

テロメアは心臓の若さの指標になるか？

Telomere Length as a Potential Indicator of Heart Aging

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Key Words

- 心筋
- テロメア
- 加齢 (エイジング)
- 心疾患
- 心重量
- 病理解剖

Summary

Myocardium is a relatively static tissue in terms of cell turnover, but no previous studies have addressed its telomere status. Using Southern blot analysis, we attempted to clarify myocardial telomere dynamics using samples from 530 autopsied patients. Overall regression analysis of myocardial tissue demonstrated a yearly telomere reduction rate of 20 base pairs. There was a significant correlation between myocardial telomere length and aging ($p < 0.001$). Moreover, regression analysis of telomere length and heart weight yielded a telomere reduction rate of 3 base pairs per gram ($p = 0.001$), and demonstrated a small but significant correlation between the telomere reduction rate and heart weight. Hearts of autopsied patients who had died of heart disease were significantly heavier than those of patients who had died of cancer or other diseases ($p < 0.001$), and heart disease was significantly more correlated with myocardial telomere shortening than cancer ($p = 0.021$) or other diseases ($p = 0.093$). This study has demonstrated that telomeres in myocardial tissue become shortened with aging and heart disease. We found that heart disease was associated with a gain of heart weight and telomere shortening in myocardium. Our findings suggest that although myocardium may have the capacity to regenerate and proliferate in response to heart disease within the human lifespan, any such regeneration would be limited because of the very slow rate of myocardial tissue replacement. As various attempts to regenerate the injured heart are now ongoing using cardiac stem cells, cellular reprogramming and tissue engineering, our present results could lead to a better understanding of how to treat or prevent heart failure.



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細胞レベルの研究から病気へアプ
ロチしたいと考えています。テロメアの研究
を通じて病理学, 生物学を俯瞰してい
きたいです。