

术前口服碳水化合物对老年患者术后谵妄影响的研究进展

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摘要

随着人口老龄化, 选择进行外科手术的老年患者逐渐增加, 但由于老年人自身生理变化、术前营养不良及术前长时间禁食等原因, 使老年患者术后谵妄发生率升高。术前碳水化合物作为快速康复外科学(ERAS)范式的当代要素, 作用于预防术后谵妄的发生成为了临床上的研究热点。充分认识术前口服碳水化合物对老年患者的安全性及可行性, 将有助于降低老年患者术后谵妄的发生率, 并且促进老年患者的早日康复。本文就术前口服碳水化合物对老年患者术后谵妄的影响做一综述。

关键词

术前口服碳水化合物, 术后谵妄, 加速康复外科, 老年患者

Advances in Research on the Impact of Preoperative Oral Carbohydrates on Postoperative Delirium in Elderly Patients

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Abstract

With the aging population, the number of elderly patients opting for surgical procedures is steadily increasing. However, due to physiological changes in the elderly, poor nutritional status be-

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fore surgery, and prolonged preoperative fasting, the incidence of postoperative delirium in older patients is increased. Preoperative carbohydrate intake, as a contemporary element of the Enhanced Recovery After Surgery (ERAS) paradigm, has become a clinical research focus for its role in preventing postoperative delirium. Fully understanding the safety and feasibility of preoperative oral carbohydrates in elderly patients could help reduce the incidence of postoperative delirium and promote early recovery in this population. This article provides a comprehensive review of the impact of preoperative oral carbohydrate intake on postoperative delirium in elderly patients.

Keywords

Preoperative Oral Carbohydrates, Postoperative Delirium, Enhanced Recovery after Surgery, Elderly Patients

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1. 引言

术后谵妄(postoperative delirium, POD)是指患者在经历外科手术后 1 周内出现的谵妄, 主要以术后 24 h~72 h 以内为特征[1] [2]。尽管 POD 通常是自限性的, 但若被临床忽视, 未得到相应的治疗及处理, 可能会持续数月或数年, 最终导致日常生活及工作能力受限[3]。一项研究表明, 未经适当治疗的术后谵妄可能导致患者在日常生活活动方面的长期衰退, 以及在术后 36 个月内较高的死亡率[4]。在一项接受心脏手术的老年患者队列中, 住院谵妄与术后 180 天的主观认知能力下降相关[5]。加速康复外科(Enhanced recovery after surgery, ERAS)由丹麦 Henrik Kehlet 教授于 1997 年最先提出, 是以循证医学证据为基础, 通过外科、麻醉、护理、营养等多科室协作, 对围手术期处理的临床路径予以优化, 以缩短住院时长, 减少住院总费用[6]。术前口服碳水化合物是加速康复外科理念的核心机制之一。有一项研究表明营养状况是术后结果的一个强有力的预测因素, 被认为是外科康复计划的一个重要组成部分[7], 而术前口服碳水化合物正是加强择期手术患者营养状态的有效手段。大量研究表明术前摄入减少(存在脱水、电解质紊乱)是术后谵妄发生的独立的危险因素。本文以术前口服碳水化合物和术后谵妄为概述, 术前口服碳水化合物和术后谵妄的相互关系及其管理给予综述, 为今后术前口服碳水化合物的实施、预防术后谵妄提供参考依据。

2. 术后谵妄概述

2.1. 术后谵妄的流行病学

一般而言, 谵妄常见于老年患者, 特别是手术前已有神经、精神合并症的老年患者 [14]。流行病学调查表明, 术后谵妄根据不同的手术类型, 手术时机和诊断标准, 发生率波动范围为 26%~52% [8]。不同报告的发生率差异很大, 如关节置换手术后为 14% [9], 血管手术后为 39% [10], 心脏手术为 46% [11], 而胃肠道手术术后谵妄发生率高达 54% [12]。由于术后谵妄以嗜睡、沉默不语、安静不动和认知分离的“低活动型”为症状, 约其 50%的谵妄不易发现, 常常被临床医生所忽略[13] [14]。

2.2. 术后谵妄的易感因素

术后谵妄是一种非特异性大脑皮质受损[15]。到目前为止, 关于谵妄病理生理机制大多为假设性。综合国内外研究, 术后谵妄的发病与转归受多种因素的共同作用, 主要与以下几方面因素有关。

