

三维超声复合成像技术监测甲状腺囊肿 PEI 疗效

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摘要 目的 本研究应用三维超声复合成像技术(3D-sonoCT)观察甲状腺囊肿无水酒精注射(PEI, percutaneous ethanol Injection)治疗前后变化,探讨其临床应用价值。方法:PEI治疗甲状腺囊肿55例,单纯性囊肿18例,复杂性囊肿37例,于PEI治疗前后进行二维及三维 SonoCT 显像。结果:三维 sonoCT 图像清晰、立体感强,可明确显示甲状腺囊肿内结构及 PEI 治疗前后变化。结论:三维 sonoCT 能提供更多丰富、直观的信息,是观察 PEI 治疗甲状腺囊肿疗效的有效手段。

关键词 三维超声复合成像 甲状腺囊肿 无水酒精注射

中图分类号 R445.1 文献标识码 A 文章编号:1673-6273(2012)24-4677-02

Clinical Utility of 3D-sonoCT in Observing Thyroid Cystic Nodule Treated after Percutaneous Ethanol Injection(PEI) Treatment

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ABSTRACT Objective: To evaluate the value of 3D-sonoCT in observing thyroid cystic nodules (TCNs) after percutaneous ethanol Injection(PEI) treatment. **Methods:** There were 55 thyroid cystic nodules underwent PEI treatment, containing of 18 simple cysts (SC) and 37 complicated cysts(CC). The changes in TCNs underwent PEI were observed by 2D and 3D-sonoCT image. **Results:** 3D-sonoCT ultrasonography can provide clear and stereoscopic view of thyroid cystic's structure and change after PEI treatment. **Conclusion:** 3D-sonoCT can offer audio-visual and abundant information for the change in TCNs after PEI treatment.

Key words: 3D-Sonographic compound technology(3D-sonoCT); Thyroid cystic nodule (TCN); Percutaneous Ethanol Injection

Chinese Library Classification(CLC): R445.1 Document code: A

Article ID:1673-6273(2012)24-4677-02

经皮穿刺无水酒精注射(PEI, percutaneous ethanol injection)治疗甲状腺囊性包块的主要原理是通过无水酒精使囊壁组织蛋白凝固变性,细胞破坏,并阻断血流供应,其特点是简单经济,创伤及副作用小^[1,2]。三维超声复合成像技术效果直观,成像迅速^[3],较常规二维超声能提供更多的信息,本文对55例甲状腺囊肿 PEI 治疗前后进行三维 sonoCT 成像,探讨其应用价值。

1 资料和方法

1.1 患者一般资料及术前诊断

2009年7月至2011年11月门诊病例55例,男13例,女42例,平均年龄 39 ± 5.2 岁,病程1月-15年,所有患者术前凝血酶原时间正常。

甲状腺囊性包块按声像图特征分为:单纯性囊肿(SC, simple cyst)18例,内壁光滑形态规则,内部呈无回声,平均体积 12.33 ± 2.08 mL;复杂性囊肿(CC, complicated cyst)37例,内有实性组织及分隔光带,平均体积 13.04 ± 4.61 mL。复杂性囊肿中5例为手术后复发(其中3例为结节性甲状腺肿,2例为甲状腺瘤)其余32均经活检证实为良性结节。

1.2 仪器

PHILIP- ATL HDI5000 型彩色超声显像仪,内置 sonoCT[®]及三维重建软件;7-12MHz 高频线阵探头,配原装穿刺架及18-20G 穿刺针。

1.3 PEI 治疗

嘱患者仰卧位,充分暴露颈前区。超声引导下进针入囊肿中央,抽吸囊液,按结节体积的0.5-1.2倍剂量注入无水酒精,留置1-5mL。疗效判定:3个月后体积缩小率大于50%者为有效,小于50%者为无效;体积缩小大于90%或液性暗区完全消失者为显著有效^[5]。

