

LETTER TO THE EDITOR

Low prevalence of ischemic heart disease in rural coastal Ecuador: an issue of high mortality rate?

E Peñaherrera¹, F Pow-Chon-Long¹, OH Del Brutto²

¹Department of Cardiology, Hospital Luis Vernaza, Guayaquil, Ecuador

²Universidad Espiritu Santo, Ecuador

Submitted: 12 April 2013; Revised: 11 July 2013; Accepted: 11 July 2013; Published: 16 February 2014

Peñaherrera E, Pow-Chon-Long F, Del Brutto OH

Low prevalence of ischemic heart disease in rural coastal Ecuador: an issue of high mortality rate?

Rural and Remote Health 14: 2623. (Online) 2014

Available: <http://www.rrh.org.au>

Dear Editor

Ischemic heart disease (IHD) will be one of the next health epidemics in rural areas of Latin America due to increased life expectancy and changes in lifestyle of the population. Knowledge on prevalence, incidence, and mortality rates of IHD is important to implement cost-effective strategies directed to reduce the burden of this condition. However, there is scarce and somewhat contradictory information on the epidemiology of IHD in the region¹. Here, we report the basal findings of the Atahualpa Project, a multi-step population-based study designed to reduce the burden of IHD in rural coastal Ecuador.

Methodology of the Atahualpa Project has been detailed elsewhere^{2,3}. In brief, trained field personnel performed a door-to-door survey to evaluate the cardiovascular status of all Atahualpa residents aged ≥ 40 years, and to apply a

validated Spanish translation of the Rose questionnaire directed to identify persons with suspected IHD⁴. Using this simple screening instrument, persons are considered as 'suspected cases' if their response to one of two questions is affirmative. Thereafter, certified cardiologists examined all individuals who were screened as suspected cases, as well as two randomly selected persons who were considered as non-suspected cases during the screening phase (matched by age and gender to the suspected cases); such evaluation also included a 12-lead ECG and a treadmill test performed in the field. Cardiologists were blinded as to whether the individual was a suspected case or a non-suspected control, and IHD was diagnosed by clinical judgment and ECG findings.

The census yielded 642 Atahualpa residents aged ≥ 40 years (41% men; mean age, 59.1 ± 12.6 years). The questionnaire revealed 12 persons with suspected IHD. Evaluation by cardiologists showed that six of these subjects were confirmed cases. Examination of 24 non-suspected



individuals disclosed no further cases, yielding the questionnaire a sensitivity of 100% (95% confidence interval (CI) 52–100%), a specificity of 80% (95% CI 61–92%), a positive predictive value of 0.5 (95% CI 0.22–0.78), and a negative predictive value of 1 (95% CI 0.83–1). Crude prevalence of IHD in subjects aged ≥ 40 years was 9.34%. The six patients with IHD had a mean age of 65.5 ± 8.2 years, and five were women; all of them had experienced the event in the past 10 years.

To get more insights of this low prevalence of IHD in the population, we looked at death certificates at the civil register office of the village. After reviewing a total of 139 death certificates of people aged ≥ 40 years from 2003 to 2012, we found that 24 (17.3%) of them were attributed to an ‘acute myocardial infarction’, and signed by a physician. Despite the biases of a retrospective search of death certificates, this suggests that Atahualpa (and probably other rural areas of the region) has been going through a process of epidemiologic transition during the past decade, where an age of ‘pestilence and famine’ has been replaced by an age of ‘receding pandemics’⁵. It is known that increasing mortality rates may result in low prevalence of a given condition as determined by cross-sectional studies. An ongoing prospective study in Atahualpa residents will determine the true incidence and mortality of IHD, and will help to reduce the burden of this condition in the population at large⁶.

External funding

This study was partially supported by an unrestricted grant from Universidad Espíritu Santo – Ecuador. The sponsor had no role in the design of the study, nor in the collection, analysis, and interpretation of data.

Ernesto Peñaherrera,^{1,2} Freddy Pow-Chon-Long,²

Oscar H. Del Brutto¹

¹School of Medicine, Universidad Espíritu Santo – Ecuador, ²Department of Cardiology, Hospital Luis Vernaza, Guayaquil, Ecuador

References

1. Zaman MJS, Lorte de Mola C, Gilman RH, Smeeth L, Miranda JJ. The prevalence of angina symptoms and association with cardiovascular risk factors, among rural, urban and rural to urban migrant populations in Peru. *BMC Cardiovascular Disorders* 2010; **10**: 50.
2. Del Brutto OH, Peñaherrera E, Ochoa E, Santamaría M, Zambrano M, Del Brutto VJ. Door-to-door survey of cardiovascular health, stroke, and ischemic heart disease in rural coastal Ecuador – the Atahualpa Project: methodology and operational definitions. *International Journal of Stroke* (Online) 2013. Available: doi 10.1111/ijss.12030 (Accessed 7 February 2014).
3. Del Brutto OH, Santamaría M, Ochoa E, Peñaherrera E, Santibáñez R, Pow-Chon-Long F, et al. Population-based study of cardiovascular health in Atahualpa, a rural village of coastal Ecuador. *International Journal of Cardiology* (Online) 2013. Available: doi 10.1016/j.ijcard.2013.01.017 (Accessed 7 February 2014).
4. López-Bescós L, Cosín J, Elosua R, Cabadés A, de los Reyes M, Arós F, Diago JL, et al. Prevalencia de angina y factores de riesgo cardiovascular en las diferentes comunidades autónomas de España: estudio PAMES. *Revista Española de Cardiología* 1999; **52**: 1045-1056.
5. Yusuf S, Reddy S, Ounpuu S, Anand S. Global burden of cardiovascular diseases. Part I: general considerations, the epidemiologic transition, risk factors, and impact of urbanization. *Circulation* 2001; **104**: 2746-2753.
6. Del Brutto OH, Montalván M, Tettamanti D, Peñaherrera E, Santibáñez R, Pow-Chon-Long F, et al. The ‘know your numbers’ program in Atahualpa – a pilot aimed to reduce cardiovascular diseases and stroke burden in rural communities of developing countries. *International Journal of Cardiology* 2013; **168**(3): 3123-3124.