

ORIGINAL RESEARCH

# On the Natural History of Coronary Artery Disease: A Longitudinal Nationwide Serial Angiography Study

Morhan A. Mohammad , MD, PhD; Gregg W. Stone , MD; Sasha Kout, MD, PhD; Göran K. Olivecrona , MD, PhD; Sofia Bergman , MD; Jonas Persson, MD, PhD; Thomas Engström, MD, PhD; Ole Fröbert, MD, PhD; Tomas Jernberg , MD, PhD; Elmir Omerovic , MD, PhD; Stefan James , MD, PhD; Göran Bergström, MD, PhD; David Erlinge , MD, PhD

**BACKGROUND:** The long-term course of coronary atherosclerosis has not been studied in large nationwide cohorts. Understanding the natural history of coronary atherosclerosis could help identify patients at risk for future coronary events.

**METHODS AND RESULTS:** All coronary artery segments with <50% luminal stenosis in patients with a first-time coronary angiogram between 1989 and 2017 were identified ( $n=2661245$  coronary artery segments in 248736 patients) and followed until a clinically indicated angiography within 15 years was performed or until death or end of follow-up (April 2018) using SCAAR (Swedish Coronary Angiography and Angioplasty Registry). The stenosis progression and incidence rates were 2.6% and 1.45 (95% CI, 1.43–1.46) per 1000 segment-years, respectively. The greatest progression rate occurred in the proximal and middle segments of the left anterior descending artery. Male sex and diabetes were associated with a 2-fold increase in risk, and nearly 70% of new stenoses occurred in patients with baseline single-vessel disease (hazard ratio, 3.86 [95% CI, 3.69–4.04]). Coronary artery segments in patients with no baseline risk factors had a progression rate of 0.6% and incidence rate of 0.36 (95% CI, 0.34–0.38), increasing to 8.1% and 4.01 (95% CI, 3.89–4.14) per 1000 segment-years, respectively, in patients with  $\geq 4$  risk factors. The prognostic impact of risk factors on stenosis progression was greatest in younger patients and women.

**CONCLUSIONS:** Coronary atherosclerosis progressed slowly but more frequently in the left coronary artery in men and in the presence of traditional risk factors. Coronary artery segments in patients without risk factors had little or no risk of stenosis progression, and the relative impact of risk factors appears to be of greater importance in younger patients and women. These findings help in the understanding the long-term course of coronary atherosclerosis.

**Key Words:** coronary artery disease ■ ischemic heart disease ■ natural history

The long-term course of coronary atherosclerosis has not been studied in large cohorts. Information derived from autopsies of US soldiers killed in the Korean war showed that 40% had some degree of luminal narrowing.<sup>1</sup> Postmortem and intravascular ultrasound studies have shown that most acute coronary events coincide with thrombosis of a coronary atherosclerotic plaque caused by either rupture or erosion.<sup>2–5</sup> The prospective PROSPECT II (Providing Regional

Observations to Study Predictors of Events in the Coronary Tree) reported that major adverse cardiovascular events emanates from untreated angiographically mild coronary lesions with a large plaque burden with a lipid-rich core.<sup>4</sup> Small serial examination studies using coronary angiography and coronary computed tomography angiography (CCTA) have been conducted but follow-up time has primarily been in the range of 1 to 2 years.<sup>6–10</sup>

Correspondence to: Morhan A. Mohammad, MD, PhD, Department of Cardiology, Skåne University Hospital, Ertegratan 7, 22185 Lund, Sweden. Email: morhan.abaddin@gmail.com or morhan.mohammad@med.lu.se

Supplemental Material is available at <https://www.ahajournals.org/doi/suppl/10.1161/JAHA.122.026396>

For Sources of Funding and Disclosures, see page 12.

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# Natural History Of Coronary Atherosclerosis

**Yan Bai**

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## **Natural History Of Coronary Atherosclerosis:**

## **Natural History Of Coronary Atherosclerosis** Book Review: Unveiling the Power of Words

In a global driven by information and connectivity, the energy of words has are more evident than ever. They have the capability to inspire, provoke, and ignite change. Such may be the essence of the book **Natural History Of Coronary Atherosclerosis**, a literary masterpiece that delves deep into the significance of words and their affect our lives. Compiled by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we will explore the book is key themes, examine its writing style, and analyze its overall impact on readers.

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### **Table of Contents Natural History Of Coronary Atherosclerosis**

1. Understanding the eBook Natural History Of Coronary Atherosclerosis
  - The Rise of Digital Reading Natural History Of Coronary Atherosclerosis
  - Advantages of eBooks Over Traditional Books
2. Identifying Natural History Of Coronary Atherosclerosis
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Natural History Of Coronary Atherosclerosis
  - User-Friendly Interface
4. Exploring eBook Recommendations from Natural History Of Coronary Atherosclerosis
  - Personalized Recommendations
  - Natural History Of Coronary Atherosclerosis User Reviews and Ratings
  - Natural History Of Coronary Atherosclerosis and Bestseller Lists

5. Accessing Natural History Of Coronary Atherosclerosis Free and Paid eBooks
  - Natural History Of Coronary Atherosclerosis Public Domain eBooks
  - Natural History Of Coronary Atherosclerosis eBook Subscription Services
  - Natural History Of Coronary Atherosclerosis Budget-Friendly Options
6. Navigating Natural History Of Coronary Atherosclerosis eBook Formats
  - ePub, PDF, MOBI, and More
  - Natural History Of Coronary Atherosclerosis Compatibility with Devices
  - Natural History Of Coronary Atherosclerosis Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Natural History Of Coronary Atherosclerosis
  - Highlighting and Note-Taking Natural History Of Coronary Atherosclerosis
  - Interactive Elements Natural History Of Coronary Atherosclerosis
8. Staying Engaged with Natural History Of Coronary Atherosclerosis
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Natural History Of Coronary Atherosclerosis
9. Balancing eBooks and Physical Books Natural History Of Coronary Atherosclerosis
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Natural History Of Coronary Atherosclerosis
10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
11. Cultivating a Reading Routine Natural History Of Coronary Atherosclerosis
  - Setting Reading Goals Natural History Of Coronary Atherosclerosis
  - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Natural History Of Coronary Atherosclerosis
  - Fact-Checking eBook Content of Natural History Of Coronary Atherosclerosis
  - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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