

CARDIAC SURGERY IN NONAGENARIANS: AGE IS NOT A CONTRAINDICATION

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Introduction

The average age of the American population is rapidly increasing as the elderly population is its fastest growing segment.[1] Studies suggest that heart surgery in older patients can improve health status and quality of life.[2] There are only a few reports which discuss cardiac surgery survival benefits for nonagenarians. [3-5] The goal of our study was to evaluate the morbidity and mortality of cardiac surgery in a patient population group of extreme age.

Methods

Records were reviewed for all patients in our institution since 1992 who have had a CABG, valve replacement or combination procedure. Fentanyl, midazolam, isoflurane, oxygen and muscle relaxant were used as general anesthetic in all cases. The records of these patients were reviewed and perioperative morbidity recorded. These results were confirmed by correlation with the data recorded in the New York State Database. Survival data were obtained from social security number inquiry.

Results

Between 1992 and 2002, 12 females and 3 males over the age of 90 underwent cardiac surgery. Seven patients underwent CABG, five valve replacement only and three had a combination of a valve procedure and CABG. Only three of the cases were performed electively.

Average age was 91 ± 1 years (90 to 96).
Preoperative ejection fraction was $47 \pm 14\%$ (15 to 60).
CABG procedures averaged 3.1 ± 1.2 distal anastomoses.

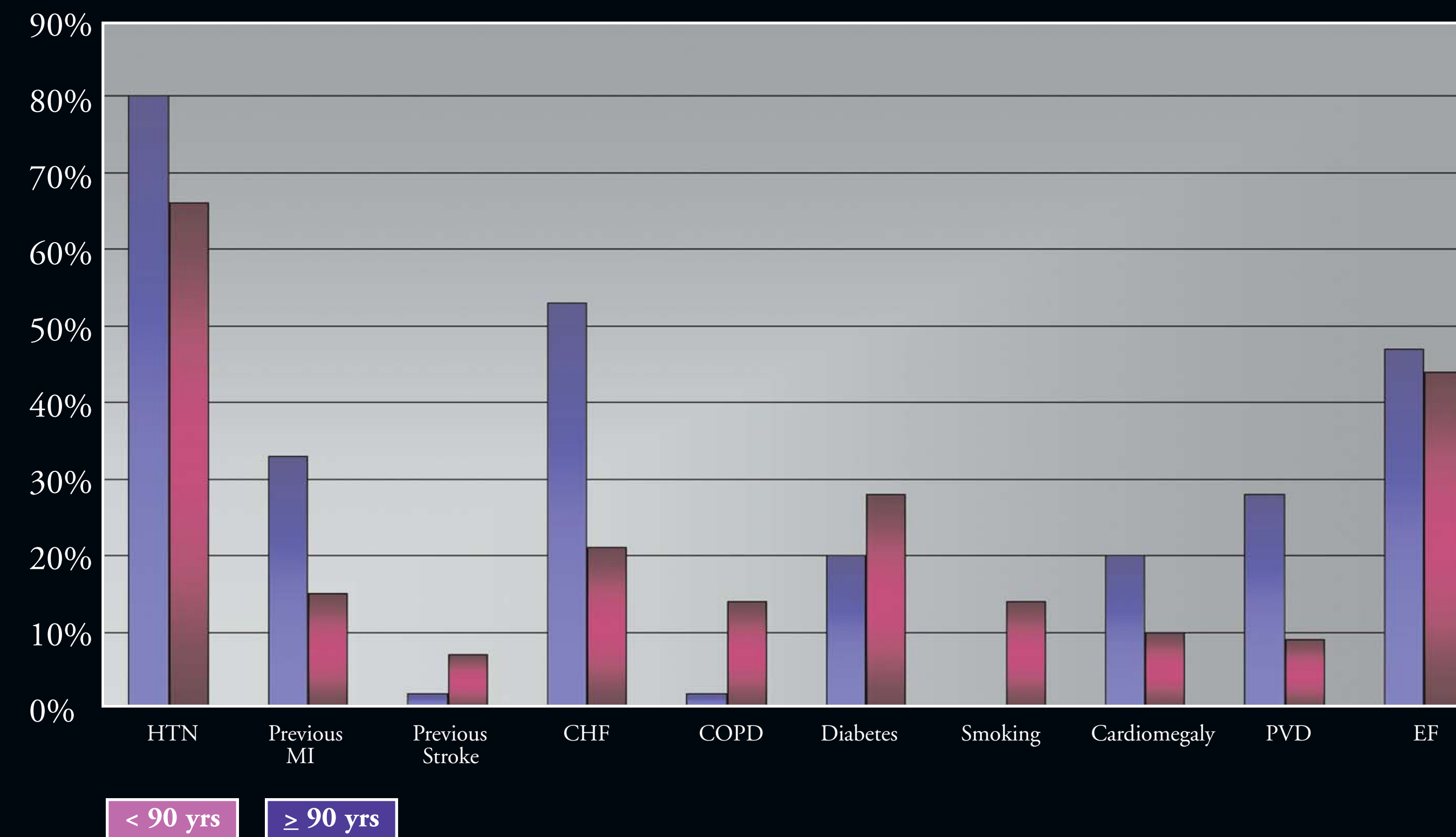
The most common risk factors were:

HTN (80%)
History of CHF (53%)
History of a previous MI (33%)
Peripheral Vascular Disease (27%)