2.2.1. 年龄

高龄是术后谵妄独立的易感因素。有研究发现, 随着年龄的增加, 尤其是 65 岁以上, 不仅患者的脏器功能、代谢功能下降, 并且术后谵妄发生率明显增加, 与年龄成正比[16]。

2.2.2. 认知功能障碍

术前存在痴呆、认知功能损害、抑郁、焦虑等认知障碍的患者更易于发生术后谵妄[17]。与其相关的基因也可能与谵妄风险增加相关(如 SLC6A3 基因、DRD2 基因、COMT 基因和 NMDA 受体基因) [18]。研究表明低评分的认知功能障碍与术后谵妄风险呈线性关系[19] [20]。术前进行认知功能量表筛查有助于及早发现和识别术后谵妄的高危患者。

2.2.3. 术前摄入减少

患者术前存在虚弱、脱水、电解质紊乱、营养不良、维生素 D 缺乏等的患者术后易发生谵妄[21] [22]。随着社会的老龄化, 老年患者手术治疗的数量显著增加。在该患者群体中, 营养不良的比例已经达到 70% [23]。多项研究表明营养不良被认为是术后谵妄独立的危险因素[23] [24] [25]。

3. 术前口服碳水化合物概述

3.1. 术前口服碳水化合物概念

术前碳水化合物是现代麻醉和外科实践中公认的一项管理措施。这通常包括在对拟实施择期手术的患者, 在术前 2 小时口服适量碳水化合物饮品, 从而改变患者的禁食禁饮状态。ASA 指南建议, 在全身麻醉、区域麻醉或择期手术前 2 小时, 可安全饮用清水, 如水、黑咖啡、红茶和无果肉果汁[26]。因其使用的好处已经得到了充分的证实, 所以将术前口服碳水化合物纳入快速康复围手术期护理途径[27]。

3.2. 术前口服碳水化合物安全性

富含碳水化合物的液体通常含有约 12% 的碳水化合物, 主要以麦芽糊精形式, 以限制渗透压和防止胃排空延迟[28]。为了避免反流误吸, 预估手术前胃内容物的最大体积不应超过 200 mL [29]。一项研究显示老年(>65 岁)胃肠道手术患者术前 2 小时口服 200 ml 碳水化合物虽可以增加麻醉前胃容量, 但并不增加反流误吸的风险。另一项的 meta 分析显示, 传统的禁饮禁食和术前 2 小时禁食之间的胃内容物的体积和 pH 几乎相同, 而且富含碳水化合物的溶液都能在大约 90 分钟内排空。经 Cochrane Review 仔细研究后, 得出结论: 使用 2 小时透明液体限值时, 未报告任何吸入性肺炎病例[30]。欧洲麻醉学会(ESA)指南指出术前禁食时间推荐为 6 h, 术前禁饮时间推荐为 2 h, 这建议与美国麻醉医生协会、加拿大麻醉医生协会基本一致, 该指南还指出肥胖、胃食管反流或糖尿病患者和/或未分娩的孕妇可在麻醉前 2 小时内安全进食液体[31]。还有一项在接受全膝或髋关节置换术的老年人中, 术前口服碳水化合物不会影响胰岛素抵抗或胃容积。从而证明了术前碳水化合物负荷是安全的[32]。另外还有一项基于儿童的研究, 在麻醉诱导前 2 小时内可以安全地允许使用无果肉果汁形式的富含碳水化合物的饮料, 因为它促进了儿童的胃排空, 尽管胃残余量(GRV)在摄入果汁后 2 小时略高于空腹, 但仍远低于胃风险限值[33]。这些均证明了术前口服碳水化合物应用于手术患者是安全可行的。

3.3. 术前口服碳水化合物有效性

3.3.1. 降低胰岛素抵抗和肌肉保存

当术前 2 小时口服碳水化合物时, 合成代谢途径起主导作用, 恢复糖原, 增加肌肉对葡萄糖的摄取, 升高胰岛素, 停止蛋白质分解代谢[34]。已有研究显示手术前碳水化合物可降低胰岛素抵抗[35] [36]。DMII

患者耐受 CHO, 但不会增加胰岛素需求或显著影响血糖水平或并发症[37]。术前口服碳水化合物也可以减少静脉输入液量, 同时刺激胰岛素分泌作用更明显, 胃残留量较低, 有益于患者的心脏功能, 可对术后代谢应激反应产生积极作用[38]。

