Can Barker’s Hypothesis Explain the Observed Different Trends of Mortality from Atherosclerotic Cardiovascular Disease in Western Europe?

Mahin Ghafari, Roya Kelishadi¹, Masoud Amiri²

Department of Public Health, Social Health Determinants Research Center, School of Health, Shahrekord University of Medical Sciences, Shahrekord, Iran, ¹Department of Pediatrics, Child Growth and Development Research Center, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran, ²Department of Epidemiology and Biostatistics, Social Health Determinants Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Date of Submission: Sep 23, 2013
Date of Acceptance: Oct 08, 2013

There are many hypothesis to explain the relationships between some factors in an earlier time and diseases in later time like salt hypothesis.¹ The effects of early life conditions and diseases in later life have been studied in several studies.²⁻⁷ Little experience exists on the possible impact of early life circumstances on trends in mortality from atherosclerotic cardiovascular diseases within national populations.

We performed a time series analysis with special attention to cohort patterns.⁸ We studied mortality trends from ischemic heart disease (IHD) and stroke in relation to infant mortality rate (IMR) in birth cohorts born between 1860 and 1939 in seven low-mortality European countries, observing a general cohort-wise decline in mortality from stroke in all countries and in both sexes, compared with an epidemic pattern of change for IHD. While the trends in IHD mortality were not strongly correlated with the IMR in subsequent cohorts, strong and positive correlations were observed for stroke.

The factors that explain the different trends for IHD in comparison with stroke are not fully understood but may be related to a relatively greater impact of smoking and serum cholesterol on IHD mortality compared to stroke mortality. Although IHD and stroke share key risk factors such as high blood pressure, tobacco use and overweight,⁹,¹⁰ the strength and directions of the associations may be different for the two diseases. The discrepancy in trends for IHD and stroke warns against too strong statements regarding the effect of early living conditions.

Furthermore, we observed a strong relationship between cohort-trends in both stroke mortality and IMR in European low-mortality countries.⁸ Although determining the exact contribution of living conditions in early life to national trends in stroke mortality remains difficult to ascertain, this association is in line with evidence from individual level studies.¹¹,¹² It suggests that living conditions earlier in life may have had an effect on the mortality experience of national cohorts and that changes over time in these living conditions may have contributed to the secular decline in stroke mortality. We conclude that cohort patterns should be considered when studying secular trends in mortality from cardiovascular diseases.

The “fetal origin” hypothesis or “Barker’s hypothesis”¹³⁻¹⁴ states that the risk of stroke could increase by maternal influences associated with...
poverty, a hypothesis, however, that is contested by others. Similarly, population-based studies have suggested that early life factors may be important determinants of the trends and geographical differences in mortality from cardiovascular disease in adults. The Barker's hypothesis can explain well the trends of stroke mortality; however, it is not appropriate for IHD. It seems that for IHD, another hypothesis can explain much better. For instance, the “accumulation of risk” model assumes that health at old ages is the result of exposures to risk factors not only in early life, but also across lifetime, which could explain the IHD mortality trends.

REFERENCES

Source of Support: Nil, Conflict of Interest: None declared.