

# 三种影像学检查联用在继发性甲状旁腺功能亢进症术前定位的诊断价值研究

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[摘要] 目的:研究 MRI、<sup>99m</sup>锝-甲氧基异丁基异腈(<sup>99m</sup>Tc-MIBI)核素显像及彩色多普勒超声等 3 种影像学联用在继发性甲状旁腺功能亢进症(SHPT)术前定位的诊断价值。方法:回顾性分析 2010—2017 年期间首次行甲状旁腺切除术的 72 例 SHPT 患者,72 例患者均通过上述 3 种影像学对病变甲状旁腺进行术前定位。以手术后病理诊断结果为金标准,分别统计出 3 种影像学检查联用及各自所诊断甲状旁腺的确诊数及误诊数,并计算敏感度及特异度,通过 SPSS 19.0 软件运用率的  $\chi^2$  检验将 3 种影像学检查联用同每种影像学方法的敏感度及特异度分别加以对比分析。结果:术后病理所报甲状旁腺共 282 枚,MRI、<sup>99m</sup>Tc-MIBI 核素显像、彩色多普勒超声及 3 种影像学检查联用的敏感度分别为 72.70%、47.52%、44.33%、82.27%;特异度分别为 78.16%、91.75%、95.14%、67.96%;3 种影像学联用的敏感度大于各自的敏感度,均差异有统计学意义,而 3 种影像学联用的特异度均小于各自的特异度,差异有统计学意义。结论:MRI、<sup>99m</sup>Tc-MIBI 核素显像及彩色多普勒超声等 3 种影像学检查联用对病变甲状旁腺术前定位的诊断价值较高,可有效辅助 SHPT 的手术治疗。

[关键词] 甲状旁腺功能亢进症;核磁共振;彩色多普勒超声;<sup>99m</sup>锝-甲氧基异丁基异腈核素显像

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## Three combined imaging studies' diagnostic value for preoperative position of hyperthyroidism

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**Abstract Objective:** To investigate the diagnostic value of three combined imaging studies' preoperative localization for secondary hyperparathyroidism. **Method:** This study lies on the retrospective analysis about 72 patients with secondary hyperparathyroidism who had parathyroid gland resection in our hospital from 2010 to 2017. All of 72 cases are examined by color doppler ultrasound, <sup>99m</sup>Tc-MIBI nuclide imaging and magnetic resonance imaging. According to the gold standard—pathological diagnosis after surgery, we compute the sensitivity and the specificity of various imaging examination and analyse these statistics by rate card square test with SPSS 19.0 software. **Result:** The parathyroid gland number of pathological diagnosis is 282. The sensitivities of magnetic resonance imaging, <sup>99m</sup>Tc-MIBI nuclide imaging, color doppler ultrasound and three combined imaging are 72.70%, 47.52%, 44.33% and 82.27%, respectively. The specificities of the examinations are 78.16%, 91.75%, 95.14% and 67.96%, respectively. The sensitivity of the combined three imaging studies is greater than the sensitivity of each single imaging studies, and there is a statistical significance between them. The specificity of the combined three imaging studies is smaller than the sensitivity of single imaging studies. There is a statistical significance, either. **Conclusion:** Three combined imaging studies' preoperative localization for secondary hyperparathyroidism has higher diagnostic value for the preoperative localization about secondary hyperparathyroidism. It can be a effective way to SHPT's surgery.

