[9] Hiremath M M, Saito Y, Knapp G W, *et al*. Microglial/macrophage accumulation during cuprizone-induced demyelination in C57BL/6 mice[J]. J Neuroimmunol, 1998, 92(1/2): 38-49.
[10] Irvine K A, Blakemore W F. Age increases axon loss associated with primary demyelination in cuprizone-induced demyelination in C57BL/6 mice[J]. J Neuroimmunol, 2006, 175(1/2): 69-76.
[11] Yang H J, Wang H, Zhang Y, *et al*. Region-specific susceptibilities to cuprizone-induced lesions in the mouse forebrain: Implications for the pathophysiology of schizophrenia[J]. Brain Res, 2009, 1270: 121-130.
[12] Kim S, Steelman A J, Zhang Y, *et al*. Aberrant upregulation of astroglial ceramide potentiates oligodendrocyte injury[J]. Brain Pathol, 2012, 22(1): 41-57.
[13] Saikali P, Antel J P, Pittet C L, *et al*. Contribution of astrocyte-derived IL-15 to CD8 T cell effector functions in multiple sclerosis[J]. J Immunol, 2010, 185(10): 5693-5703.
[14] Su Z, Yuan Y, Chen J, *et al*. Reactive astrocytes inhibit the survival and differentiation of oligodendrocyte precursor cells by secreted TNF-alpha[J]. J Neurotrauma, 2011, 28(6): 1089-1100.
[15] Marignier R, Nicolle A, Watrin C, *et al*. Oligodendrocytes are damaged by neuromyelitis optica immunoglobulin G *via* astrocyte injury[J]. Brain, 2010, 133(9): 2578-2591.
[16] Sharma R, Fischer M T, Bauer J, *et al*. Inflammation induced by innate immunity in the central nervous system leads to primary astrocyte dysfunction followed by demyelination[J]. Acta Neuropathol, 2010, 120(2): 223-236.
[17] Saijo K, Winner B, Carson C T, *et al*. A Nurr1/CoREST pathway in microglia and astrocytes protects dopaminergic neurons from inflammation-induced death[J]. Cell, 2009, 137(1): 47-59.

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个案与短篇

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冠状动脉CT血管成像诊断左冠状动脉主干-肺动脉瘘1例

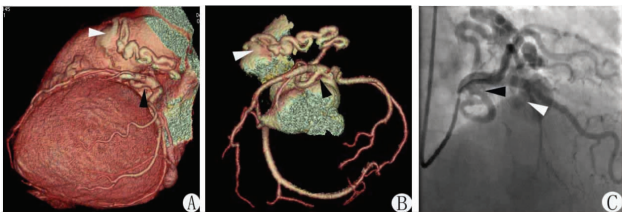
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[**关键词**] 冠状动脉瘘;冠状动脉-肺动脉瘘;CTA
[**中图法分类号**] R814.42 [**文献标志码**] B

左冠状动脉主干-肺动脉瘘是一种罕见的冠状动脉畸形,因其临床表现多样,易误诊、漏诊。本院心血管内科近期收治1例,现分析其冠状动脉CT血管造影表现如下。

1 临床资料

患者,女性,59岁,上楼时心悸、气促,伴有夜间阵发性呼吸困难6月余,自服药物治疗,症状无明显缓解,近来因上述症状加重1周入我院治疗。既往高血压病史1年。外院冠状动脉CTA检查提示:"冠状动脉-肺动脉瘘可能"。入院查体:BP 156/84 mmHg,HR 68次/min,律齐,胸骨左缘2~3肋间闻及IIY6s1vl粗糙的吹风样连续性杂音,舒张期更响亮。我院相关检查:心电图提示非特异性的S T段和T波改变。冠状动脉CTA检查:心脏及冠状动脉VR(图1A、B)清晰显示自左冠状动脉主干远端发出一支迂曲血管,紧贴肺动脉起始端左侧壁走形,最后注入肺动脉起始端右前部,左冠状动脉前降支、回旋支及右冠状动脉走形正常,未见明显钙化及狭窄征象,提示左冠状动脉-肺动脉瘘。冠状动脉造影(图1C)见左冠状动脉主干远端大量团状造影剂流至肺动脉根部。该患者最终诊断为左冠状动脉主干-肺动脉瘘。入院期间给予降压、抗凝、扩冠、强化降脂等治疗后,患者症状缓解后出院。