1.4 超声监测

常规二维观察,按 $V(mL) = 0.52 \times \text{长} \times \text{宽} \times \text{高}(cm)$ 计算结节体积;在 sonoCT 状态下,按下"3D"键,进行三维数据采集,采集3-5次,调入3D图像,选择感兴趣区,根据需要进行任意旋转、裁剪,处理后存图。

2 结果

55例甲状腺囊性结节经无水酒精注射治疗后,总有效率达83.21%。单纯性囊肿治疗前体积 10.33 ± 1.08 mL,3个月后 1.45 ± 0.31 mL,缩小率 $85.96 \pm 2.18\%$,显著有效率100%。复杂性囊肿治疗前体积 13.04 ± 4.61 mL,3个月后 3.43 ± 1.71 mL,缩小率 $73.7 \pm 3.58\%$,有效率77.57%,显著有效率27.32%。二者相比,单纯性囊肿无水酒精注射治疗的显著有效率明显高于复杂性囊肿($P < 0.05$),而有效率及缩小率则无显著性差异。部分

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(收稿日期:2012-03-26 接受日期:2012-04-20)

患者术后感面部潮红或局部不适,均在 1-2 周内恢复。无声嘶、术中出血、甲功异常等严重并发症。

二维超声声像图表现:治疗前甲状腺单纯性囊肿壁薄,边界清,形态规则,内为无回声区;复杂性囊肿囊壁欠光滑,内有分隔光带及(或)乳头样、团块样稍强回声。PEI 治疗后,甲状腺囊肿明显缩小,囊壁皱缩,液区内纤维化及坏死组织明显增多,

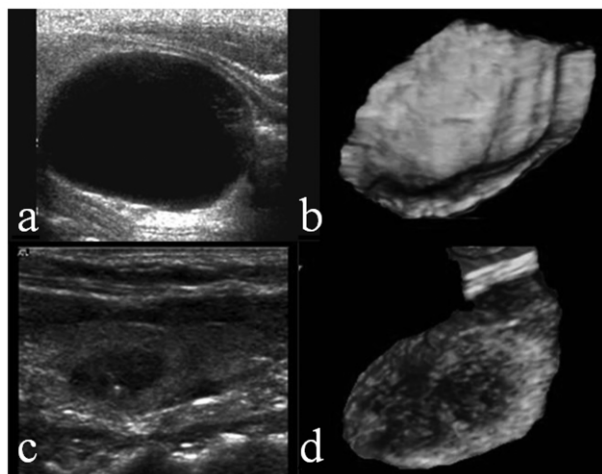


图 1 单纯性囊肿 PEI 治疗 a:治疗前二维图像; b:治疗前三维 sonoCT; c:治疗后二维图像; d:治疗后三维 sonoCT 图像

Fig.1 SC PEI treatment: a: 2D before treatment; b:3D-sonoCT before treatment; c: 2D after treatment; d:3D-sonoCT after treatment

样改变(见图 1,图 2)。

3 讨论

PEI 治疗甲状腺囊肿,具有安全简便、疗效肯定且无明显并发症等优点。55 例患者中,复杂性囊肿体积缩减率 $76.7 \pm 4.58\%$,有效率 78.57% ;单纯性囊肿体积缩减率 $88.23 \pm 4.18\%$,有效率 100% ,无明显并发症,与国内外报道基本相同^[4,5]。过去,我们常规采用二维超声观察甲状腺囊肿声像图的变化,二维超声属平面显像,不能完全显示病灶的空间范围及其内部细微结构,尤其是 PEI 治疗后,囊肿内液区形态复杂,二维图像很难做出准确判断,不利于与临床医生及患者交流。

甲状腺囊肿属含液区病变,透声性良好,普通二维超声即可获得较满意的显示效果,而 SonoCT 技术的运用使声像图更加细腻清晰,细节显示优越。这是因为 SonoCT 技术采用了计算机偏转技术,使超声声束产生精确“离轴”状态,可发射 9 个角度的超声波,无需后处理即可获得 9 倍于普通超声的信息量,同时有效减少伪像,提高对比度,更清晰显示图像细节。三维超声重建的实质是二维超声信息的整合^[6],基于 SonoCT 基础的三维图像质量明显优于普通三维超声,可提供更多的信息量。