**Key words** hyperparathyroidism; magnetic resonance imaging; color doppler ultrasound; <sup>99m</sup>Tc-MIBI nuclide imaging

继发性甲状旁腺功能亢进症(secondary hyperparathyroidism, SHPT)是慢性肾脏病终末期的一种常见并发症<sup>[1-2]</sup>。SHPT 晚期需行甲状旁腺切

除术治疗<sup>[3-5]</sup>。但是由于甲状旁腺存在异位的情况,手术切除所有的甲状旁腺存在一定的困难,从而导致了术后 10%~30%的复发率<sup>[6-7]</sup>,因此术前病变甲状旁腺的检出和准确定位显得尤为重要<sup>[8]</sup>。常用的影像学检查方法主要有:彩色多普勒超声、<sup>99m</sup>锝-甲氧基异丁基异腈(<sup>99m</sup>Tc-MIBI)核素显

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像、电子计算机断层扫描、MRI。而每种影像学方法因作用原理不同,在术前定位病变甲状旁腺上都存在各自的优点和不足,单靠一种影像学很容易漏诊病变的甲状旁腺。本文旨在研究 MRI、<sup>99m</sup>Tc-MIBI 核素显像及彩色多普勒超声等 3 种影像学联用在 SHPT 术前定位的诊断价值,以更好地指导临床手术。

## 1 资料与方法

### 1.1 临床资料

收集 2010—2017 年间在我院首次行甲状旁腺切除术的 72 例 SHPT 患者,所有患者均存在手术指征,且术后 10 min 甲状旁腺激素/术前甲状旁腺激素  $\leq 30\%$ <sup>[9]</sup>,72 例患者均通过 MRI、<sup>99m</sup>Tc-MIBI 核素显像及彩色多普勒超声等 3 种影像学对病变甲状旁腺进行术前定位。其中男 37 例,女 35 例;年龄 30~81 岁,平均(49.7±13.6)岁;所有患者透析时间(53.17±12.05)个月。

### 1.2 影像学检查方法

①彩色多普勒超声所用设备名称:彩色超声诊断仪(型号:美国 GE Logiq);②<sup>99m</sup>Tc-MIBI 核素显像所用设备名称:单光子发射型电子计算机断层扫描仪(型号:Infinia,生产厂家:以色列 GE Medical Systems Israel-F. I);③MRI 所用设备名称:医用 MRI 成像设备(型号:1.5T Signa HDx Echhospeed,生产厂家:GE Medical Systems LLC)。

### 1.3 手术及病理诊断

手术均由我院临床经验丰富且手术技能娴熟的头颈外科专家进行,术中根据影像学检查所报的甲状旁腺位置寻找甲状旁腺,然后按照中央区+纵隔清扫的理念寻找剩余甲状旁腺,具体操作为:患者采取全身麻醉,取平卧位将颈部垫高,采用常规甲状腺手术方式将皮肤组织与颈阔肌切开,游离皮瓣之后将颈白线打开,暴露甲状腺,断扎甲状腺峡部,切断甲状腺韧带,翻起甲状腺下级,如甲状腺有病变,则先切除病变的甲状腺,方便寻找甲状旁腺。随后根据术前影像学检查结果探查肿大的甲状旁腺,解剖出喉返神经,沿着喉返神经入喉处周围寻找上甲状旁腺,清扫气管前、左右气管食管沟及上纵隔,寻找下甲状旁腺及纵隔异位甲状旁腺,这一过程中注意保护患者的喉返神经,手术中谨慎操作,术后 10 min 抽血化验甲状旁腺激素,若甲状旁腺激素低于 150 pg/L 或术后 10 min 甲状旁腺激素/术前  $\leq 30\%$ <sup>[9]</sup>,停止寻找甲状旁腺,否则继续寻找。选择其中较小的、组织相对正常的甲状旁腺组织切成 1 mm×1 mm×1 mm 大小并切成匀浆状包埋于胸锁乳突肌中 1/3 处。切除标本送病理,病理均由我院多年从事临床病理工作的病理科专家诊断并得出报告。

### 1.4 统计学方法

以手术后病理诊断结果为金标准,分别统计出

3 种影像学检查联用及 3 种影像学检查各自所诊断甲状旁腺的确诊数及误诊数,并计算敏感度(确诊数/病理所报阳性数),特异度(1-误诊数/淋巴结或被误认为甲状旁腺的甲状腺组织枚数),通过 SPSS 19.0 软件运用率的  $\chi^2$  检验将 3 种影像学检查联用的敏感度及特异度同 3 种影像学检查的任意一种的敏感度及特异度加以对比分析。见表 1。

