·综　述·

全身麻醉气管插管术后咽喉痛的防治研究进展

张杰，　徐紫清，　侯怀晶，　薛建军
甘肃省中医院麻醉科，甘肃 兰州 730050

摘要：术后咽喉痛是一种常见且容易忽视的全身麻醉气管插管术后并发症，严重影响患者满意度和术后恢复质量。然而，关于术后咽喉痛防治的最佳药物或干预措施的共识仍然存在争议。本文对全麻气管插管术后咽喉痛的影响因素和防治进展进行综述，为降低全身麻醉气管插管术后咽喉痛的发生率提供参考。

关键词：全身麻醉；气管插管；术后；咽喉痛；防治；中医药
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Research progress on prevention and treatment of sore throat after tracheal intubation

ZHANG Jie, XU Ziqing, HOU Huaijing, XUE Jianjun
Department of Anesthesiology, Gansu Provincial Hospital of TCM, Lanzhou, Gansu 730050, China
Corresponding author: XUE Jianjun, E-mail: enchill@163.com

Abstract: Postoperative sore throat (POST) is a common and easily overlooked complication after endotracheal intubation under general anesthesia. It seriously affects patient's satisfaction and the quality of postoperative recovery. However, the consensus on the best drugs or interventions for POST management remains controversial. This study reviews the influencing factors and progress of prevention and treatment of POST intubation under general anesthesia, in order to provide a reference for reducing the incidence of POST after endotracheal intubation under general anesthesia.

Keywords: General anesthesia; Endotracheal intubation; Postoperative; Sore throat; Prevention and treatment; Chinese medicine
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术后咽喉痛(postoperative sore throat, POST)是全身麻醉插管术后常见的并发症,发病率高达 30%~70%[1]。虽然多数 POST 具有自愈性,但它仍是患者全麻后不满意的主要原因之一,会增加患者的不适感,延长住院时间,影响术后恢复质量[2-3]。随着全身麻醉气管插管患者数量的不断增加,加速康复外科和舒适化医疗的迅速发展,POST 的防治越来越受到人们的重视[4]。本文将近期应用于气管插管全麻 POST 的防治措施进行综述,旨在降低全麻气管插管 POST 的发生率,提高患者住院满意度,促进患者早日康复。

1　POST 发生的原因

气管插管术在围术期及危重患者的生命保障中发挥着重要作用,是麻醉及重症医学中应用最广泛、最有效的气道管理手段之一。POST 发生主要归因于侵入性操作,与以下三个原因有关[5]:(1) 喉镜置入过程中对咽喉部的机械性损害;(2) 插管过程中,气管导管与声门及咽后壁的接触引起黏膜损伤;(3) 气管导管套囊压力过大造成呼吸道黏膜缺血坏死。

2　POST 的非药物防治

2.1　*气管导管的种类和插管工具*　研究显示,选用较小型号的导管可降低择期手术患者气管插管后 POST 和声音嘶哑的发生率[6]。此外,Jeon 等[7]研究发现使用硅胶材质的加强型气管导管或双腔管 POST 发生率明显低于聚氯乙烯材质的普通气管导管。由此可见,气管导管的型号和材质均会影响到 POST 的发生率。在气管插管工具的选择上,多项研究表明,与直接喉镜组相比,采用可视化插管工具 POST 发生率更低[8-9]。Inoue 等[10]研究表明,与经验丰富的麻醉医师插管相比,受训者进行单腔气管插管并未改变 POST 和声音嘶哑的发生率。而日本一项回顾性研究对 256 例接受肺切除术的肺癌患者以麻醉医师插管经验为暴露因素,发现与 2 年以上经

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通信作者：薛建军，E-mail: enchill@163.com
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验的高级麻醉医师插管相比，经验不足 2 年的麻醉医师进行双腔气管插管会增加术后 24 h 声音嘶哑的发生率[11]。考虑可能的原因是双腔管比单腔气管导管管径粗，质地较硬，且双腔气管导管在插管后需要多次调整位置，以确保良好的单肺通气及患者安全，且插管位置较深，加大了气管黏膜的损伤。

此外，对于双腔气管插管的患者，插管前将双腔支气管导管置于 40 ℃ 0.9%生理盐水中热软化 10 min，有助于减少与插管相关的气道损伤，显著降低 POST 的发生率和严重程度[12-13]。因此，麻醉前应充分评估气道在保证充分镇静、镇痛及肌松的情况下，根据患者的个体情况选择合适的气管导管，在条件允许的情况下使用可视化的插管工具，尽可能减少引起 POST 的危险因素。

