

- [3] Sessa B, Tinici M, Ianniello S, et al. Blunt abdominal trauma: role of contrast-enhanced ultrasound (CEUS) in the detection and staging of abdominal traumatic lesions compared to US and CE-MDCT [J]. Radiol Med, 2015, 120(2): 180-189.
- [4] Hull TD, Agarwal A, Hoyt K. New ultrasound techniques promise further advances in AKI and CKD [J]. J Am Soc Nephrol, 2017, 28(12): 3452-3460.
- [5] Singbartl K, Kellum JA. AKI in the ICU: definition, epidemiology, risk stratification, and outcomes [J]. Kidney Int, 2012, 81(9): 819-825.
- [6] Rossi C, Artunc F, Martirosian P, et al. Histogram analysis of renal arterial spin labeling perfusion data reveals differences between volunteers and patients with mild chronic kidney disease [J]. Invest Radiol, 2012, 47(8): 490-496.
- [7] Greis C. Quantitative evaluation of microvascular blood flow by contrast-enhanced ultrasound (CEUS) [J]. Clin Hemorheol Microcirc, 2011, 49(1-4): 137-149.
- [8] Kogan P, Johnson KA, Feingold S, et al. Validation of dynamic contrast-enhanced ultrasound in rodent kidneys as an absolute quantitative method for measuring blood perfusion [J]. Ultrasound Med Biol, 2011, 37(6): 900-908.
- [9] Cao W, Cui S, Yang L, et al. Contrast-enhanced ultrasound for assessing renal perfusion impairment and predicting acute kidney injury to chronic kidney disease progression [J]. Antioxid Redox Signal, 2017, 27(17): 1397-1411.
- [10] Bou Chebl R, Kiblawi SE, Khuti C, et al. Use of contrast enhanced ultrasound for confirmation of central venous catheter placement: systematic review and meta-analysis [J]. J Ultrasound Med, 2017, 36(12): 2503-2510.
- [11] Ivanov II, Littman DR. Modulation of immune homeostasis by commensal bacteria [J]. Curr Opin Microbiol, 2011, 14(1): 106-114.
- [12] 伏钢, 吴曙军, 杨斌, 等. 超声造影引导鼻空肠管置放术 [J]. 中华超声影像学杂志, 2009, 18(11): 953-955.
- [13] 叶瑞忠, 刘景全, 孙仁华, 等. 胃肠超声造影技术联合气体灌注定位鼻肠管的方法学研究 [J]. 肠外与肠内营养, 2017, 24(2): 112-121.
- [14] 朱贤胜, 高云华, 王莎莎, 等. 超声造影对急性脑梗死与脑循环时间的相关性研究 [J]. 中国超声医学杂志, 2013, 29(3): 193-196.
- [15] Droste DW, Boehm T, Ritter MA, et al. Benefit of echocontrast-enhanced transcranial arterial color-coded duplex ultrasound [J]. Cerebrovasc Dis, 2005, 20(5): 332-336.
- [16] 栾玉爽, 白志勇, 张华斌, 等. 经颅超声造影对单侧颈内动脉闭塞患者颅内侧支循环及颅内动脉狭窄的评价 [J]. 中华老年心脑血管病杂志, 2015, 26(9): 957-959.

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• 病例报道 •

Ultrasonic manifestations of residual testicular adrenal tumor: a case report

睾丸肾上腺残余肿瘤超声表现 1 例

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[中图分类号] R445.1

[文献标识码] B

患者男, 30岁, 因体检发现“左侧肾上腺占位”入院。自述平素身体状况良好, 已婚未育, 男性功能正常, 睾丸无疼痛、酸胀等症状。实验室检查: 促肾上腺皮质激素、肾素、醛固酮均高于正常参考值, 17-羟孕酮、游离睾酮、雄烯二酮、皮质醇昼夜节律均未见明显异常。超声检查: 脾肾间区探及大小约 2.1 cm × 1.8 cm 团块状稍低回声, 类圆形, 边界清楚, 形态规则, CDFI 示其内未探及明显血流信号。双侧睾丸中上极均可见不规则减弱回声区, 边界不清, 左侧范围约 21 mm × 10 mm × 9 mm, 右侧范围约 24 mm × 13 mm × 11 mm, 内可见斑片及点状强回声, CDFI 示其内血流信号丰富(图1)。超声提示: 脾肾间区团块稍低回声, 考虑肾上腺增生可能; 双侧睾丸中上极减弱回声区伴钙化, 考虑睾丸占位性肿瘤。进一步行超声造影检查: 双侧睾丸减弱回声区约 30 s 开始增强, 约 66 s 时达峰, 呈均匀性高增强, 129 s 时

