

·综述 General review·

耳廓动静脉畸形介入治疗

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【摘要】 先天性动静脉畸形是一种罕见的血管畸形,其动脉与静脉之间缺乏正常的毛细血管而直接沟通,导致一系列临床症状和体征。耳廓是头颈部动静脉畸形的第二大好发部位。由于畸形影响美观、耳廓解剖位置狭窄和疾病本身复杂性,耳廓动静脉畸形治疗一直是临床医师棘手问题。外科医师应用外科手术手术治疗动静脉畸形,但效果往往欠佳,引起患者容貌残缺。近年随着介入治疗不断发展和完善,以其微创、准确、安全、高效、可重复性高等特点,已有效地取代传统手术治疗,成为动静脉畸形首选治疗方法,并满足患者对美观的要求。该文就耳廓动静脉畸形介入治疗现状作一综述。

【关键词】 动静脉畸形;耳廓;无水乙醇;栓塞

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【Abstract】 Congenital arteriovenous malformation (AVM) is a rare vascular malformation, in which the normal capillaries between arteries and veins are lack and the arteries communicate directly with the veins, resulting in a series of clinical symptoms and signs. The auricle is the second most predilection site of arteriovenous malformations in cephalocervical region. Because of the damage to the beauty of the face caused by AVM, the narrowed auricular anatomy and the complexity of the AVM itself, the treatment of auricular AVM has always been a thorny problem for clinicians. Surgeons usually treat AVM with surgery, but the results are often poor, easily causing the disability in patient's appearance. With the continuous development and improvement of its technology in recent years, and being of its advantages of minimally-invasive, accurate, safe, efficient, repeatable, etc., the interventional therapy has effectively replaced the traditional surgery and has become the preferred therapy for AVMs. Besides, interventional therapy can meet the patient's requirements to maintain beauty. This paper aims to make a brief review about the current status of interventional therapy for auricular AVMs. (J Intervent Radiol, 2020, 29: 527-529)

【Key words】 arteriovenous malformation; auricle; ethanol; embolization

先天性动静脉畸形(congenital arteriovenous malformation, AVM)是由于原始胚胎血管发育停滞或有序再吸收障碍所致^[1],患者内皮细胞能正常分裂,却不退化^[2]。AVM在出生时便存在并与患儿一同长大,组织学研究显示畸形增大时血流增加并非内皮细胞增殖的结果,这与动脉瘤不同。创伤、手术、青春期、怀孕等因素可导致动静脉畸形迅速长大并出现各种临床症状^[3-5]。耳廓动静脉畸形患者症

状包括巨耳、水肿、皮肤发红、瘙痒、皮温增高、疼痛、杂音、震颤,病情继续进展可出现出血、溃疡,极少数患者可出现充血性心力衰竭^[3,6]。Schobinger描述的动静脉畸形临床分期系统,将畸形变化分为4个阶段,皮肤色泽改变、皮温增高为Ⅰ阶段(静止期),病变长大、杂音为Ⅱ阶段(扩张期),出血、疼痛、溃疡为Ⅲ阶段(破坏期),充血性心力衰竭为Ⅳ阶段(失代偿期)。AVM在CT平扫图像上表现为密

度不均的异常软组织膨隆,注射对比剂后典型颅面部表现为强化的畸形血管巢、供血动脉增粗增多、引流静脉扩张迂曲^[7],三维重建可清晰显示供血动脉、引流静脉解剖结构及其与周围组织的关系^[8-9];MRI T2 加权像表现为高信号病灶,内见血液流动空隙^[10];彩色多普勒超声可显示血流信号、异常供血动脉和引流静脉^[11]。耳廓由于位置狭小、外形凹凸,一般不应用彩色多普勒超声检查,MRI、CT 均可用于耳廓动静脉畸形检查。选择性血管 DSA 造影是评估动静脉畸形最重要工具,可准确显示病变供血动脉、引流静脉和病灶,但因其是有创检查,一般会在介入治疗的同时进行^[3,12-13]。

1 耳廓动静脉畸形介入治疗概况

介入栓塞材料包括聚乙烯醇(polyvinyl alcohol, PVA)、 α -氰基丙烯酸正丁酯(n-butyl-2-cyanoacrylate, NBCA)、乙烯-乙醇共聚物(ethylene vinyl alcohol copolymer, EVOH, Onyx)、弹簧圈,无水乙醇为目前认为唯一的永久性栓塞材料。

PVA、NBCA 虽可堵塞畸形血管,但并未破坏血管内皮细胞。完整的内皮细胞一方面在局部低氧刺激下释放血管生成因子,导致新生血管形成,另一方面可清除血管内血栓,导致栓塞血管再通^[8,13]。PVA、NBCA 在缓解临床症状如急性出血等方面有较好效果^[14-15]。弹簧圈作为辅助治疗材料,在介入治疗动静脉畸形时一般用于栓塞扩大的引流静脉,通过自身体积占据扩张的静脉,以期减少其他栓塞材料用量及在扩张静脉中的通过速度,减少手术并发症^[2,16-18]。

