

# A Wonderful Mind: Eugene Braunwald

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Every year, at the end of August, cardiologists, and not only cardiologists, await with great interest the latest news in cardiology from the European Congress of Cardiology. This congress takes place annually at the end of summer, before the new academic year begins. In this way, at the end August we find the summary of what happened lately and what we have to do in the near future.

But in mid-August, cardiologists also have a thankful thought directed to Eugene Braunwald, MD, PhD, the father of modern cardiology in the last four decades or more. He is born on the

15<sup>th</sup> of August and this summer he celebrated his 91<sup>st</sup> birthday.

Every year, over a long period of time, Eugene Braunwald was honorary invited to, and participated in, the European Congress of Cardiology. And each time, his interventions provided a rare and precious quality of a human being: a vision.

Braunwald is born in Vienna, Austria. His family emigrated to the United States and he graduated the New York University School of Medicine. It is not the place here to follow his career, which is brilliant. For a very long time, he has been serving as a Professor at the Harvard Medical School.

But his main contribution to cardiology over the last half century or so were the Textbooks of Cardiology edited by him, **“Braunwald’s Heart Disease”**, starting with the first edition in 1980 (or 1979, depending on details of publishers).

It is true that cardiology was gifted to have textbooks many years before Braunwald launched his first edition of **“Braunwald’s Heart Disease”**.

Charles K. Friedberg issued his **“Diseases of the Heart”** in 1949. It was a single author textbook, and medicine could not tolerate any

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Article received on the 24<sup>th</sup> of September 2020 and accepted for publication on the 25<sup>th</sup> of September 2020

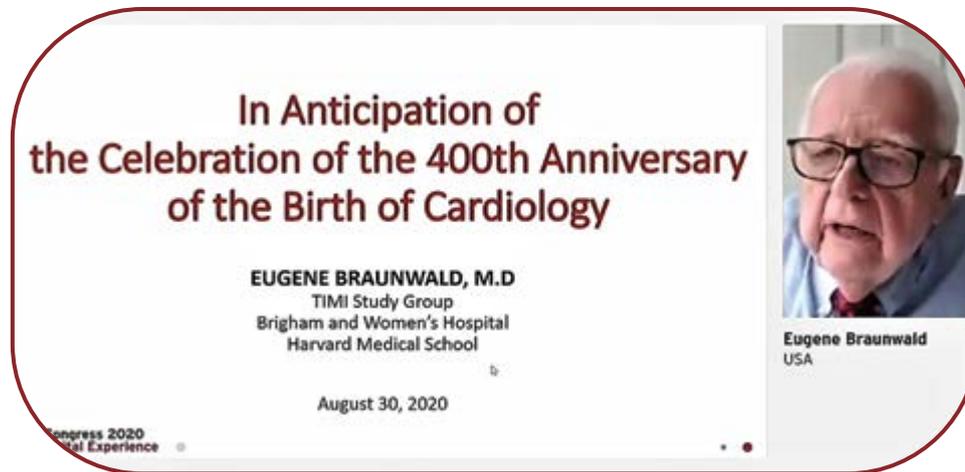


FIGURE 1. Eugene Braunwald at the European Congress of Cardiology, August 2020

more that a single giant mind could cover a huge and continuous changing medical discipline. After the third edition, in the late 1960, and the death of Friedberg in 1972, in a traffic accident, this textbook was not continued.

Another giant who issued a textbook of cardiology was John Willis Hurst from Emory University, Atlanta, Georgia, USA. The first edition of his **Hurst's The Heart** appeared in 1966 and it has currently reached its 14<sup>th</sup> edition. It is a real textbook, with many expert authors in every field and continues to appear after Hurst's death in 2011, when he was 90 years old.

But Eugene Braunwald had a superior vision. If you have a textbook of more than 2000 pages printed in 8 pts letters, you get only a pale image of cardiology. This is the reason why Braunwald introduced the "Companions of Braunwald's Heart Disease", such as "Myocardial Infarction", "Hypertension" "Heart Failure" and many others, but also very new items such as "Mechanically Circulatory Support" or "Cardiovascular Magnetic Resonance". To date, there are 19 Companions, each of several hundreds of pages. Every Companion is only an introduction to those specialists who want to become more profoundly implied in a field of cardiology. And then, they have to go further to specialized monographs such as "Left Ventricular Assist Device Implantation" or "Magnetic Resonance and Atrial Fibrillation". And if you read any of these, you do not become a specialist capable to work in that sub-specialty. You have to practice a period under an expert's supervision and read much more. This is the degree of specialization

of every field of our activities, be it medicine or any other one.

