设置路径图, 透视下使用微导管超选择插管至肌瘤供血动脉, 再次造影明确后用粒径 300~500 μm 聚乙烯醇微球栓塞, 后退导管于髂内动脉再次造影示肌瘤无显影、正常子宫动脉保留为精准栓塞终点。B 组: 9 例患者经 3D 血管造影示 4 例肌瘤血供源于双侧子宫动脉, 4 例源于左子宫动脉, 1 例源于右子宫动脉; 肌瘤供血动脉为多支分支血管且均较纤细, 难以行肌瘤供血动脉超选择栓塞, 遂使用 300~500 μm 聚乙烯醇微球栓塞子宫动脉至主干, 后退导管于髂内动脉再次造影示子宫动脉未见显影或仅主干显影后, 结束操作。

1.3 随访

住院期间密切观察患者股动脉穿刺点有无出血和皮下血肿、足背动脉搏动减弱或消失、下肢皮温降低等动脉血栓形成征象。出院后电话随访 12 个月, 记录患者术后月经量增多改善情况。术后 1 年行超声或 MRI 检查, 再次记录子宫肌瘤可测量最大径线之和。

1.4 统计学分析

统计患者术前及术后 1 年子宫肌瘤可测量最大径线之和, 并计算缩小率。采用 SPSS 25.0 软件进行统计学分析, 符合正态分布计量资料以均值 \pm 标准差表示, 组间比较用独立样本 t 检验, 组内比较用配对样本 t 检验。 $P < 0.05$ 为差异有统计学意义。

2 结果

子宫肌瘤供血动脉超选择插管栓塞过程影像见图 1。两组患者术后月经量增多症状均有不同程度改善。两组间术前、术后可测量最大径线之和比较差异无统计学意义 (均 $P > 0.05$); A 组术前、术后径线比较差异有统计学意义 ($P = 0.006$), B 组术前、术后径线比较差异无统计学意义 ($P = 0.052$); 两组间中位肌瘤缩小率比较差异有统计学意义 ($P = 0.031$), 见表 1。



①②双侧子宫造影示子宫肌瘤血供源于左子宫动脉; ③3D 血管造影后明确肌瘤供血动脉支 (箭头); ④微导管超选择插管至目标血管, 造影示肌瘤形态完整; ⑤栓塞后肌瘤染色形态完整; ⑥左子宫动脉复查造影示肌瘤未见显影, 正常子宫动脉显影良好

图 1 子宫肌瘤供血动脉超选择插管栓塞过程影像

表 1 两组患者术后 1 年子宫肌瘤大小及缩小率对比

参数	A 组 (n=5)	B 组 (n=9)	t 值	P 值
术前可测量最大径线之和 ($\bar{x} \pm s$, mm)	85.00 \pm 43.35	65.00 \pm 12.68	1.008	0.366
术后可测量最大径线之和 ($\bar{x} \pm s$, mm)	35.20 \pm 25.96	49.44 \pm 24.83	-1.013	0.331
t 值	5.228	2.283		
P 值	0.006	0.052		
中位肌瘤缩小率 (%)	62	25	2.434	0.031

