JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
© 2016 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
PUBLISHED BY ELSEVIER

VOL. 68, NO. 5, 2016
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2016.05.061

EDITORIAL COMMENT

Ischemic Heart Disease in New-Onset Heart Failure, or Finding Waldo

Where's Waldo?*

James B. Young, MD,[a,b] Josef Stehlik, MD, MPH[c,d]

Parents with young children might cherish memories of reading with their preschoolers the clever books by British author and illustrator, Martin Handford. The *Where's Waldo?* series ("Wally," outside of Canada and the United States) was first published in 1987 (1). These lavishly illustrated books contain large-scale scenes with crowds touring various tourist attractions around the world. Waldo appears hidden amongst the gaggle and the reader's challenge is to find him (and, subsequently, his friends). Hanford dressed Waldo and friends garishly and in a characteristic fashion. And so it is in the patient with new-onset heart failure. In this setting, coronary artery disease (CAD) is all too often disguised as Waldo. Our job is to find Waldo and determine his relationship to the heart failure and its presentation.

SEE PAGE 450

Doshi et al. (2) focus on this challenge in their retrospective cohort study appearing in this issue of the *Journal*, reporting on the underutilization of CAD testing among patients hospitalized with new-onset heart failure. The authors used a large, 67,640-subject administrative database (Truven Health MarketScan and, specifically, their Commercial and Medicare Supplemental databases) to determine the occurrence of invasive and noninvasive studies to identify ischemic CAD in patients newly hospitalized for heart failure. The window of analysis included a 90-day post-discharge period.

Despite the fact that CAD is, today, the most common primary etiology of heart failure (3), a surprising—indeed, an amazing and troubling—number of patients were not subjected to noninvasive or invasive evaluations or revascularization procedures to address the potential underlying problem of culprit CAD. Indeed, only about 18% underwent ischemic heart disease (IHD) testing as an inpatient and 28% subsequently as outpatients, whereas about 2% had a revascularization procedure during index hospitalization and 4% subsequently. Patients already carrying a diagnosis of IHD were more likely to be studied with noninvasive and invasive testing. The authors rightfully conclude that the vast majority of patients with new-onset heart failure did not receive testing or revascularization procedures for IHD during initial hospitalization or in the subsequent 3 months. Of course, diagnostic testing and aggressive interventions in 100% of patients would not be appropriate, but surely many more than those reported by Doshi et al. (2) should have been studied and treated.

The strengths of this study lie with the extraordinary numbers of patients evaluated and the fact that this work was an administrative database analysis. Patients were culled from the records of more than 81 million individuals available in the MarketScan Commercial and Medicare databases. But then the weaknesses of this study are the inherent limitations to using administrative "big data" sets of this nature. Because an analysis of this sort is dependent upon claims data that allow tracking of diagnoses along

*Editorials published in the *Journal of the American College of Cardiology* reflect the views of the authors and do not necessarily represent the views of *JACC* or the American College of Cardiology.

From the [a]Cleveland Clinic Lerner College of Medicine of Case Western Reserve University School of Medicine, Cleveland, Ohio; [b]Heart and Vascular Institute, Cleveland Clinic, Cleveland, Ohio; [c]Division of Cardiovascular Medicine, University of Utah School of Medicine, Salt Lake City, Utah; and the [d]Thoracic Transplant Registry, International Society for Heart and Lung Transplantation, Salt Lake City, Utah. Both authors have reported that they have no relationships relevant to the contents of this paper to disclose.

with testing procedures and interventions coded, errors in this bureaucratic process or nonsubmission of claims surely led to omission of some tests and procedures, whereas some others likely were incorrectly allocated. However, the amazing size of the cohort analyzed, and the attention today usually paid to reimbursement by caregivers and hospitals, likely mitigate, in our opinion, any major concern. As the authors point out with respect to cardiovascular disease diagnosis and management, use of administrative codes track reasonably well with reimbursement and, therefore, seem suitable surrogates for a study of this nature. Another limitation is that comorbidities are not really well assessed in a study of this type, nor is determination of New York Heart Association symptomatic classification or American College of Cardiology/American Heart Association heart failure stage. None of this critique mitigates the seeming dearth of study and treatment of this important patient population.

Of course, in general, we treat patients for only 3 reasons: we attempt to cure disease; ameliorate symptoms; and prevent comorbidities. Rarely do we actually cure diseases that cause heart failure. Such is the case with IHD; but clearly, as the authors argue, we have knowledge that guides pharmaceutical, electrophysiological, and interventional procedures that can help achieve the remaining 2 therapeutic goals. We must, however, characterize the underlying pathophysiology of the heart failure syndrome in any given patient and, in particular, determine whether IHD is primarily accounting for, or is a significant contributor to, new-onset or worsening heart failure. Paying better or, let's say, more compulsive attention to current heart failure diagnosis and treatment guidelines seems essential. We might quibble about specific recommendations, but generally, there is agreement about how to approach ischemic heart disease and adhering to the guidelines to do so (4). Arguably, with increased adherence to guidelines, outcomes would be better.

One might wonder why testing and interventional therapies are not used with substantive frequency in new-onset heart failure cohorts in this relatively contemporaneous sample, as Doshi et al. (2) suggest. We wonder the same thing. If data indicate, which they do, that select diagnostic and therapeutic procedures are beneficial in appropriate patients, and if guidelines address this situation in reasonable fashion, which they do, it makes sense that more aggressive testing for IHD (and determining any relationship to new-onset heart failure) should occur. Subsequently, delivery of guideline-recommended interventional revascularization procedures should then follow. As we move deeper into a different model of health care delivery in the United States and move away from a more subspecialty-based, procedurally oriented reimbursement scheme, there is the possibility that care paths focused on reducing cost per case in the setting of population management might push us away from aggressive testing and therapy in some patients. Perhaps, though there is no evidence to support that, this is what might be occurring in this particular group. We might think about that a bit and consider the argument made by seeking value in health care. When value translates into meaningful patient outcomes divided by cost, we must include the fact that appropriate diagnosis and management of ischemic syndromes in new-onset heart failure, though costly, could translate into morbidity reduction and improvement in quality of life. Perhaps this is where the real "cost savings" will occur and counterbalance the expense of diagnostic procedures and interventions.

Looking for Waldo dressed up as IHD amongst the myriad of difficulties often present in patients with heart failure seems essential. Let's think hard about "Getting With the Guidelines" the next time we see a new heart failure patient, and let's push for an ischemia work-up and intervention more often than it seems we are doing today (5).

REPRINT REQUESTS AND CORRESPONDENCE: Dr. James B. Young, Cleveland Clinic Foundation, 9500 Euclid Avenue, NA-21, Cleveland, Ohio 44195. E-mail: youngj@ccf.org.

REFERENCES

1. Hanford M. Where's Wally? London, UK: Walker Books, 1987.

2. Doshi D, Ben-Yehuda O, Bonafede M, et al. Underutilization of coronary artery disease testing among patients hospitalized with new-onset heart failure. J Am Coll Cardiol 2016;68:450–8.

3. Mozaffarian D, Benjamin EJ, Go AS, et al. Heart disease and stroke statistics—2016 update: a report from the American Heart Association. Circulation 2016;133:e38–360.

4. Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2013;62:e147–239.

5. Wang TY, Dai D, Hernandez AF, et al. The importance of consistent, high-quality myocardial infarction and heart failure care: results from the American Heart Association's Get With the Guidelines Program. J Am Coll Cardiol 2011;58:637–44.

KEY WORDS big data, coronary artery disease, guidelines, revascularization