Then, what is the value of the single book, "Braunwald's Heart Disease"? It is the Vision. The vision of authors of each chapter as well as that of the father of the textbook himself, on the direction in which every corner of cardiology should evolve. Reading the book, we live at the same time a brilliant synthesis of this moment and the place where we will be in the future. And everything in the atmosphere and flavor of Harvard, always ranked number one in Best Medical Schools worldwide, to whom the nucleus of authors of this textbook belongs.

Now, let us see what was Braunwald's vision on the fields of cardiology this year at his ESC lecture (Figure 1). It is noteworthy that his intervention was dedicated to the 400<sup>th</sup> celebration of Cardiology. He and everybody considers that cardiology was born in 1628, when William Harvey published "De Motu Cordis" and described the circulation of blood.

Firstly, he discussed the Primordial Prevention. We are now discussing a lot about the primary prevention of cardiovascular disease, which is to attack the risk factors before the appearance of a cardiovascular event. Primordial prevention is to make the risk factors not to appear or cure them from the moment they occur, in other words it means preventing the development of risk factors. He exemplified his point by talking about obesity in children or hypertension in adolescents (1). If we succeed to make obesity not to appear or hypertension not to exist in the

circulation of a young person, we make the best primordial prevention of cardiovascular disease.

An important issue was artificial intelligence. Braunwald noted several achievements. Artificial intelligence analysis discovered patients who would develop atrial fibrillation, by analyzing electrocardiograms in sinus rhythm. Artificial intelligence analysis has also identified patients who would develop ventricular dysfunction according to an early electrocardiogram. Or, most interestingly, the algorithm of artificial intelligence predicted long term mortality in an analysis during an acute cardiac failure moment or, in another domain, predicted mortality in patients with heart failure with preserved ejection fraction (2).

In cardiology, a new group of drugs is directly addressed to inflammation and specifically to cytokines. Braunwald developed this item discussing the works of his team in Harvard and citing a paper which has been very recently published in *Circulation* (3). The cytokines discussed here are Interleukin 18, Interleukin 1-beta and Interleukin 6, and the recent clinical studies cited are COLCOT, CANTOS and CIRT. Colchicine, Canakinumab and Methotrexate are the drugs

considered ready to be applied in practice for the treatment of atherosclerosis using its inflammatory mechanism.

Clonal Hematopoiesis was the final issue discussed by Braunwald at the congress. He also used works of his team in Harvard, and this time, a main paper cited by him had Peter Libby as first author (4). Clonal Hematopoiesis, fully named “Clonal Hematopoiesis of Independent Potential” and abbreviated CHIP, denotes the presence of an expanded somatic cell clone in a person with no other somatic abnormality. It was shown that the presence of CHIP denoted an important cardiovascular risk factor for atherothrombotic disease, and in the same time, did not show any increased risk for hematologic neoplasia. At the congress, Braunwald has also shown that mutated CHIP drivers occur frequently in patients with severe degenerative aortic stenosis – an increasingly recognized contemporary disease.

We may end this comment by saying that cardiologists are gifted doctors having among and with them such wonderful minds like that of Eugene Braunwald. □

## REFERENCES

1. **Epure AM, Chiolero A.** From detection early in life to the primordial prevention of elevated blood pressure. *J Clin Hypertens* 2019;21:1350.
2. **Segar MW, et al.** Machine learning-based cluster analysis can identify phenogroups of patients with HFpEF with distinct clinical characteristics and long-term outcomes. *Eur J Heart Fail* 2020;22:148.
3. **Ridker PM.** From CANTOS to CIRT to COLCOT to Clinic. Will All Atherosclerosis Patients Soon Be Treated With Combination Lipid-Lowering and Inflammation-Inhibiting Agents? *Circulation* 2020;141:787.
4. **Libby P, et al.** Clonal Hematopoiesis Crossroads of Aging, Cardiovascular Disease, and Cancer. *JACC* 2019;74:567.