See Article page 15.

Commentary: Just ask—if you're ready for the answer

Martin Czerny, MD, MBA

Genetic testing has become an indispensable component of building a 4-dimensional picture of patients with acute and chronic thoracic and abdominal aortic disease, and has broadened our horizons in terms of the underlying disease mechanisms and their consequence. This wealth of knowledge is summarized in an excellent manner by Drs Norton and Yang in this issue of the *Journal*.¹

This differentiated knowledge obtained over the last 2 decades should aid decision making regarding when to initiate treatment and when to refrain from doing so—as, after all, the prevention of acute aortic dissection and its deleterious consequences is our primary aim. Let me try to put the bricks together. Maximum diameter remains the least common denominator for indicating treatment. This is not always ideal and clearly does not mirror every component of the disease, but it is obviously reliable and broadly applicable.²

Several other morphological details have entered the arena in the last years, including root morphology, aortic valve cuspidity, and the presence or absence of arch variants, which also mirror connective tissue disease components and impact decision making. Finally, aortic length from the annular plane to the level of the brachiocephalic trunk offspring has been established as an important factor in indicating treatment.³⁻⁵ Needless to say, the quality and outcomes of the aortic service are eventually the most important factors in the recommendation for earlier treatment.

From the Department of Cardiovascular Surgery, University Heart Center Freiburg—Bad Krozingen, Bad Krozingen; and Faculty of Medicine, Albert Ludwigs University, Freiburg, Germany.

Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Feb 23, 2021; accepted for publication Feb 26, 2021; available ahead of print March 26, 2021.

Address for reprints: Martin Czerny, MD, MBA, Faculty of Medicine, Albert Ludwigs University Freiburg, University Heart Center Freiburg—Bad Krozingen, Südring 15, Bad Krozingen 79189, Germany (E-mail: martin.czerny@universitaets-herzzentrum.de).

JTCVS Open 2021;6:24-5
2666-2736

Copyright © 2021 The Authors. Published by Elsevier Inc. on behalf of The American Association for Thoracic Surgery. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).
<https://doi.org/10.1016/j.jtcvs.2021.02.010>

Martin Czerny, MD, MBA

CENTRAL MESSAGE

Genetic testing broadens our horizons; however, the results obtained require a more differentiated implementation into clinical practice.

So how does the knowledge of genetic factors contribute to indicating the need for treatment in its current form? After all, this is another brick in the wall in the large gray zone in the event that the classical determinants for indicating treatment are not yet apparent or the indication threshold has just been reached. In other words, the knowledge of their presence tips the scales. However, there remains a substantial gap between the broad theoretical knowledge of genetic factors and their clinical implementation to lower the threshold for indicating treatment. Most likely, serum as well as cellular markers have the greatest potential to close this gap—for example, a serum troponin or a kind of “prostate-specific antigen” for aortic disease that could help guide treatment.

In summary, we shall ask whether genetic components are responsible for aortic disease, but in the event of their presence, we should be prepared to give an adequate answer to our patients, which usually means earlier prophylactic surgery to prevent acute aortic dissection and its deleterious consequences.

References

1. Norton EL, Yang B. The impact of genetic factors and testing on operative indications and extent of surgery for aortopathy. *J Thorac Cardiovasc Surg Open*. 2021; 6:15-23.
2. Czerny M, Schmidli J, Adler S, van den Berg J, Bertoglio L, Carrel T, et al. Current options and recommendations for the treatment of thoracic aortic pathologies involving the aortic arch: an expert consensus document of the European Association for Cardio-Thoracic Surgery (EACTS) and the European Society of Vascular Surgery (ESVS). *Eur J Cardiothorac Surg*. 2019;55:133-62.
3. Dumfarth J, Chou AS, Ziganshin BA, Bhandari R, Peters S, Tranquilli M, et al. Atypical aortic branch variants: a novel marker for thoracic aortic disease. *J Thorac Cardiovasc Surg*. 2015;149:1586-92.

4. Krüger T, Oikonomou A, Schibilsky D, Lescan M, Bregel K, Vöhringer L, et al. Aortic elongation and the risk for dissection: the Tübingen Aortic Pathoanatomy (TAIPAN) project. *Eur J Cardiothorac Surg*. 2017;51:1119-26.
5. Wu J, Zafar MA, Li Y, Saeyeldin A, Huang Y, Zhao R, et al. Ascending aortic length and risk of aortic adverse events: the neglected dimension. *J Am Coll Cardiol*. 2019;74:1883-94.