3 讨论

子宫肌瘤源于子宫肌层平滑肌细胞和成纤维细胞,是育龄期妇女最常见良性肿瘤,患病率随着年龄增长而上升^[1]。子宫肌瘤确切病因尚不清楚,但某些因素与之发生发展有显著相关性,如雌激素和孕激素水平失调、肥胖、初潮过早等生殖和内分泌因素^[5-6]。大多数情况下子宫肌瘤体积较小且无临床症状,但当肌瘤体积增大到一定程度或数目较多导致子宫体积增大时,会出现月经量增多、盆腔受压、疼痛、不孕等症状。另外,患有子宫肌瘤孕妇早产、胎盘早剥、胎位不正、围产期出血和胎儿生长受限等风险同样增加,且症状严重程度与瘤体大小、数目及位置均有相关性^[7]。越来越多证据表明,任何大小黏膜下肌瘤及直径>4 cm 壁间肌瘤均会极大地影响患者生育能力^[8]。子宫肌瘤传统治疗方式有激素疗法、开放式肌瘤切除术、腹腔镜下肌瘤剔除术和子宫切除术。激素治疗目前临床应用较少,已不作为手术替代疗法^[1];子宫肌瘤剔除术能保留子宫,是目前应用最广泛的治疗方式,但术中出血风险高、恢复时间相对较长,且存在较高复发率,可能需进一步干预^[9];子宫切除术对于希望保留子宫或有孕育要求患者则不适用^[4]。Ravina 等^[10]1995 年报道子宫动脉栓塞治疗子宫肌瘤有效。该术式可有效阻断肌瘤血供,使之处于缺血缺氧状态并坏死萎缩,具有创伤小、恢复快及保留子宫优势,在临床上应用越来越广泛^[11-12]。然而双侧子宫动脉栓塞具有相应风险,因其同时阻断子宫血供,可能引起子宫内膜缺血萎缩、宫腔粘连风险增加^[12]。栓塞过程中存在聚乙烯醇微球进入卵巢血管,存在卵巢血供减少甚至消失风险,进而出现与卵巢功能不全相关持续性闭经。这些风险在临床上发生率较低,却可能对未来生育能力产生不良影响^[13]。Zanolli 等^[14]研究表明,子宫动脉栓塞术与子宫肌瘤切除术相比,术后妊娠率更低、流产率增加。虽然有研究表明子宫动脉栓塞对患者生育能力不会产生负面影响^[15],但对于有生育要求的子宫肌瘤患者是否行子宫动脉栓塞治

疗仍需慎重选择。另外,子宫动脉栓塞后子宫肌瘤复发仍有发生,这与栓塞剂未完全致密闭塞肌瘤血管有关^[16]。一般而言,直径更小的栓塞颗粒可达到更好的疗效,但却可增加子宫缺血及卵巢缺血风险^[17]。

如何使瘤体致密栓塞,尽可能保留子宫血供是近年研究重点,而明确肌瘤血供则是关键。曾北蓝等^[18]通过 DSA 分析发现子宫肌瘤血供来源可分为 3 型,Ⅰ型以一侧子宫动脉供血为主,Ⅱ型为双侧子宫动脉供血,Ⅲ型为单纯一侧子宫动脉供血。有研究表明,对Ⅲ型患者仅行供血侧子宫动脉栓塞同样可达到较好疗效,疼痛、卵巢缺血等并发症发生率更低^[19]。本研究在此基础上,通过术中 3D 子宫动脉造影发现,部分Ⅲ型肌瘤供血支为源于子宫动脉的单一支。对于此类单分支供血,3D 血管造影可进一步明确供血分支起源及走行,予以微导管超选择插管至肌瘤供血动脉进行栓塞,可致密闭塞肌瘤供血动脉分支。这种精准超选择插管栓塞方式可避开子宫动脉卵巢支,降低卵巢异位栓塞风险。术后 1 年随访发现,虽然超选择子宫肌瘤供血动脉栓塞组与双侧子宫动脉栓塞组瘤体均有缩小,但超选择栓塞组瘤体中位缩小率(62%)远高于双侧子宫动脉栓塞组(25%),差异有统计学意义,表明超选择栓塞肌瘤供血动脉是一种更好的治疗方式。但是在临床实践中,能够明确瘤体供血分支占比较小,且子宫动脉走行迂曲,精准插管栓塞时需选择合适的微导管并轻柔操作,以避免血管痉挛甚至闭塞。

本研究不足之处为纳入病例数较少,未对比两组患者间术后卵巢功能变化指标及 MR 检查数据。需进一步增加样本量进行对比研究。

总之,子宫动脉栓塞治疗子宫肌瘤具有创伤小、恢复快等优势。对于 3D 血管造影能明确肌瘤供血分支患者采用栓塞瘤体供血支而保留正常子宫动脉的精准栓塞,应是更好的选择,既能达到更好的疗效,又可降低相关并发症发生率。

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