基本廓清(图2)。超声造影提示: 双侧睾丸低回声区考虑良性肿瘤。予患者激素代替治疗6个月, 复查超声示双侧睾丸低回声区明显缩小, 左侧肾上腺区团块变化不明显。结合实验室检查临床综合诊断为 21-羟化酶缺乏症伴睾丸肾上腺残余肿瘤。

讨论: 肾上腺皮质与睾丸均来源于中胚层的体腔上皮, 肾上腺细胞在胚胎发育过程中伴随睾丸下降, 称为肾上腺残余细胞^[1]。睾丸肾上腺残余肿瘤是一种罕见的睾丸良性肿瘤, 多发生于先天性肾上腺皮质增生症患者^[2]。文献^[3]报道其超声多表现为睾丸内团块状低回声, 边界清楚, 形态欠规则, 其内血流信号较周围正常睾丸组织稍丰富。本例肿块呈团块状稍低回声, 形态欠规则, 累及双侧睾丸, 血流信号较丰富, 与文献报道相符; 但边界欠清, 内多量斑片状及点状钙化形成, 分析可能与本例肿

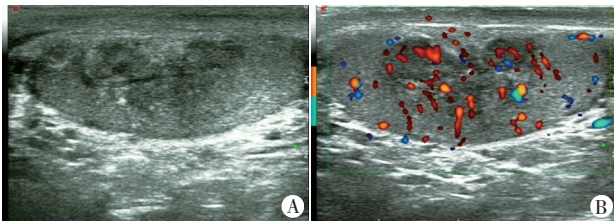
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- supinator syndrome[J].J Ultrasound Med,2002,21(11):1289-1293.
- [22] Chiavaras MM, Jacobson JA, Billone L, et al. Sonography of the lateral antebrachial cutaneous nerve with magnetic resonance imaging and anatomic correlation [J].J Ultrasound Med, 2014, 33(8):1475-1483.
- [23] Zhu J, Zhao Y, Liu F, et al. Ultrasound of the lateral femoral cutaneous nerve in asymptomatic adults [J]. BMC Musculoskelet Disord,2012,22(13):227.
- [24] Park BJ, Joeng ES, Choi JK, et al. Ultrasound-guided lateral femoral cutaneous nerve conduction study [J]. Ann Rehabil Med, 2015, 39(1):47-51.
- [25] Ebadi H, Siddiqui H, Ebadi S, et al. Peripheral nerve ultrasound in small fiber polyneuropathy [J]. Ultrasound Med Biol, 2015, 41(11): 2820-2826.
- [26] Bolat D, Aydogdu O, Tekgul ZT, et al. Impact of nerve stimulator-

- guided obturator nerve block on the short-term outcomes and complications of transurethral resection of bladder tumour: a prospective randomized controlled study [J]. Can Urol Assoc J, 2015, 9(11-12):780-784.
- [27] Sakura S, Hara K, Ota J, et al. Ultrasound-guided peripheral nerve blocks for anterior cruciate ligament reconstruction: effect of obturator nerve block during and after surgery [J]. J Anesth, 2010, 24(3):411-417.
- [28] Wu H, Groner J. Pulsed radiofrequency treatment of articular branches of the obturator and femoral nerves for management of hip joint pain [J]. Pain Pract, 2007, 7(4):341-344.
- [29] Evangelopoulos ME, Humpert S, Rosler KM. Ultrasound-guided electrodes for conduction studies of the saphenous nerve [J]. J Clin Neurophysiol, 2017, 34(3):243-247.