A、B:心脏及冠状动脉VR示冠状动瘘起始部(黑箭)及终止端(白箭);C:DSA示左冠状动脉主干发出(黑箭)一迂曲走形血管注入肺动脉起始端(白箭)

图1 左冠状动脉-肺动脉瘘患者冠状动脉CTA及DSA表现

2 讨论

冠状动脉瘘(coronary artery fistula,CAF)是指左右冠状动脉主干或分支与心脏或大血管之间存在的异常通道,占冠状动脉畸形(congenital coronary anomalies,CCA)的13%[1]。CAF包括冠状动脉-血管瘘及冠状动脉-心腔瘘。其中冠状动脉-肺动脉瘘约占CAF的17%,起源于左冠状动脉主干者尤为罕见。冠状动脉-肺动脉瘘多属先天性发育畸形,是胚胎时期心肌组织间内皮细胞构成的窦间间隙持续存在,部分伴有其他先天性畸形,少数患者因后天外伤、感染或手术等原因所致。CAF临床表现多样,严重者可伴发心力衰竭、心肌梗死、感染性心内膜炎,甚至猝死。部分患者因为心脏杂音、心包积液、心脏扩大、进行性呼吸困难等原因就诊,相当部分的CAF在心脏外科手术或经冠脉造影、心脏超声检查时意外发现[2-3]。

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综上所述,本实验通过构建Cx43的干扰载体,成功转染至原代培养ASTs,达到了较好的抑制效果。将Cx43干扰质粒转染至ASTs,其释放谷氨酸明显减少,提示Cx43介导的半通道是谷氨酸释放的途径之一,并为研究病理条件下的神经元损伤的机制提供了新的思路。

参考文献:

[1] Bruzzone R, Hormuzdi S G, Barbe M T, *et al*. Pannexins, a family of gap junction proteins expressed in brain[J]. Proc Natl Acad Sci U S A, 2003, 100(23): 13644-13649.

[2] Herrero-Gonzalez S, Valle-Casuso J C, Sanchez-Alvarez R S, *et al*. Connexin43 is involved in the effect of endothelin-1 on astrocyte proliferation and glucose uptake[J]. Glia, 2009, 57(2): 222-233.

[3] Bennett M V, Contreras J E, Bukauskas F F, *et al*. New roles for astrocytes: gap junction hemichannels have something to communicate [J]. Trends Neurosci, 2003, 26(11): 610-617.

[4] Saez J C, Contreras J E, Bukauskas F F, *et al*. Gap junction hemichannels in astrocytes of the CNS[J]. Acta Physiol Scand, 2003, 179(1): 9-22.

[5] Contreras J E, Sanchez H A, Eugenin E A, *et al*. Metabolic inhibition induces opening of unapposed connexin 43 gap junction hemichannels and reduces gap junctional communication in cortical astrocytes in culture[J]. Proc Natl Acad Sci U S A, 2002, 99(1): 495-500.

[6] Ye Z C, Ransom B R, Sontheimer H. (1R, 3S)-1-Aminocyclopentane-1, 3-dicarboxylic acid (RS-ACPD) reduces intracellular glutamate levels in astrocytes[J]. J Neurochem, 2001, 79(4): 756-766.

[7] Nicholls D, Attwell D. The release and uptake of excitatory amino acids[J]. Trends Pharmacol Sci, 1990, 11(11): 462-468.

[8] Kimelberg H K, Rutledge E, Goderie S, *et al*. Astrocytic swelling due to hypotonic or high K^+ medium causes inhibition of glutamate and aspartate uptake and increases their release[J]. J Cereb Blood Flow Metab, 1995, 15(3): 409-416.

[9] Parpura V, Haydon P G. Physiological astrocytic calcium levels stimulate glutamate release to modulate adjacent neurons[J]. Proc Natl Acad Sci U S A, 2000, 97(15): 8629-8634.

[10] Ye Z C, Wyeth M S, Baltan-Tekkok S, *et al*. Functional hemichannels in astrocytes: a novel mechanism of glutamate release[J]. J Neurosci, 2003, 23(9): 3588-3596.

