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实时三维超声输卵管造影与X线造影诊断不孕症患者输卵管病变的价值比较*

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摘要 目的：比较实时三维超声输卵管造影与X线造影检查诊断女性不孕症患者输卵管病变的临床应用价值。**方法：**选择2014年3月至2016年12月我院诊治的不孕症患者60例作为研究对象，所有患者都于月经干净后3-7 d同时随机实施实时三维超声输卵管造影与X线造影检查，观察并记录造影图像质量与诊断结果，比较两种方法的诊断效果。**结果：**实时三维超声输卵管造影与X线造影的图像质量优良率分别为98.3%和86.7%，实时三维超声输卵管造影的图像质量明显高于X线造影(P<0.05)。实时三维超声输卵管造影与X线造影诊断不孕症患者输卵管不通畅率分别为56.7%和46.7%，实时三维超声输卵管造影组显著高于X线造影组(P<0.05)。输卵管通畅性评价金标准腹腔镜下通液术诊断发现输卵管不通畅35例，在此基础上实时三维超声输卵管造影与X线造影检查不孕症的敏感性分别为97.1%和80.0%，特异性均为100.0%，超声诊断的敏感性明显高于X线(P<0.05)。**结论：**相对于X线造影，实时三维超声输卵管造影检查不孕症患者输卵管病变的图像质量更好，有利于疾病的判断，对输卵管通畅度判断更精确，利于后期治疗及疾病预防，还可提高诊断敏感性。

关键词：实时三维超声输卵管造影；X线造影；不孕症；输卵管病变；敏感性

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Comparison of the Value of Real time Three Dimensional Ultrasonography and Contrast Radiography for the Diagnosis of Tubal Disease in Patients with Infertility*

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ABSTRACT Objective: To compare the value of real time three dimensional ultrasonography and contrast radiography for the diagnosis of tubal disease in patients with infertility. **Methods:** From March 2014 to December 2016, 60 cases of infertility patients in our hospital were selected as the research object, all patients in menstrual clean after 3-7d and the implementation of real time three dimensional ultrasonography and contrast radiography, the image quality and diagnosis results were recorded. The diagnostic effects of the two methods were compared. **Results:** The excellent and good rate of real time three dimensional ultrasonography and contrast radiography were 98.3% and 86.7% respectively, and the quality of real time three dimensional ultrasonography was significantly higher than that of contrast radiography (P<0.05). Real time three dimensional ultrasonography and contrast ultrasonography in the diagnosis of tubal infertility were 56.7% and 46.7%, respectively, which was higher in the real time three dimensional ultrasonography group than that of the contrast radiography (P<0.05). 35 cases were found in 60 cases of patients with laparoscopic diagnosis of tubal obstruction, the sensitivity of real time three dimensional ultrasonography and contrast radiography of tubal infertility were 97.1% and 80%, the specificity were 100%, the sensitivity of ultrasound diagnosis was significantly higher than that of the contrast radiography (P<0.05). **Conclusion:** Compared with the contrast radiography, real-time three-dimensional ultrasound contrast has better image quality for the tubal disease in patients with infertility, it has more accurate for tubal patency judgment, so as to improve the diagnostic sensitivity.

Key words: Real time three dimensional ultrasonography; X-ray radiography; Infertility; Tubal disease; Sensitivity

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前言

子宫及输卵管是女性生殖系统的主要组成部分。子宫内侧与宫角相连通，外端游离[1,2]。输卵管是精子和卵子结合的场所

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和通道,其结构与功能的正常,在妊娠过程中占有重要地位[3,4]。目前,女性不孕症的常见病因包括:输卵管阻塞、子宫内膜异位、盆腔黏连等[5,6]。流行病学调查显示输卵管性不孕是不孕症的重要组成部分,占女性不孕症的 50%左右,已成为不孕症的首要因素,因此对于输卵管病变的诊断和治疗非常重要。目前,常用的输卵管检查手段有输卵管通液、X 线造影、腹腔镜和超声等[7,8]。临床上公认的的输卵管通畅性诊断金标准为腹腔镜下通液术。X 线造影是向宫腔内注射造影剂并同时拍摄 X 线片,根据造影剂在盆腔内弥散情况,从而判断输卵管的通畅性[9]。三维超声的显像方式有经腹二维超声和三维超声等,其中三维超声可以实时、连续观察宫腔及输卵管显影情况,达到最佳显像目的,并且检查结果直观,较少依赖于医师的技术和经验,并且是一种无创的检查方法[10]。本研究主要对比了实时三维超声输卵管造影与 X 线造影检查女性不孕症患者输卵管病变的临床价值。现将研究结果报道如下。

