

## The 1918 influenza and 20th century CHD

First published online 4 June 2010

Dear Editor,

As a medical doctor studying, since 1990, the role of influenza as a determinant of the 20th century rise in CHD mortality, I welcome the publication in this journal of other papers also suggesting an association between the 1918 influenza pandemic and CVD occurrence.<sup>1</sup>

While our target birth cohorts and methodology were different, the underlining idea behind our studies was the same: that influenza priming would have a role in the differential birth cohort distribution of CHD and CVD events later in life.

Mazumder *et al.*<sup>1</sup> used the 1918–1919 pandemic as a natural experiment to test the hypothesis of increase in late CVD effects among those that were intra-uterus during the height of the 1918 pandemic.

I had been looking for a possible cause for the increase in the world population vulnerability to CHD, from the 1940s to the 1980s. In 1990, I found a clue to the puzzle, and in 1994 I presented, for the first time, the hypothesis of association between 20th century CHD mortality and the 1918 influenza pandemic.<sup>2</sup> But to explain the CHD epidemic in the United States, I looked not at the 1918–1919 birth-cohorts but at the ones that had been hit hardest by the influenza pandemic of 1918–1919: those born around 1890. If our chronology of the recycling of influenza viruses is right, it would indicate the 1890 pandemic (H3 virus) as the initiator of vulnerability, both to the 1918 pneumonia deaths and to the 20th century rise in CHD mortality, upon reinfections with different subtypes (H1–H2?) of influenza viruses.<sup>3</sup>

Mazumder *et al.*'s<sup>1</sup> findings are very interesting. Based on my previous studies, I would not expect H1 infections, supposedly dominant in 1918–1919, to initiate CHD. But their findings would agree with the idea of co-circulation of H1 and H3 viruses in 1918.<sup>4</sup>

Since 2000–2004, there has been a growth of investigations tackling the link between influenza and CHD. A recent paper by Warren-Gash *et al.* does an excellent job of reviewing these studies.<sup>5</sup>

The 2009 H1N1 pandemic is giving us the opportunity of widely reevaluating the role of infection and particularly of influenza on CHD causation. These may be exciting times!

I here anticipate that this new pandemic will foster a revolution in our knowledge regarding disease causality.

Maria Ines Azambuja  
Universidade Federal do Rio Grande do Sul  
Rua Ramiro Barcelos 2600  
4/420, Porto Alegre, RS. Brazil  
miazambuja@terra.com.br

### References

1. Mazumder B, Almond D, Park K, Crimmins EM, Finch CE. Lingering prenatal effects of the 1918 influenza pandemic on cardiovascular disease. *J Dev Orig Health Dis.* 2010; 1, 26–34.
2. Azambuja MI. Inflammation as the cause of coronary heart disease. *Lancet Infect Dis.* 2010; 10, 142–143.
3. Azambuja MI, Achutti AA, Levins R. The inflammation paradigm: towards a consensus to explain coronary heart disease mortality in the 20th century. *CVD Prev Control.* 2008; 3, 69–76.
4. Azambuja MI. A parsimonious hypothesis to the cause of variations in influenza lethality in 1918–19 and 2009. *Med Hypothesis.* 2010; 74, 681–684.
5. Warren-Gash C, Smeeth L, Hayward AC. Influenza as a trigger for acute myocardial infarction or death from cardiovascular disease: a systematic review. *Lancet Infect Dis.* 2009; 9, 601–610.

To the Editor,

My co-authors and the reviewers were not aware of Dr Azambuja's prior report. We would have included it in our discussion.

Sincerely,

Caleb E. Finch  
Andrus Gerontology Center  
University of Southern California  
cefinch@usc.edu