## 2 结果

术后病理所报甲状旁腺共 282 枚,其中常位甲状旁腺 254 枚,纵隔异位甲状旁腺 7 枚,胸腺及胸腺舌叶异位甲状旁腺 20 枚,气管食管沟异位甲状旁腺 1 枚;淋巴结或被误认为甲状旁腺的甲状腺共 206 枚,其中淋巴结 203 枚,甲状腺 3 枚;MRI、<sup>99m</sup>Tc-MIBI 核素显像、彩色多普勒超声及 3 种影像学检查联用的确诊数分别为 205 枚、134 枚、125 枚、232 枚;误诊数分别为 45、17、10、66;MRI、<sup>99m</sup>Tc-MIBI 核素显像、彩色多普勒超声及 3 种影像学检查联用的敏感度分别为 72.70%、47.52%、44.33%、82.27%;特异度分别为 78.16%、91.75%、95.14%、67.96%;3 种影像学联用的敏感度  $>^{99m}$ Tc-MIBI 核素显像的敏感度,差异有统计学意义( $r^2=74.745, P<0.05$ ),3 种影像学联用的特异度  $<$ 彩色多普勒超声的特异度,差异有统计学意义( $r^2=787.379, P<0.05$ )。

表 1 3 种影像学检查对甲状旁腺诊断的误诊数、漏诊数、敏感度及特异度

影像学检查	确诊数	误诊数	敏感度	特异度
			/%	/%
彩色多普勒超声	125	10	44.33	95.14
<sup>99m</sup> Tc-MIBI 核素显像	134	17	47.52	91.75
MRI	205	45	72.70	78.16
3 种影像学检查联用	232	66	82.27	67.96

## 3 讨论

慢性肾功能衰竭的患者由于肾脏功能受损,造成磷排出减少以及 1-阿尔法羟化酶合成不足,从而导致低钙血症和高磷血症,长期的低钙高磷状态,刺激甲状旁腺激素分泌增加,甲状旁腺增生,逐渐出现 SHPT,后期会造成钙磷代谢失调,引起骨痛、骨骼畸形、皮肤瘙痒甚至导致患者死亡,严重影响患者的生活质量。有研究表明 SHPT 患者心血管病的发病率和死亡率是非 SHPT 患者的 1.06~3.90 倍<sup>[10]</sup>。目前治疗肾衰继发性甲状旁腺功能亢进症的方法主要有药物治疗和手术治疗<sup>[11]</sup>。早期可用药物控制,但晚期需手术治疗,手术可缓解上述症状<sup>[12-16]</sup>。有研究表明,SHPT 术后有较高的复发率<sup>[17-19]</sup>,而没有将所有病变甲状旁腺切除完全是其主要原因。而影像学检查对病变甲状旁腺的术

前定位对于手术起着一定的促进作用。本研究中, MRI、<sup>99m</sup>Tc-MIBI 核素显像、彩色多普勒超声及 3 种影像学检查联用的敏感度分别为 72.70%、47.52%、44.33%、82.27%; 特异度分别为 78.16%、91.75%、95.14%、67.96%; 3 种影像学联用的敏感度大于 3 种影像学各自的敏感度, 差异均有统计学意义, 而 3 种影像学联用的特异度均小于 3 种影像学各自的特异度, 且差异有统计学意义; 可见 3 种影像学联用对病变甲状旁腺的检出率要高于任意单一检查, 而对非病变甲状旁腺的检出率及特异度却小于任意单一检查, 但敏感度为真阳性率, 其对手术的指导意义要比真阴性率即特异度大的多。