1 资料与方法

1.1 研究对象

选择 2014 年 3 月至 2016 年 12 月在我院诊治的 60 例不孕症患者,纳入标准:符合不孕症的诊断,有正常性生活未避孕未孕 1 年以上; 有造影检查及宫腹腔镜联合手术的适应症;患者知情同意本研究且得到医院伦理委员会的批准。排除标准:有子宫输卵管造影禁忌者或宫腹腔镜联合手术禁忌者; 内、外生殖器急性或亚急性炎症,严重的全身性疾病患者;配偶不育者。年龄最小 21 岁,最大 43 岁,平均年龄 29.56± 2.12 岁;平均孕次为 1.67± 0.45 次; 平均产次为 1.12± 0.11 次; 经产妇 15 例,初产妇 45 例;平均体重指数为 22.94± 1.98 kg/m^2;不孕年限最短 1 年,最长 6 年,平均为 3.92± 1.11 年;平均流产次数为 1.11± 0.45 次。

1.2 检查方法

所有患者都于月经干净后 3-7 d 同时随机实施实时三维超声输卵管造影与 X 线造影检查。在超声中, 超声仪器为美国 GE-LOGIQ7 彩超机,造影试剂为欧乃派克(20 mL/ 支,碘浓度 300 mg/mL)和泛影葡胺(20 mL/ 支,碘浓度 76%)。患者麻醉后取膀胱截石位,常规消毒,球囊内注入生理盐水 1.5-2 mL,宫腔内置入 6F 导尿管。缓慢推注造影剂至宫腔内, 显影满意后摄像,20-30 min 后拍摄弥散像,判断输卵管的通畅情况。

在 X 线造影中, 患者麻醉后取仰卧位, 调好 X 线照射部位,更换为膀胱截石位置,暴露宫颈,将球囊导管顺着子宫朝向,缓慢推入置管达宫腔,向球囊注入 2-3 mL 生理盐水,固定造影管。随后在 X 线监视推注造影剂碘海醇,在 X 线显示器判断输卵管的通畅情况。

1.3 观察指标

(1)输卵管通畅程度:(1)通畅:子宫周围、盆腔微气泡弥散均匀;注入造影剂无明显阻力,注入造影剂后宫腔扩张后迅速闭合,无返流,无阻力;可见造影剂微泡强回声白宫角迅速向输卵管移动。(2)阻塞:盆腔及子宫周围未见造影剂弥散,推注造影剂时阻力明显,造影剂强注入造影剂几乎全返流。(3)通而不畅:卵巢周围环状强回声不明显,可见半环状强回声带,造影剂通过不顺利,注入造影剂后宫腔轻度扩张,少量返流。不通畅率 = 阻塞 / 总例数× 100.0%。(2)图像质量判断标准:优:子宫、双侧卵巢和盆腔、输卵管全程或大部分清晰显影。良:子宫、双侧卵巢和盆腔、输卵管部分或节段显影清晰。差:子宫、双侧卵巢显示欠清晰,输卵管仅少部分节段或未显影。(3)诊断效果:以腹腔镜手术结果为金标准, 判定实时三维超声输卵管造影与 X 线造影检查的敏感性与特异性。

1.4 统计学分析

选择 SPSS20.00 软件进行统计学分析,计量资料及计数资料分别采用 t 检验与 x^2 检验,以 P<0.05 为差异具有统计学意义。

2 结果

2.1 两种诊断方法的造影图像效果比较

实时三维超声输卵管造影与 X 线造影的图像质量优良率分别为 98.3%和 86.7%, 实时三维超声输卵管造影的图像质量明显高于 X 线造影(P<0.05),见表 1。

表 1 两种诊断方法图像效果比较

Table 1 Comparison of the image effects between two diagnostic methods

Angiographic methods	n	Excellent	Good	Bad	Good rate
Real time three dimensional ultrasonography	60	54	5	1	98.3%
Contrast radiograph	60	40	12	8	86.7%
P					<0.05

