

## 终末期肾病患者行甲状旁腺切除对颈动脉钙化的影响\*

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**摘要** 目的 探讨对终末期肾病患者行甲状旁腺切除对颈动脉钙化的影响。方法 选择我院 2009 年 10 月至 2010 年 12 月收治的 20 例继发性甲状旁腺功能亢进的终末期肾病患者,行甲状旁腺切除术,对患者术前、术后进行颈动脉彩超检查颈动脉钙化情况,并将患者术前、术后的血钙、血磷、钙磷乘积、PTH、C 反应蛋白、血红蛋白、白蛋白等指标进行比较。结果 与术前比较,术后患者颈动脉钙化斑块有明显减少,血钙、血磷、钙磷乘积、PTH、C 反应蛋白均明显降低,差异性有显著( $P<0.05$ );血红蛋白较术前明显升高( $P<0.05$ )。结论 切除甲状旁腺(PTX)能安全有效的降低甲状旁腺素水平、改善钙磷代谢紊乱,并控制颈动脉钙化的进展。

**关键词** 终末期肾病;甲状旁腺切除术;颈动脉;钙化

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## The Impact of Parathyroidectomy on Carotid Calcification for Patients with End Stage Renal Disease (ESRD)\*

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**ABSTRACT Objective:** To investigate the impact of parathyroidectomy on carotid calcification for patients with end stage renal disease (ESRD), and to evaluate the effect of parathyroidectomy on carotid calcification, calcium and phosphate abnormality of end-stage renal disease patients. **Methods:** 20 parathyroid patients with ESRD of hyperparathyroidism from October, 2010 to October, 2011 in our hospital were excised and enrolled in this study. Carotid calcification was recorded before and after PTX. Meanwhile, the serum calcium, phosphorus, calcium-phosphate product, PTH, C-reactive protein, hemoglobin and albumin were compared before and after the surgery. **Results:** Compared with pre-operation, the serum calcium, phosphorus, calcium-phosphate product, PTH, C-reactive protein were significantly decreased in post-operation ( $P<0.05$ ), and hemoglobin concentration was higher in post-operation than pre-operation ( $P<0.05$ ). **Conclusions:** The removal of parathyroid glands (PTX) could rapidly and securely reduce the PTH, serum calcium levels and calcium-phosphate product. It could prevent progression of vascular calcification and relieve the syndrome of patients with ESRD.

**Key words:** End-stage renal disease (ESRD); Parathyroidectomy; Carotid artery; Calcification

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## 前言

随着城市的发展,肾病的发生率也在逐年升高,采取维持性透析的病人日益增多,甲状旁腺功能亢进及心血管钙化并发症也随之明显增多<sup>[1]</sup>。目前血管钙化已成为慢性肾脏病(chronic kidney diseases, CKD),尤其是终末期肾病(End Stage Renal Disease, ESRD)患者的常见并发症,是导致心血管疾病发生及死亡的重要因素<sup>[2]</sup>。血磷、甲状旁腺激素(PTH)和钙磷乘积水平是心血管钙化、钙化防御及其他软组织钙化的独立危险因素<sup>[3]</sup>。目前对于血管钙化的治疗方法比较单一,随着透析时间延长,逐渐出现难以控制的高磷、高钙磷乘积、高甲状旁腺素,内科治疗已经产生抵抗<sup>[4]</sup>。为了更好地探讨治疗血管钙化的方法,本文通过切除甲状旁腺(PTX)来降低 PTH、降低血钙水平从而降低钙磷乘积,进一步减少钙化的发生和进展,取得了较好的临床效果,现报告如下。

## 1 资料与方法

## 1.1 一般资料

本组 20 例均为维持性透析的严重继发性甲状旁腺功能亢进患者。其中男 12 例,女 8 例,年龄 38~65 岁,平均年龄  $62.4 \pm 7.3$  岁,透析时间 5~237 个月,平均透析时间为  $36.28 \pm 31.42$  个月。临床症状:骨痛 3 例、肌无力 6 例、皮肤瘙痒 8 例、关节痛 2 例、失眠 1 例。所有患者术前均进行颈动脉彩超检查,测定双侧颈动脉内膜-中膜厚度及钙化情况。

## 1.2 治疗方法

所有患者均采用颈丛神经阻滞或气管内插管麻醉<sup>[5]</sup>。取仰卧位,将肩部垫高,以充分显露颈部;用小沙袋在头部两侧固定,以防术中头部左右移动。于胸骨上切迹上方 2 横指处,沿皮纹作弧形切口,两端达胸锁乳突肌外缘<sup>[6]</sup>。切开皮肤、皮下组织及颈阔肌,用组织钳牵起上、下皮瓣,用刀在颈阔肌后面的疏松

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组织间进行分离,上至甲状软骨下缘,下达胸骨柄切迹<sup>[7]</sup>。此间隙血管较少,过深或过浅分离时常易出血。用无菌巾保护好切口,用小拉钩拉开切口,用4号丝线缝扎两侧颈前静脉。在两侧胸锁乳突肌内侧缘剪开筋膜,将胸锁乳突肌与颈前肌群分开,然后在颈中线处纵行切开深筋膜,再用血管钳分开肌群,深达甲状腺包膜<sup>[8]</sup>。在甲状腺与假包膜之间轻轻分离甲状腺腺体,并将肌肉顶起,在血管钳间横行切断,以扩大甲状腺的显露。然后探查甲状旁腺正常所在部位,自周围组织钝性分离后,切断、结扎出入的血管,完整地摘除甲状旁腺。甲状旁腺摘除后,将创面可靠缝合止血。可不放引流,缝合切口<sup>[9]</sup>。