分析原因, 每种影像学检查各有其优缺点。彩色多普勒超声经济方便, 其对于常位甲状旁腺定位能力较高, 但对纵隔异位的甲状旁腺其检出率大大降低。因为部分甲状旁腺可异位于纵隔胸骨后, 由于彩色多普勒超声无法探及胸骨后的甲状旁腺, 所以彩色多普勒超声漏诊率高。<sup>99m</sup>Tc-MIBI 甲状旁腺显像可有效检出异位甲状旁腺, 但核素显像在显示甲状旁腺某处多发病灶时, 只能表现为该处放射性普遍增高, 不能明确分辨出该处病灶的数目。MRI 对软组织分辨率较高<sup>[20]</sup>, 但由于钙化灶内不含质子, 所以 MRI 对有钙化的甲状旁腺不敏感, 故不产生 MRI 信号。因为我院自开展此项手术以来, 采用 CT 影像学检查的病例较少, 所以其未被纳入此项研究。但 CT 对检出病变甲状旁腺也存在其优缺点, 对于钙化的甲状旁腺 CT 容易识别; 但 CT 对密度相近的组织分辨不清。而 3 种影像学检查联用可以弥补单一影像学各自的缺点, 大大提高了其对病变甲状旁腺的术前定位的诊断价值。

综上所述, MRI、<sup>99m</sup>Tc-MIBI 核素显像及彩色多普勒超声等 3 种影像学检查联用对病变甲状旁腺术前定位的诊断价值较高, 可有效辅助 SHPT 的手术治疗。

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# 鼻内镜下视神经减压术治疗外伤性 视神经病 212 例报告

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**[摘要]** 目的:探讨鼻内镜下视神经减压术治疗外伤性视神经病(TON)的临床特点和疗效。方法:回顾性分析 1999-04—2016-09 期间因 TON 行鼻内镜手术的 212 例(217 眼)患者资料,并对预后的影响因素进行探讨。结果:术后随访 6 个月~2 年,217 眼中 118 眼视力有提高,总有效率为 54.38%,其中无光感 166 眼中 77 眼有效,有效率为 46.39%,有光感以上视力 51 眼中 41 眼有效,有效率为 80.39%。受伤后视力有光感以上残余视力患者疗效显著,差异有统计学意义( $\chi^2=18.186, P<0.01$ )。伤后无视神经管骨折患者疗效显著,差异有统计学意义( $\chi^2=10.096, P<0.01$ )。结论:鼻内镜下视神经减压术治疗 TON 疗效确切,对于伤后无光感、受伤时间长的患者也不应放弃手术机会。

**[关键词]** 外伤性视神经病;鼻内镜;视神经减压术;疗效

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## A 212 cases analysis of treatment for traumatic optic neuropathy by nasal endoscopic opticnerve decompression

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**Abstract Objective:** To explore the clinical features and therapeutic efficacy of nasal endoscopic optic nerve decompression for traumatic optic neuropathy (TON) treatment. **Method:** Two hundred and twelve cases (217 eyes) with TON were retrospectively analyzed in our study, who were treated with nasal endoscopic optic nerve decompression in our institution from 1999 to 2016.  $\chi^2$ -test was used to explore the potential prognostic factors on visual acuity. **Result:** All patients were followed up from 6 months to 2 years postoperatively, and the effective rate was 54.38% (118/217). In the 166 eyes with no light perception (NLP), the effective rate was 46.39% (77/166), while in the 51 eyes with light perception (LP), the effective rate was 80.39% (41/51). The therapeutic efficacy of patients with LP or above LP was better than that of NLP, and the difference was statistically significant ( $\chi^2=18.186, P<0.01$ ). Moreover, the therapeutic efficacy of patients without an optic canal fracture was better than that with an optic canal fracture, and the difference had statistical significance ( $\chi^2=10.096, P<0.01$ ). **Conclusion:** The efficacy of nasal endoscopic optic nerve decompression on TON was positive, and even for the patients with NLP or a long history also should have a try.

**Key words** traumatic optic neuropathy; optic nerve decompression; nasal endoscopic; efficacy

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