2.2 两种诊断方法的通畅情况对比

实时三维超声输卵管造影与 X 线造影检查不孕症患者对于诊断输卵管的不通畅率分别为 56.7%和 46.7%, 实时三维超声输卵管造影组高于 X 线造影组(P<0.05),见表 2。

表 2 两种诊断方法的结果比较

Table 2 Comparison of the results between two diagnostic methods

angiographic method	n	Clear	Accessible not smooth	Obstructed
Real time three dimensional ultrasonography	60	6(10.00%)	20(33.33%)	34(56.7%)
Contrast radiograph	60	11(18.33%)	21(35%)	28(46.7%)
P		>0.05	>0.05	<0.05

2.3 两种诊断方法的诊断效果对比

60 例患者腹腔镜诊断为输卵管不通畅 35 例，为此实时三维超声输卵管造影与 X 线造影检查不孕症的敏感性分别为 97.1%和 80.0%，特异性都为 100.0%，超声诊断的敏感性明显高于 X 线(P<0.05)。见表 3。

表 3 两种方法的诊断效果对比

Table 3 Comparison of the diagnostic effects between the two methods

Angiographic method	Ultrasound		X ray		Total
	Obstructed	Clear / accessible not smooth	Obstructed	Clear / accessible but not smooth	
Obstructed	34	1	28	7	35
Clear / accessible but not smooth	0	25	0	25	25
Total	34	26	28	32	60

3 讨论

输卵管性不孕是女性不孕的最常见原因 [11]。据统计，有 80%以上的女性不孕由输卵管病变引起，且其发病率有逐年增高的趋势[12-14]。输卵管性不孕可导致给女性患者精神压力和心理负担增加[15]，甚至影响患者的生活质量，严重则导致社会问题，因此输卵管病变需要进行早期诊断、尽早治疗[16-18]。输卵管分为间质部、峡部、壶腹部、漏斗部等，对拾卵、受精卵分裂、精子获能、卵子受精、受精卵成熟以及输送有重要作用[19,20]。

X 线造影是输卵管性不孕早期的标准诊断方法，研究表明 X 线造影可显示输卵管的形态、通畅情况[21]。Chen 等利用 X 线造影方法观察患者输卵管积水、伞端是否与周围组织粘连等[22-24]，但是 X 线造影检查当存在双侧输卵管间压力差时也容易出现单侧输卵管欠通畅或阻塞的假阳性诊断，并且在检查中对于女性患者有一定的创伤[25]。超声造影将造影剂注入患者宫腔内，利用超声学显像原理显示声学造影效果，将患者输卵管状况可视化；特别是实时三维超声能从多个角度显示输卵管的空间走形[26,27]。本研究结果显示实时三维超声输卵管造影与 X 线造影的图像质量优良率分别为 98.3%和 86.7%，实时三维超声输卵管造影的图像质量明显高于 X 线造影。其原因主要在于实时三维超声输卵管造影不受角度、方向或空间的局限，可多角度呈现输卵管的走行方向、形态，从而便于对输卵管造影图像观察、分析。

X 线造影检查易造成假阳性与假阴性情况，长期重复 X 线下子宫输卵管造影工作有一定的危害性。超声造影具有费用廉价、重复性好、无创、安全等优点，且超声造影技术由传统的基波显像发展至低机械指数谐波显像，检查技术也由二维超声发展到三维超声[28]。本研究结果显示实时三维超声输卵管造影与 X 线造影检查不孕症患者对于诊断输卵管的不通畅率分别为 56.7%和 46.7%，诊断不孕症的敏感性分别为 97.1%和 80.0%，特异性都为 100.0%，提示三维超声输卵管造影对输卵管性不孕的诊断效能更优。但超声造影也出现误诊患者，可能是因为超声造影剂所产生的小气泡在造影完成后疏通了假性阻塞的输卵管，当行宫腹腔镜联合手术时，阻塞的输卵管已通畅所造成的[20]。而实时三维超声输卵管造影应根据子宫与双侧卵巢的空间关系进行三维预扫描定位，优先选择预判断较通畅的一侧，造影过程中应用二维动态观察造影剂是否溢入盆腔，选择最佳扫描范围及角度，尽量回抽宫腔内残留造影剂[29,30]。

总之，相对于 X 线造影，实时三维超声输卵管造影检查不孕症患者输卵管病变的图像质量更好，对输卵管通畅度判断更精确，从而提高了诊断敏感性。

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