### 1.3 检测指标

表1 患者术前术后临床指标比较( $\bar{x} \pm s$ )

Table 1 The comparison of clinical parameters in the patients before and after the operation ( $\bar{x} \pm s$ )

Index	Preoperation	3 months after surgery	6 months after surgery	1 year after surgery
Parathyroid hormone (pg/mL)	483.61± 387.44	267.33± 215.72*	213.65± 181.52*	212.01± 183.13*
Serum calcium (mmol/L)	2.51± 0.39	2.12± 0.43	1.78± 0.37*	1.72± 0.36
Serum phosphorus (mmol/L)	2.29± 0.42	1.91± 0.38*	1.81± 0.41*	1.79± 0.43*
Calcium-phosphate product	4.67± 1.13	3.41± 0.92*	3.38± 0.78	3.32± 0.72
C-reactive protein (mg/L)	11.9± 6.82	5.24± 3.82*	5.18± 3.26	5.17± 3.30
Hemoglobin (g/L)	8.27± 4.01	9.86± 4.12	11.33± 3.87*	12.02± 3.91
Albumin (g/L)	29.69± 7.99	36.72± 8.13*	38.45± 7.81*	37.16± 8.21

Note: Compared with the preoperative, \* P < 0.05.

结果显示:与手术前比较,手术后3个月、6个月、1年甲状旁腺激素、血磷的含量及钙磷乘积、C反应蛋白均明显降低,差异性显著 P < 0.05;血钙在术后6个月及术后1年明显降低, P < 0.05;血红蛋白、白蛋白的含量均明显升高, P < 0.05。所有患者术后经颈动脉彩超检查发现颈动脉血管钙化现象完全消失,并且术后患者钙剂及活性维生素D的使用量均明显降低。

### 3 讨论

目前,终末期肾病患者的心血管疾病(cardio vascular disease, CVD)是主要死亡原因之一,占50%左右,除了传统的心血管病危险因素以外,ESRD患者动脉中膜钙化与其心血管疾病发生率及病死率增加相关<sup>[11]</sup>,但ESRD患者的血管钙化机制尚未明确<sup>[12]</sup>。临床研究发现,继发性甲状旁腺功能亢进(secondary hyperparathyroidism, SHPT)是ESRD的常见并发症之一<sup>[13]</sup>。并且PTH、钙、磷水平异常会引起全身性骨病、异位钙化和病死率增高。PTH促进骨释放钙和磷,并增加细胞内钙水平<sup>[14]</sup>。本文采用手术将甲状旁腺切除后,发现患者血磷、血钙、钙磷乘积均明显降低,差异性显著 P < 0.05;由于钙磷乘积值超过4.2mmol/L时,血液透析会出现转移性钙化,患者手术后钙磷乘积均恢复到正常范围。

甲状旁腺激素的主要功能是调节脊椎动物体内钙和磷的代谢,促使血钙水平升高,血磷水平下降<sup>[15]</sup>。通过手术的方式将甲状旁腺切除后能使血管内钙磷调节正常。对于难治性继发性甲状旁腺功能亢进终末期肾病(ESRD)患者,通过甲状旁腺切除(PTX)可以阻止或减慢心血管系统的钙化的进展,减少心血

管死亡风险,为临床透析患者心血管事件相应的防治提供新的治疗方法<sup>[16]</sup>。目前,对于颈动脉血管钙化的防治主要采取以及方面:(1)控制高磷血症成为预防血管钙化并降低心血管疾病死亡率的措施之一<sup>[17]</sup>。因此临床上多通过饮食限磷,或应用磷结合剂。(2)延长透析时间可增加磷清除,临床上常通过充分透析的方法来改善高磷血症。(3)正常人钙负荷增加可经肠、肾及骨来处理维持体内钙的平衡。由于透析患者这方面的能力大大降低,因此学高浓度增高,会沉积到心血管及软组织上,越来越多的人认识到通过降低钙负荷来降低血钙浓度<sup>[18]</sup>。

### 1.4 统计学处理

所有数据采用SPSS17.0统计软件处理,计量资料用均数±标准差( $\bar{x} \pm s$ )表示,采用t检验, P < 0.05表示差异有统计学意义。

## 2 结果

血管钙化是终末期肾病的常见并发症,与心血管疾病的病死率密切相关。血管钙化一旦发生,很难逆转,因此重在防治<sup>[19]</sup>。终末期肾病血管钙化过程非常复杂,迄今仍有许多未知之处,如骨的钙化和血管钙化之间的联系,因为终末期肾病患者血管钙化与骨质疏松常常同时存在,至今仍然未能找到简单、高效的控制终末期肾病血管钙化发生、发展和逆转的措施等<sup>[20]</sup>。因此,进一步深入地研究血管钙化的发病机制和防治手段对于减少终末期肾病患者危重心血管的发病率和病死率有重要意义。

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