[11] Jiang S, Yuan H, Duan L, *et al*. Glutamate release through connexin 43 by cultured astrocytes in a stimulated hypertonicity model[J]. Brain Res, 2011, 1392: 8-15.

[12] Elbashir S M, Harborth J, Weber K, *et al*. Analysis of gene function in somatic mammalian cells using small interfering RNAs[J]. Methods, 2002, 26(2): 199-213.

[13] Karpuk N, Burkovetskaya M, Fritz T, *et al*. Neuroinflammation leads to region-dependent alterations in astrocyte gap junction communication and hemichannel activity[J]. J Neurosci, 2011, 31(2): 414-425.

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获取良好的冠状动脉CTA图像是诊断CAF的必要条件。针对我科CT扫描仪特点,将心率控制在70次/min以下,采用快速容积扫描,消除心脏运动对图像质量的影响。图像重建时,选择合适的周期相位图像,运用多种重建技术如容积重建(VR)、最大密度投影(MIP)和多平面重建(MPR)进行重建。重建时重点观察CAF的起源动脉、瘘管的走形及粗细、瘘管与周围心腔、大血管的关系以及最终注入动脉[4]。本例采用上述扫描方法及图像后处理技术,清晰显示CAF起源于左冠状动脉主干,迂曲走形于肺动脉起始部左、前侧壁旁,然后注入肺动脉起始部,瘘管管径与左冠状动脉前降支近中段管径接近、管腔粗细较均匀。

冠状动脉-肺动脉瘘需与冠状动脉起源于肺动脉畸形(anomalous origin of coronary artery from thepulmonary artery, ACAPA)鉴别。CAF属于冠状动脉终止异常,ACAPA属于冠状动脉起源异常。全面分析冠状动脉起源、走行、分布有助于鉴别诊断,其主要鉴别点在于与肺动脉相连的冠状动脉是否由多个细小分支逆行充盈,否则为冠状动脉-肺动脉瘘[5]。此例患者左、右冠状动脉主干分别起自左、右冠状窦,瘘管起自左冠状动脉主干,终止于肺动脉起始部,未见逆行充盈现象。

综上,此病具有潜在危险性,即使无临床症状,也应及早诊治。冠状动脉造影为诊断冠状动脉瘘的"金标准",但其有创、费用较高、对小瘘口、多瘘口等复杂异常难以准确诊断,故不作为首选。冠状动脉CTA诊断CAF具有独特优势,是精确、快速、可靠而直观的无创性检查方法,与冠状动脉造影呈完全相关[6-7]。本例患者运用冠状动脉CTA检查诊断为左冠状动脉主干-肺动脉瘘,与其后冠状动脉造影检查结果相符。

参考文献:

[1] 郑丽丽, 杨有优, 谢洪波, 等. 64层螺旋CT对冠状动脉瘘诊断的临床价值[J]. 临床放射学杂志, 2009, 28(3): 330-333.

[2] 洪李锋, 马业新. 冠状动脉瘘的研究进展[J]. 内科急危重症杂志, 2010, 16(3): 154-156.

[3] Rudraiah L, Dhar G, Thatai D. Acquired coronary cameral fistula—a report of two cases[J]. Int J Cardiol, 2008, 123(2): e40-e42.

[4] 戚跃勇, 邹利光, 陈轶, 等. 冠状动脉瘘影像诊断与介入治疗[J]. 中华实用诊断与治疗杂志, 2010, 24(10): 950-952.

[5] 王向日, 谢建功, 全凌峰, 等. 成人先天性冠状动脉瘘的临床及X线诊断分析[J]. 南华大学学报:医学版, 2007, 35(1): 110-112.

[6] Kang W C, Moon C 2nd, Ahn T H, *et al*. Identifying the course of a coronary-bronchial artery fistula using contrast-enhanced multi-detector row computed tomography[J]. Int J Cardiol, 2008, 130(3): e125-e128.

[7] Lubarsky L, Jelnin V, Hecht H. Right coronary artery fistula-evaluation by multidector computed tomographic angiography[J]. Clin Cardiol, 2009, 32(7): E6-E7.

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