2.2　*气管导管的套囊因素*　研究证实套囊压力和套囊形状与 POST 和声音嘶哑的发生有关[14-15]。气管导管套囊充气的目的是防止正压通气时误吸风险和(或)挥发性麻醉药外逸。然而，套囊长时间的过度充气会影响气管黏膜灌注，导致缺血性坏死、气管破裂、气管食管瘘或喉神经麻痹。Lee 等[2]研究发现套囊压力超过 17 cm H_2O 是 POST 发生的危险因素，低于先前报道的 20~30 cm H_2O 的气囊内压力阈值，可能是由于韩国患者气道的顺应性和受体敏感性不同。Chang 等[15]研究发现使用带有锥形套囊的气管导管在术后 24 h POST 发生率明显低于传统圆柱形套囊的气管导管，可能与锥形套囊的气管导管直径和套囊与气管接触面积较小有关。

2.3　*超声引导下喉上神经内支阻滞*　喉上神经是迷走神经的一个分支，约舌骨大角的水平分为内支和外支。内支支配声门以上咽喉部黏膜的感觉[16]。随着超声可视化技术的应用，超声引导神经阻滞具有定位精确，更高的成功率和更短的操作时间等潜在优势[17]；更重要的是，超声可视化可减少神经阻滞相关并发症[18]。多项研究表明，在喉镜手术和困难气道的清醒气管插管中，超声引导下喉上神经内支阻滞可改善 POST 的严重程度和发生率，并稳定患者的血流动力学反应[19-21]。

3　POST 的药物防治

3.1　*非甾体抗炎药*　非甾体抗炎药具有抗炎、止痛作用。目前非甾体抗炎药是否可以有效防治 POST 尚有争议[22-25]。有研究证实非甾体抗炎药静脉制剂用于预防或治疗 POST 疗效确切[22-24]；且高质量的证据证实外用盐酸苄达胺预防择期手术气管插管成人 POST 疗效优于利多卡因[24]。但 Thang'a 等[25]研究发现在麻醉诱导前 30 min 单次静脉输注 75 mg 双氯芬酸钠并不会显著降低 POST 的发生率或严重程度。为了明确非甾体抗炎药防治 POST 的疗效以便为麻醉医师提供更加合理的选择，建议未来开展关于非甾体抗炎药之间及非甾体抗炎药与其他干预措施比较的大样本、多中心、高质量的随机对照研究。

3.2　*糖皮质激素*　糖皮质激素在抑制炎症的同时能有效缓解症状。Zhang 等[26]基于随机对照试验的 Meta 分析表明，糖皮质激素可显著降低 POST 和声音嘶哑的发生率，并可降低喉水肿和再插管的发生率。高质量的证据表明气管插管中局部应用皮质类固醇在预防 POST 方面优于非镇痛剂和利多卡因[27]。多项研究表明，静脉注射地塞米松可降低术后 24 h POST 的发生率[28-29]。但是，目前的研究重点关注糖皮质激素的治疗作用，很少有研究去关注糖皮质激素是否对患者的免疫系统功能产生抑制，从而增加围术期感染风险。建议未来开展的研究在关注糖皮质激素治疗作用的同时，也应考虑其带来的副作用，为临床实践及指南制定提供循证依据。

3.3　*局部麻醉药*　多项研究表明对气管导管套囊利多卡因碱化或前端涂抹复方利多卡因胶浆及静脉注射利多卡因均可有效降低 POST 的发生风险[30-31]。雾化吸入是利用超声波将液态水汽化使其更容易吸入肺部，同时药物均匀分布在气溶胶中。当气溶胶通过咽喉时，药物与呼吸道黏膜有足够的接触而发挥作用，具有用药剂量小、起效快、咽喉局部药物浓度高、不良反应少等优点。研究发现利多卡因与布地奈德联合雾化吸入，不仅利多卡因对咽喉组织产生麻醉、镇痛作用，阻断神经冲动的产生与传导；且布地奈德能降低毛细血管的通透性，缓解咽喉部充血和炎症反应。二者联合使用，可增强治疗效果，有效降低双腔支气管插管手术患者 POST 的发生率、减轻咽喉痛程度，且无明显不良反应[32]。

3.4　*N-甲基-D-天冬氨酸(NMDA)受体拮抗剂*　近年来，NMDA 受体拮抗剂在降低 POST 方面引起了人们的关注。研究已证实 NMDA 在伤害感受和炎症方面具有重要作用[33-34]。因此，局部应用氯胺酮或镁降低 POST 发生率和严重程度可能的机制与其外周镇痛和抗炎作用有关。一项对 6 种常用预防 POST 外用药物的网状 Meta 分析提示，利多卡因并不是预防 POST 的最佳外用药物[35]。甘草甜素、皮质类固醇、非甾体抗炎药和 NMDA 受体拮抗剂(氯胺酮和镁)可根据麻醉医师的临床经验和患者偏好进行选择，推荐用于减轻 POST。

