A Note on the History of Cardiology: Dr. Otto Klein, 1881 to 1968

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Cardiology has many unsung heroes, even so Dr. Otto Klein's (Fig. 1) history and contribution are exceptionally buried in rarely read pages of old medical journals and in sparse citations in books published on the history of cardiology.

Otto Klein was born in Pilsen in 1881 in the Czech region of the Austro-Hungarian Empire. He graduated from The German Medical School in Prague, and during World War I served as a physician in the Austrian Army on the Eastern Front for two and a half years, later becoming chief of a military hospital on the Italian front in Piave. His academic medical career began in 1919 at the Second Medical Clinic of the University Hospital in Prague.

In 1930, Dr. Klein, after having lectured in Prague and in Wiesbaden, Germany, about his new investigation, published his study in the Muenchener Medizinische Wochenschrift (1). The title of the article announced the measuring of the “minute volume” of the heart in humans using the Fick Principle, while the subtitle stressed that the mixed venous blood was obtained with the aid of “Herzsondierung”, that is, catheterization of the heart. In the introduction to the article, Dr. Klein mentioned that till then the oxygen content of the mixed venous blood had to be obtained indirectly, because direct puncturing of the heart in humans is fraught with danger. The paper then quotes Forssmann (as Reference #2) and stresses that following the experience indirectly, because direct puncturing of the heart in humans is fraught with danger. The paper then quotes Forssmann (as Reference #2) and stresses that following the experience of Dr. W. Nonnenbruch. Although his list of publications grew (he published on water metabolism, regulation of blood sugar, diabetes, kidney diseases, and other topics) and he reached full professorship in 1933, his work with cardiac catheterization could not be continued, mainly because of the opposition of Prof. Nonnenbruch.

The medical world, both in Europe and in America, ignored Dr. Klein’s work. In his book, The History of Cardiology (2), Acierno writes: “Klein then visited Boston in an attempt to convince the local clinicians of the feasibility of the technique for gathering blood samples from different areas of the heart. Unfortunately, the Bostonian establishment turned a deaf ear to his proposals, and medicine had to wait another 12 years for Courand and Richards to alert the profession to the enormous potentialities of cardiac catheterization.” Dr. Acierro recently confirmed in a personal communication to me that Dr. Courand was the one who mentioned to him this “Boston incident,” which, according to the “12 year delay” referred to, must have taken place in the early 1930s.

In 1938, because he was a Jew, Dr. Klein had to resign his academic post, and soon after the full Nazi takeover of Czechoslovakia in 1939, he immigrated to Argentina.

In Argentina, Dr. Klein worked at the Durand Hospital in Buenos Aires, but retired in 1951 because of severe health
problems (he suffered from advanced “rheumatic disease”). We know very little about his life afterwards other than that he retired to Vienna and did some studies on the composer Brahms, as Dr. Jiri Widimsky personally communicated to me. He also reported (3) that Klein visited Prague in 1964 during the European Congress of Cardiology there, and discussed his professional life with him. He noted that Klein was surprised that his work was still known after 35 years.

Dr. Otto Klein died in Buenos Aires in 1968, leaving his wife, but no children. His death was chronicled in the Prager Nachrichten (4).

Books or monographs dealing with the history of cardiac catheterization were not kinder with Dr. Klein after his death than they had been during his lifetime. King and Douglas (5) mention that “Klein, working in Prague, used cardiac catheterization in human subjects to obtain blood samples in order to determine the cardiac output in human beings,” while Grossman (6) in sparse words mentions Klein’s 1930 “11 right heart catheterizations.” Only in the year 2001 was his life story described in a brief Letter to the Editor in another journal (7).

The Nobel Prize Committee in 1956 marked the enormous contributions of Werner Forssmann and of Andre F. Cournand and Dickinson W. Richards by awarding the three the Nobel Prize for Medicine and Physiology. In retrospect, however, Dr. Klein’s fundamental and precise work seems to be the necessary link between the seminal work of Forssmann and that of Cournand and Richards, by proving the feasibility and reliability of cardiac catheterizations in patients, thereby paving the way for the work of Cournand and Richards, thus changing the face of cardiology forever.

Did the Nobel Prize Committee know about Dr. Klein’s work and judge it unimportant, or was the Committee unaware of it? In either case, it seems that an injustice has been done to Otto Klein. These lines are far too meager to make amends to him, but hopefully they will help us to remember this neglected and overlooked pioneer of cardiology.

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