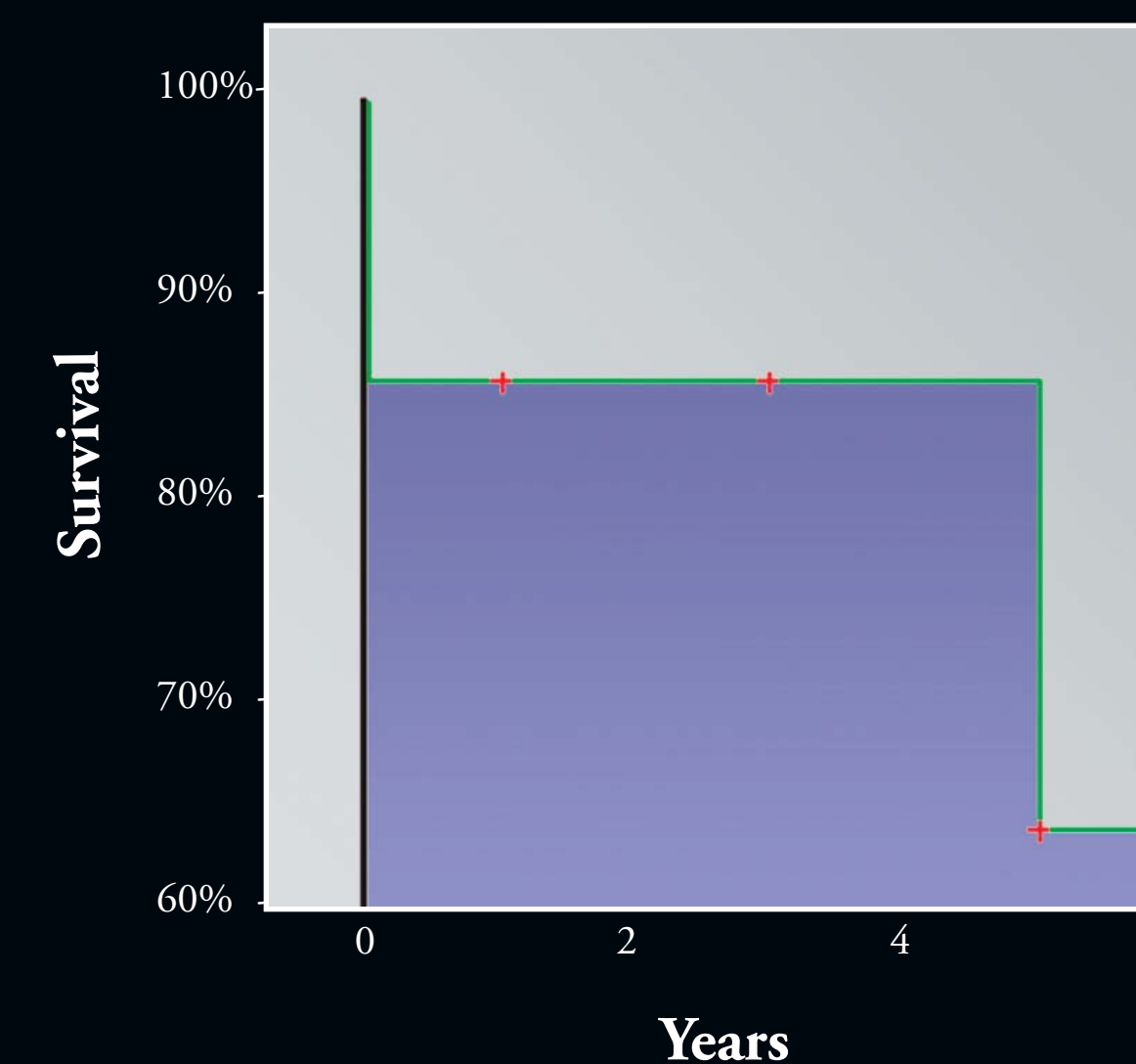
For the 13 patients who required cardiopulmonary bypass (CPB), average CPB time was 120 ± 38 minutes (range 54 to 190 minutes).

The only perioperative complications were respiratory failure 13%.

Risk Factor Comparison between Nonagenarian and Non-Nonagenarian Patients



Kaplan-Meier Survival Data for Nonagenarians



Length of follow-up averaged 5 ± 3 years.

Two patients had early post-operative respiratory failure (13%) and died within 30 days.

Three other deaths were recorded at 4, 6, and 8 years post-op.

To date, there have been a total of 5 deaths in 15 patients.

Discussion

Our data suggests that extreme age is not an independent exclusion factor for cardiac surgery. Although patients shared common risk factors, our sample size was too small to discern any significant negative predictive values using logistic regression. Although we had fewer perioperative complications, overall cumulative survival was similar to prior studies. [3-5]

Approximately 10% of U.S. healthcare expenditures are dedicated to heart disease. The average cost of treatment for heart disease is more than four times higher for persons age 75 compared to persons ten years younger. [6] Improvements in medical care have changed expectations for both patients and health care specialists.

Despite their advanced age, the nonagenarians' rates of COPD, diabetes and previous stroke were lower than our institution's average. Their average ejection fractions were slightly higher and there were no histories of smoking in our study population. Patient selection had a definite role in our positive outcome. Important issues for the future are further studies to refine selection criteria.

Conclusion

Cardiac surgery and cardiopulmonary bypass can be performed safely in nonagenarians. Significant long-term survival can be achieved in selected patients.

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