Onyx 是一种液态栓塞剂,由 EVOH 溶解于有机溶剂二甲基亚砜(dimethyl sulphoxide, DMSO)中,并以黑色钽粉作为对比剂。DMSO 在与血液接触时自混合物中扩散并留下乙基乙烯醇以聚合。聚合首先在混合物外围发生,并在数分钟内逐渐硬化至塞子中心。Onyx 与 NBCA 相比,不会粘附于微导管壁和血管壁,因此手术中理论上不会有微导管阻塞风险。DMSO 作为一种刺激物,可引起严重的局部和血管周围炎症,可能会损害健康组织。黑色钽粉用于耳廓等表浅部位病灶,可能会污染邻近皮肤^[19-20]。

无水乙醇是一种永久性无色、液态栓塞材料,可充分渗透入病灶血管,用于人体浅表组织血管内时也不会使皮肤变色。无水乙醇进入血管后,可使血浆蛋白变性,血管内皮细胞脱水并从血管壁完全剥离^[1]。Su 等^[21]报道对 66 例头颈部浸润扩散性颅外动静脉畸形患者行无水乙醇栓塞,结果显示 56

例(84.8%)血管 100% 闭塞,10 例(15.2%)血管 50%~99% 闭塞,达到部分缓解;所有患者红肿、肿胀明显减轻,皮温降低。Zheng 等^[6]报道对 17 例耳廓动静脉畸形患者行无水乙醇栓塞,结果 3 例(17.6%)血管 100% 闭塞,11 例(64.7%)患者血管 50%~99% 闭塞;所有患者皮肤发红、肿胀、皮温增高等症状减轻,15 例(88.2%)Schobinger 临床分期降低。Hua 等^[22]报道分析无水乙醇栓塞治疗 35 例耳廓动静脉畸形患者中、长期疗效,结果表明 16 例(45.7%)病变得得到控制(血管 100% 闭塞,临床症状完全缓解),18 例(51.4%)得到改善(血管 50%~99% 闭塞,临床症状部分缓解),仅 1 例复发。

2 介入治疗要点^[6,22]

耳廓动静脉畸形病变主要由同侧耳后动脉、颞浅动脉和枕动脉供血。接受过供血动脉结扎或局部部分切除患者,颈内动脉分支、椎动脉及甲状腺干参与供血。通常情况下,耳廓上部病变供血源自颞浅动脉,中间或耳垂源自耳后动脉,耳后或基底部源自枕动脉。介入手术一般在全身麻醉下进行,同时作同侧颈外动脉、颈内动脉造影,对接受过颈外静脉结扎者需行同侧颈总动脉、椎动脉、甲状腺干及对侧颈外动脉造影。为了确定病变详细血管构筑,需进一步行耳后动脉、颞浅动脉和枕动脉造影。可选择经导管或直接穿刺进入血管巢,注射对比剂确定微导管或穿刺针头进入血管巢而非供血动脉,注射无水乙醇时用手压迫引流静脉,若观察到对比剂自病灶中渗漏至邻近组织或引流静脉消失且发生持续动脉反流,表明存在非目标栓塞风险,需重新确定穿刺部位。保持微导管尖端或穿刺针头在血管巢内,是手术成功的关键。每注射无水乙醇 5~10 min,需行动脉造影,以评估血管栓塞情况。

3 并发症与防治

无水乙醇栓塞硬化术后最常见并发症是皮肤水泡、坏死和软组织坏死,通常可自行恢复或无菌辅料覆盖即可恢复,不需皮肤移植^[6,22-24]。根据文献报道,坏死可能与非靶向栓塞和栓塞后局部软组织肿胀相关。术中应用稀释的乙醇栓塞浸润性耳廓动静脉畸形,有助于预防可能出现的皮肤坏死,术后常规应用地塞米松,以减轻局部肿胀和疼痛^[24]。短暂性血红蛋白尿也是较常见的术后并发症,但一般通过静脉补液后 5~6 h 缓解,不会导致肾功能损害^[23-25]。由于无水乙醇毒性作用,患者每次最大注射剂量不能超过 1 mL/kg 体重,单次注射剂量为 10 min

内不超过 0.1 mL/kg 体重。超过剂量可能出现肺动脉高压、心律失常、心肺衰竭等风险^[26-27]。但也有学者认为,肺动脉高压与乙醇注射引起交感神经刺激所致疼痛有关^[28]。实时监测、及时应用硝酸甘油,对于肺动脉高压有效^[29]。但监测肺动脉有创,且费用昂贵,应用前需与患方充分沟通。

4 结语

动静脉畸形是血管畸形中一种罕见类型,创伤、手术、青春期、怀孕等均可导致其迅速生长并出现各种临床症状。目前常见动静脉畸形影像学诊断手段有 MRI、CT、DSA。耳廓动静脉畸形发病率低、解剖位置复杂及影响美观,考虑到疗效及患者对容貌完整性的夙愿,无水乙醇栓塞术无疑是当前理想的首选治疗方法。

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