3.5　*α_2 肾上腺素能受体激动剂*　右美托咪定是一种选择性 α_2-肾上腺素受体激动剂，对呼吸具有剂量依赖性镇静作用，可减轻炎症反应并抑制疼痛信号[36]。插管前联合使用右美托咪定和罗哌卡因进行表面麻醉不仅可显著降低术后咽痛的发生率和严重程度，还可减少麻醉药物的需求和术中血流动力学波动，且无心动过缓和低血压等不良反应[37]。Liu 等[38]对涉及 400 例患者的 9 项 RCT 研究进行 Meta 分析，结果表明围术期静脉注射右美托咪定对预防 POST 有积极作用。

4　中医治疗

大多数采取术前的预防措施持续性效果仍不够理想。因此，如何减少发生从而提高患者的麻醉舒适度，仍然为麻醉医生目前需要解决的问题之一。中医是中国文化的无价之宝，中医药技术在围术期应用广泛，并具有独特优势。近年来，不少学者发现中医外治疗法防治 POST 效果显著。

4.1　*中药*　甘草为豆科植物甘草(亦称乌拉尔甘草)、胀果甘草或光果甘草的干燥根和根茎[39]。甘草制剂已被证明能有效预防和治疗气管插管后的咽喉痛，其含有许多活性成分，主要包括多糖、皂苷、黄酮类化合物等[40]。但目前尚无针对甘

草具体有效成分防治 POST 的研究。因此,对全麻气管插管 POST 发生率高这一临床问题,基于中药甘草抗炎抗氧化等多个药理作用,探讨不同甘草成分对气管插管呼吸道并发症的作用并筛选甘草有效部位,为甘草防治全麻气管插管呼吸道损伤的临床应用提供理论依据。

4.2　穴位刺激技术　目前临床上常用于治疗疼痛的穴位刺激方式主要包括针刺、经皮穴位电刺激、电针、耳穴贴压、穴位按摩等[41]。关于针刺治疗咽喉疾病,早在《内经》中已有论述。中医认为,针刺通过疏通经络、调和气血,可以达到止痛和治病的功效。咽喉是经脉循行交会之处,取大椎、合谷、少商、商阳等穴位点刺放血,可通经活络、消肿止痛,治疗咽喉肿痛有显著的疗效[42]。研究表明,针刺穴位除了改善局部微循环外,还可增加脑内具有镇痛作用的神经递质(脑内吗啡样物质、5-羟色胺、乙酰胆碱),减少拮抗镇痛作用的递质(多巴胺、去甲肾上腺素)来发挥镇痛作用[43]。Jau 等[44]系统评估了穴位刺激是否有助于预防接受全麻气管插管手术的成年患者的 POST,结果表明在全身麻醉下接受气管插管手术的成年患者中,穴位刺激治疗在预防术后 24 h 咽喉痛方面明显优于无穴位刺激或假穴位刺激治疗,穴位刺激可以被认为是加速康复路径中预防 POST 的非药物方法之一。然而,由于受到原始研究数量及质量的限制,后续仍需要开展大样本、多中心的临床试验来明确穴位刺激的有效性及其相关的不良事件。

5　结　语

目前防治 POST 的干预措施大多以术前预防为主,尽管有一定的缓解作用,但是 POST 发生率依旧居高不下。因此,寻找疗效确切且副作用小的临床干预方法已成为研究的新热点。除非药物因素外,局部麻醉药、糖皮质激素及二者联合雾化吸入、超声引导下喉上神经阻滞、NMDA 受体拮抗剂及中医等用于防治 POST 具有较好的疗效。临床上应根据患者的情况和麻醉医师的临床经验结合当前最佳证据进行合理选择,以预防和治疗全麻气管插管的呼吸道不良反应。此外,中医药干预不仅可以有效缓解患者咽痛不适,还可以减少西医治疗带来的副作用,具有很强的实用性。因此,中西医结合防治 POST 的发生是麻醉医师未来重要的研究方向。

利益冲突　无

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IgG4>40 个/HPF,IgG4/IgG>40%。河北医科大学第四医院病理科会诊意见:纵膈淋巴结呈肉芽肿性炎病变。患者纵隔淋巴结免疫组化仍不能除外 IgG4-RD,但结合临床症状、除外结核或其他特殊感染、根据 IgG4-RD 的诊断及排除标准及河北医科大学第四医院病理科会诊意见,考虑患者纵隔淋巴结上皮细胞样肉芽肿样病变为结节病累及纵隔淋巴结,最终诊断患者 IgG4-RD 合并结节病。IgG4-RD 与结节病临床表现均复杂多样,且均可累及多个系统,都需在排除其他疾病的基础上确诊,两者在临床上不易鉴别,极易漏诊、误诊,临床上只有在熟悉两种疾病各自临床表现、实验室检查、病理特征及免疫组化表现的基础上,才能做出正确的诊断。本例 IgG4-RD 合并结节病患者经过糖皮质激素治疗后,预后良好。结节病与 IgG4-RD 的鉴别及诊断需引起重视。

利益冲突　无

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