甲状腺囊肿属含液区病变,尤其适于采用三维超声显示其立体形态、内部结构和内壁特征。三维 sonoCT 重建操作简单,成像迅速,能全面、真实的反映甲状腺囊肿 PEI 治疗前后的变化,其优点主要体现为 ①甲状腺囊肿内壁、囊内实性部分及分隔光带的表面轮廓及内部结构显示完整,立体感强,空间位置明确,可为治疗提供更详细信息。②不受切面改变的限制,立体

最后完全硬化,表现为边界模糊的不规则稍低回声区。

三维 sonoCT 声像图表现 PEI 治疗前单纯性囊肿内壁平滑,边界清晰,呈空壳样结构,复杂性囊肿囊肿内液区形态不规则,可见不规则团块样回声,呈蜂窝状结构。PEI 治疗后,囊肿内不规则柱状、乳头状、团块样实性成份的轮廓及内部结构清晰显示,囊肿完全硬化后形成稍低回声团块,边界呈“浸润”

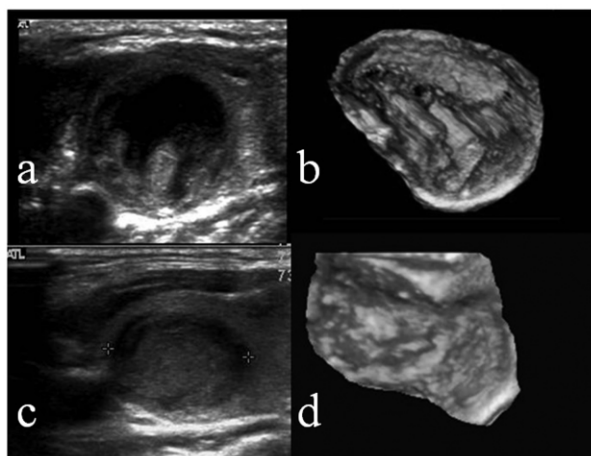


图 2 复杂性囊肿 PEI 治疗 a:治疗前二维图像; b:治疗前三维 sonoCT; c:治疗后二维图像; d:治疗后三维 sonoCT 图像

Fig.2 CC PEI treatment: a: 2D before treatment; b:3D-sonoCT before treatment; c: 2D after treatment; d:3D-sonoCT after treatment

显示 PEI 术后囊肿内残留液区的形态、位置及范围,说服力强,便于治疗前后对照。③可进行表面及结构成像,使 PEI 治疗后囊肿内坏死、纤维化成份的形态、结构及与周围组织关系更加清楚直观。④可对图像进行任意角度的旋转、切割,能多方位观察甲状腺囊肿及其治疗后改变。

综上所述,我们认为,应用三维 sonoCT 观察 PEI 治疗甲状腺囊肿,操作简单,成像迅速,图像清晰、立体感强,能提供更加丰富、全面的信息,较之常规二维超声能更好的反应甲状腺囊肿治疗前后的变化,且更易于临床交流。

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(下转第 4694 页)

只能进行影像学的检查,其具有较大局限性。本临床研究显示,CT 对肺癌纵隔淋巴结转移的灵敏度为 55.26%、真实性为 57.89%、特异度为 60.53%、阳性预测值为 44.74%以及阴性预测值为 81.58%。而电视纵隔镜其分别为 94.74%、97.37%、100.00%、100.00%、97.37%。结果提示,电视纵隔镜对肺癌纵隔淋巴结转移的相关诊断指标均优于 CT,故我们认为对 CT 检查提示怀疑为肺癌纵隔淋巴结转移的患者应当实施电视纵隔镜检查进行验证。

综上所述,我们认为,纵隔隔镜检查术具有低危险、安全性高,而且其并发症的发生率小于 4%,死亡率低于 0.05%。而且部疑难疾病合并出现纵隔淋巴结肿大的患者的诊断与术后病理诊断的符合率高等特点,值得在胸外科推广。

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(上接第 4678 页)

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