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A:二维超声示右侧睾丸中上极可见不规则减弱回声区,边界不清;
B:CDFI示其内血流信号丰富,内可见斑片及点状强回声

图1 睾丸肾上腺残余肿瘤超声表现

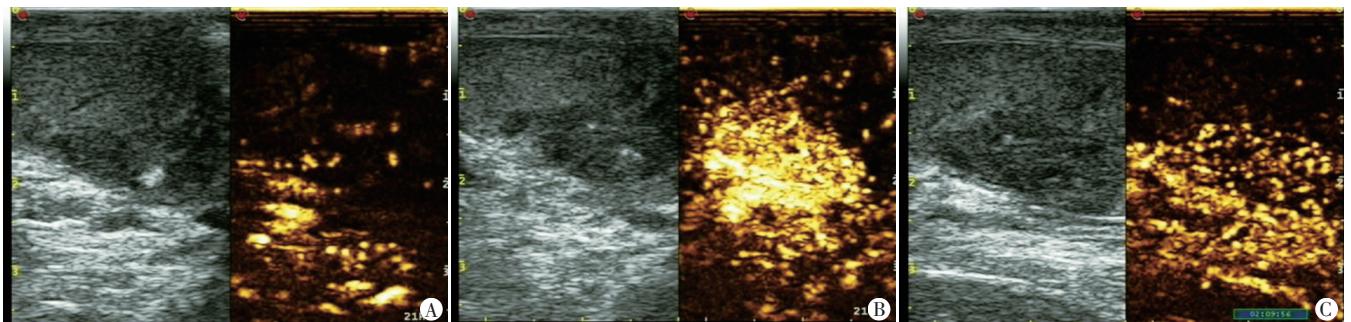
瘤病理基础或肿瘤细胞变性有关。目前有关该病超声造影表现的报道较少,本例超声造影稍晚于正常睾丸增强,达峰时呈均匀性高增强,团块内造影剂消退缓慢,笔者认为可能为团块内部分纤维化增生所致。睾丸肾上腺残余肿瘤应与精原细胞瘤相鉴别,精原细胞瘤是最常见的生殖细胞肿瘤,中年多发,多为均匀性稍低回声结节,边界清楚,形态较规则,血流信号多丰富,少数精原细胞瘤结节内可见点片状钙化,难与本病鉴别,但精原细胞瘤病变区超声造影多早于周围睾丸组织增强,达峰呈均匀性高增强,或结合肾上腺增生病史、激素检查可与本病相鉴别。

本病的治疗主要分为药物治疗和手术治疗。研究^[4]表明高剂量的糖皮质激素可降低促肾上腺皮质激素水平,使瘤体缩小甚至消失,并使生精功能恢复正常,改善睾丸功能,本例患者

通过激素替代治疗后,双侧睾丸团块明显缩小,各项指标趋于正常。睾丸肾上腺残余肿瘤为良性肿瘤,若肿瘤局部压迫症状严重或激素治疗不敏感可行睾丸肿物剔除术,但也有研究^[5]表明手术治疗并不能改善其睾丸功能,故一般不主张外科手术治。结合睾丸、肾上腺的超声表现及相关激素类检查可有效提示睾丸肾上腺残余肿瘤,为临床诊治提供依据。

参考文献

- [1] 张燕,李蓉,周波,等.一例21-羟化酶缺乏症伴睾丸肾上腺残余肿瘤[J].中华内分泌外科杂志,2013,7(2):174-176.
- [2] Bayhan GI, Cetinkaya S, Cinar HG, et al. Testicular adrenal rest tumor in a patient with 11beta-hydroxylase deficient congenital adrenal hyperplasia [J]. J Pediatr Endocrinol Metab, 2010, 23(7): 729-732.
- [3] Fitoz S, Atasoy C, Adiyaman P, et al. Testicular adrenal rests in a patient with congenital adrenal hyperplasia: US and MRI features [J]. Comput Med Imaging Graph, 2006, 30(8):465-468.
- [4] 李燕虹. 睾丸内肾上腺残余瘤诊治 [J]. 中国实用儿科杂志, 2016, 31(6):434-437.
- [5] Otten BJ, Hermus ARMM, Grinten HLCD. Testicular adrenal rest tumours in congenital adrenal hyperplasia [J]. Int J Ped Endocrinol, 2009, 2009(1):1-8.



左侧睾丸减弱回声团块约30 s(A)开始增强,66 s(B)时达峰,呈均匀性高增强,129 s(C)时基本廓清

图2 睾丸肾上腺残余肿瘤超声造影表现

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