International Journal of Cardiology 291 (2019) 25–26

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Editorial

The pains of non-specific chest pain in the emergency department

Ilan Gottlieb, MD, PhD

Casa de Saude Sao Jose, Fonte Imagem Medicina Diagnostica, Rio de Janeiro, Brazil

ARTICLE INFO

Article history:
Received 12 May 2019
Accepted 21 May 2019
Available online 23 May 2019

The classical work by Diamond and Forrester that generated the famous pretest probability table carrying their name, in which the prevalence of obstructive coronary disease (CAD) is predicted based on gender, age and symptoms, is still largely used worldwide, both in order to define population-based health policies [1], and also guiding therapeutic decisions on a patient level. Their work was published in 1979 [2], encompassing almost 30 thousand patients that sought medical assistance due to CAD-related symptoms in the 1960s and 1970s. At that time, myocardial infarction awareness programs were incipient, and the general population knew little about myocardial infarction risk factors, symptom characteristics, and how to respond to chest pain. Therefore, patients usually took a long time without diagnosis or treatment, and in those weeks or months, patients had a better chance to ascertain the clinical characteristics of the pain, like trigger factors, reproducibility, duration, irradiation and relief. In this setting, Diamond and Forrester reported that a 55 year old man with typical angina symptoms had an obstructive CAD pre-test probability of 92%, whereas if he had non-anginal pain the probability significantly dropped to 21%.

Fifty years later, laypeople now know pretty accurately the symptoms of chest pain secondary to obstructive CAD [3]. They have read about it, they have been taught early signs in school, they have watched it in movies and television programs. Since myocardial infarction inspires fear, people unconsciously simulate the symptoms of angina by suggestion, amplifying the typical symptoms and suppressing the atypical ones. Not surprisingly, an analysis from the Confirm Registry that applied the Diamond and Forester criteria in a contemporary cohort of 14,078 patients undergoing coronary computed tomography angiography, demonstrated that the actual rates of obstructive CAD is roughly half of what Diamond and Forester had predicted [4], underlying this shift in pretest probability assessment. As an example, they showed that a 65 year-old female with typical angina had a pre-test probability of obstructive CAD of only 19%, which dropped to approximately 16% if the same patient presented with non-anginal chest pain. One can imagine the challenge faced by physicians relying on clinical assessment alone for the diagnosis of obstructive CAD.

So doctors caring for patients with chest pain in emergency departments are burdened with a three-pronged problem: First, they deal with a potentially lethal disease, that is the number one mortality cause worldwide [5]. Second, patients unconsciously simulate anginal symptoms, complicating clinical assessment. And thirdly, health care costs are increasingly being scrutinized, so resources must be expertly allocated.

In this setting, the paper published in this issue of IJC by Kwok et al. brings valuable information about more than 1.1 million patients that presented to the emergency department with non-specific chest pain [6]. Their work was based on retrospective data from a large database from the United States (the Nationwide Readmissions Database), where non-specific chest pain definition is somewhat uncertain, and based on broad generic codes such as “chest pain, unspecified” or “precordial pain” or still “other chest pain”. These are likely not the non-specific chest pain definition one might have at the bedside, which is closer to “chest pain that cardiovascular causes were ruled out and that other causes of chest pain could not be ascertained in the emergency department”. Notwithstanding this practical limitation, the results from their study give valuable information regarding readmissions after non-specific chest pain. For instance, they show that readmissions are early (mean 4 days), and not rare, approximately 3% of patients were readmitted, the large majority due to acute coronary syndromes. They also show that the diagnosis of non-specific chest pain decreased by half in only four years, from 2010 to 2014, maybe due to better diagnostic technology. Interestingly, patients that underwent invasive coronary angiography in the index admission were still readmitted with acute coronary syndromes, albeit at a lower rate than patients that did not (1.34% vs. 2.64%, respectively), suggesting that technology and resources are only part of the solution.

It is due time when current diagnostic approaches based on clinical, laboratory and imaging data are integrated into smart artificial intelligence algorithms, further improving healthcare efficacy and expenditures in the emergency department [7]. Until then, it is vital to continue accumulating knowledge of factors associated with readmission due to non-specific chest pain, as the authors have expertly done.

References

[1] G. Montalescot, U. Sechtem, S. Achenbach, et al., Eur. Heart J. 34 (38) (2013) 2949–3003.

DOI of original article: https://doi.org/10.1016/j.ijcard.2019.04.001.
E-mail address: ilangottlieb@gmail.com.

https://doi.org/10.1016/j.ijcard.2019.05.047
0167-5273/© 2019 Elsevier B.V. All rights reserved.

[2] G.A. Diamond, J.S. Forrester, N. Engl. J. Med. 300 (1979) 1350–1358.
[3] P. Muntner, K.B. DeSalvo, R.P. Wildman, et al., Am. J. Epidemiol. 163 (2006) 913–920.
[4] V.Y. Cheng, D.S. Berman, A. Rozanski, et al., Circulation. 124 (2011) 2423–2432.
[5] E.J. Benjamin, M.J. Blaha, S.E. Chiuve, et al., Circulation. 135 (2017) e146–e603.
[6] C.S Kwok, D.L. Brown, H.G.C. Van Spall, et al., Non-specific chest pain and subsequent serious cardiovascular readmissions, Int. J. Cardiol. 291 (2019) 1–7.
[7] D. Dey, P.J. Slomka, P. Leeson, et al., J. Am. Coll. Cardiol. 73 (2019) 1317–1335.