3.3.2. 缩短住院时间

一项大型荟萃分析($n = 1976$)得出了术前口服碳水化合物可以缩短住院时间, 但是发病率没有统计学意义[39]。一项单独的荟萃分析发现, 腹部大手术后的总住院时间缩短了 30%至 50% [40]。以上所述, 均支持 ERAS 理念下的术前口服碳水化合物的实施不仅减少患者住院时间同时降低住院费用。

3.3.3. 减少术前主观不适感及增加术后恢复

基于欧洲临床营养与代谢学会(ESPEN)对结肠手术围手术期护理进行了全面的分析证实术后口服碳水化合物可降低如口渴、饥饿、焦虑等主观不适感[41] [42]。与术前禁食相关, 术前碳水化合物负荷可以提高结直肠癌手术后恢复[43]。

3.3.4. 提高患者的满意度和幸福感

长期以来术前禁饮禁食, 会使患者感到口渴, 饥饿等不适感。为了优化这一方面, 在腹部和心脏手术中发现: 术前口服碳水化合物降低了患者口渴, 饥饿感; 并且不会增加围手术期并发症[44]。最新一项研究表明, 在进行无痛结肠镜检查前 2 小时口服摄入富含碳水化合物的饮料 5 毫升/公斤, 病人的舒适度和满意度可以进一步改善[45]。

4. 术前口服碳水化合物与术后谵妄的关系

研究分析 692 名年龄在 65 岁或以上的择期手术患者, 得出通过术前口服碳水化合物可以预防术后谵妄的发生, 也证实了术后谵妄是衰弱老年患者常见的并发症, 它会造成老年人长期认知和功能下降的结局[46]。一项髌骨骨折研究表明进行术前老年综合评估的患者包括术前营养评估, 不仅缩短了术前等待时间和总住院时间, 提高了 48 小时手术率, 还降低了术后谵妄的发生率[25]。目前已经证实泌尿外科和骨科手术的老年患者接受术前营养干预的有益于术后谵妄和其他老年综合征的发生率。术前营养不良被认为是术后谵妄的独立且危险因素。在老年非心脏手术中, 与营养状况正常($PNI \geq 50$)的患者相比, 轻度营养不良($PNI 45 \sim 50$)不会增加术后谵妄的风险, 而中度至重度营养不良($PNI 40 \sim 45$)和严重营养不良($PNI < 40$)的患者更容易发生术后谵妄[47]。术前口服碳水化合物是有效的改善营养不良的围手术期营养计划措施, 这一举措可以将术后谵妄的发生率降低 30%~50% [48]。但是一项接受选择性普通、妇科肿瘤和骨科手术的患者(≥ 75 岁)实行围术期营养干预, 结果显示接受围术期营养干预措施组的术后谵妄较少, 但是没有统计学意义[49]。根据目前的文献显示, 老年患者对应激源反应受损, 如果围手术期进行早期动员和营养支持, 可以降低术后谵妄的风险[50]。今后, 需更多的临床研究来进一步验证术前口服碳水化合物对术后谵妄的影响以及其作用机制。

5. 术前口服碳水化合物与术后谵妄的管理

术前口服碳水化合物作为加速康复外科的对当代要素, 长期以来被认为是教条的东西, 作为预防术后谵妄的术前优化措施仍未得到临床医生足够的重视[44]。还因为患者对术前口服碳水化合物所带来的益处认知不足, 导致患者对其不配合甚至抗拒, 造成术前口服碳水化合物在临床的实施和患者的依从性相当低[28] [51]。因此, 由外科医生、麻醉医生和其他医务人员等多科室的共同协作实施管理, 环环相扣, 这不仅可以提高医护人员对患者围手术期营养管理的重视, 也可以使更多患者受益, 最大程度降低术后谵妄发生率。

6. 小结

目前国内外对于术前口服碳水化合物与术后谵妄预防的认识和研究相对欠缺。尤其在 COVID-19 大流行期间, 由于老年患者体质虚弱和手术等待时间延长, 术后谵妄发生率随之增加。从我们的角度来看, 未来的方向旨在培养专业的谵妄团队, 全方位完善围术期干预策略, 制定个体化营养治疗, 从而预防术后谵妄, 防止功能下降, 并允许老年人以最大程度的独立性回家。

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