



Title	Early achievement of walkability after cardiac surgery and the risk of cardiovascular disease after hospital discharge
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論文内容の要旨  
Synopsis of Thesis

氏 名 Name	河村 知範
論文題名 Title	Early achievement of walkability after cardiac surgery and the risk of cardiovascular disease after hospital discharge (心臓手術後患者の早期歩行再獲得と退院後の循環器疾患イベントリスクとの関連について)
論文内容の要旨 〔目的(Objective)〕 This study aimed to examine whether early attainment of walkability after cardiac surgery is associated with a reduced risk of long-term cardiovascular events, particularly heart failure readmissions. While previous research has shown that early mobilization post-surgery can reduce complications and shorten hospital stays, evidence regarding its impact on long-term cardiovascular outcomes after discharge is limited. Therefore, this study focused on how early walkability achievement might influence cardiovascular outcomes over an extended follow-up period. 〔方法ならびに成績(Methods/Results)〕 In a prospective cohort study, 553 patients who underwent cardiac surgery at Kishiwada-Tokushukai Hospital between 2014 and 2018 were included. Patients who were unable to walk, underwent multiple surgeries, or took more than six days post-surgery to walk were excluded. Based on the day patients achieved a walking distance of 100 meters post-surgery, they were categorized from day 1 through day 5. Rehabilitation followed JCS/JACR guidelines, progressing from passive movement to independent walking. Physical function was evaluated at discharge through grip strength, walking speed, and the short physical performance battery (SPPB). Cardiovascular outcomes included ischemic heart disease, hospitalizations due to heart failure, stroke, infective endocarditis, arrhythmias, sudden cardiac death, and valvular disease progression. The primary endpoint was the incidence of cardiovascular events, with a median follow-up of 3.3 years. Out of 553 patients, 69 patients (12%) achieved walkability on day 1, and 196 (35%) achieved it by day 2. During follow-up, 118 patients (21%) experienced cardiovascular events, with 35 (6%) hospitalizations for heart failure and 28 (5%) cases of ischemic heart disease. Kaplan-Meier analysis showed that patients who could walk within two days post-surgery had significantly lower risks of readmission due to heart failure. Even after adjusting for factors like age, preoperative physical condition, and surgical details, early mobilization was associated with a significant reduction in heart failure readmissions. The adjusted hazard ratio (HR) indicated that achieving walkability within two days post-surgery was protective against heart failure readmissions compared to those who achieved it later. No significant associations were found between early mobilization and other cardiovascular events, though trends suggested potential benefits for various cardiovascular conditions. Early mobilization was also associated with better physical performance at discharge, including higher grip strength and faster walking speeds. Improved physical function at discharge has been shown to maintain activity levels, potentially preventing frailty and aiding in daily living activities. In this study, patients who achieved early walkability demonstrated better motor function at discharge, which may have contributed to improved long-term outcomes. 〔総括(Conclusion)〕 Early achievement of walkability following cardiac surgery is linked to a reduced risk of cardiovascular events, especially in decreasing heart failure-related readmissions. These findings highlight the importance of postoperative mobility and rehabilitation in predicting cardiovascular health post-discharge, supporting JCS/JACR guidelines for rehabilitation. Although this observational study cannot establish causation, the evidence suggests that achieving early independent walking may improve patient prognosis. Future research should further investigate whether enhanced early mobilization protocols could reduce long-term cardiovascular risks.	

論文審査の結果の要旨及び担当者

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論文審査の結果の要旨

心臓手術後を受けた患者がいかに早く歩行できるようになるかは患者にとって重要な生活機能の再獲得であるばかりでなく、退院後に新たに心血管疾患を発症するリスクとの関連が示唆されているが本法ではこの点についての詳細なエビデンスは稀有であった。本研究は、心臓手術を受けた外来患者を対象とした前向きコホート研究であり、心臓手術の何日目に歩行能力100m以上を達成したか、に基づいてその後3年の間追跡した貴重な疫学研究である。生存分析によって、交絡因子を考慮した多変量解析を用いて歩行能力獲得までの期間が早いこと、特に2日目までに歩行能力100m以上を達成した際に最も心血管疾患リスク、特に心不全のリスクが低く、同時にそれを支持するように歩行能力獲得までの日数が長くなるにつれてその関連が消失する方向にある傾向を明らかにした。これらの結果は、従来臨床の現場で示唆されてきた知見を前向き研究によって明らかにし、さらにその後の心血管疾患リスクの評価にも重要な示唆を与えるものである。以上より本論文は学位に値するものと考えられる。