A Historical Perspective

Introduction

… then my lord Gawan dismounted. There lay a man pierced through, with his blood rushing inward. He asked the hero’s lady whether the knight was still alive … “You would soon see and hear him in health, he is not mortally wounded, the blood is only pressing on his heart.” He grasped a branch of the linden tree, slipped the bark off like a tube … and inserted it into the body through the wound. Then he bade the woman suck on it until the blood flowed toward her. The hero’s strength revived so that he could speak and talk again.

Parzival’s Pericardial Puncture
Wolfram von Eschenbach, 1200 A.D. [1]

Pericardium was first described by Hippocrates (460–370 B.C.) but its diseases remained neglected in the history of medicine for many centuries. Galen (131–201 AD) was the first to discover the pericardial effusion in a monkey and made probably the first pericardial resection in a man with anterior mediastinitis [2–4]. In injured gladiators dying from pericardial infections he noted similarities with heart failure, but has also recognized that if the pericardium is inflamed, the disease does not inevitably affects the myocardium. More than 900 years later, Avenzoar, a famous physician from Eshbeelia (now Seville, Andalusia, Spain), known in the Arabic world under the name of Ibn Zuhr, described in his book “Al Taisir”, “water, which is collected in the pocket of the heart or pericardial sac” [5]. His classification of pericardial diseases into serous, fibrinous, and purulent forms is kept until the present time. In the middle ages, pericardial diseases have attracted attention of many prominent physicians. Richard Lower in his “Tractatus de corde” (1669) and Jean Baptiste Senac in his “Traité de la Structure du Coeur” (1774) dedicated extensive chapters to pericardial diseases. Recognizing the complexity of the problem Laënnec was writing in 1819 that “there are few diseases attended by more variable symptoms and more difficult diagnosis than this”. Although changes in precordial dullness on percussion were noted by Auenbrugger in 1761, the pericardial rubs were described much later by Collins in 1824. Distinctive features of rheumatic and tuberculous pericarditis were first described by Jean Cruveilhier (1828) and Jean-Baptiste Bouillaurd (1835) in their anatomic textbooks (Fig. 1.1). Norman Chevers was the first physician striking the importance of diastole in diagnosis of constrictive pericardial diseases (1842). Richard Bright from the Guy’s Hospital in London described pericardial effusion in renal failure [6]. A German surgeon, Edmund Rose, introduced the term “cardiac tamponade” in 1884 after the analysis
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of the series of cases of fatal heart wounds in which the patients have died due to the compression by a relatively small intrapericardial hemorrhage [7]. One of the famous victims of traumatic cardiac tamponade was Empress Sissi of Austria who died due to the small stab wound in the left ventricle after an attack in Geneva, Switzerland [8].

William Osler wrote a statement in 1892 stressing that the pericardial diseases are insufficiently acknowledged “Probably no serious disease is so frequently overlooked by the practitioners. The experience based on post-mortem examinations show how often pericarditis remains unrecognized or goes on to resolution and adhesion without attracting notice” [9].

Diagnostic and Therapeutic Pericardial Interventions

Pericardiocentesis and Pericardial Drainage

Although Galen described first drainage of purulent pericardial effusion and an improvised pericardial drainage was also described in the above quoted lyrical text from 1200, the first pericardial puncture was proposed in the scientific literature by Jean Rio-lan, professor of surgery from Paris [10, 11]. In his treatise Encheiridion anatomicum et pathologicum (1653) he suggested trepaning of the sternum as an approach to drain the pericardial effusion. However, it is not know if he actually ever performed this procedure.

Giovanni Battista Morgagni in the text “De Sedibus” (1756) has observed that the outcome of soldiers with heart wounds depended on the rate of pericardial filling. However, he feared the injury of coronary arteries and did not attempt to perform drainage of the pericardial effusion in his patients. Jean Baptiste de Sénon, the personal physician to the Louis XVth, described clinical findings in pericarditis in detail in his “Traité de la coeur et les maladies” and associated it with mediastinitis, pneumonia, and pleurisy. He recognized pain and pericardial distress as symptoms of a “hydrops pericardii” and advocated parasternal drainage.

Corvisart, one of the most prominent physicians of the Napoleon’s time, distinguished various forms of „dry“ pericarditis and was able to differentiate them from pericardial effusion by means of percussion. Despite this achievement, the French school in the XIXth century was still reluctant to take the risk of performing pericardial punctures. Percussion of the thorax revealing dullness beyond the cardiac apex was assumed as diagnostic for large pericardial effusions (Ewart’s sign or Bamberger-Pins-Ewart’s sign, 1896)[12]. However, he considered the probability of an accurate diagnosis too uncertain to permit incision or blind puncture of the pericardium and drained pericardial effusions by surgical pericardiotomy [13].

For the same reason, Laënnec rejected pericardiocentesis despite his extensive correlation of auscultatory and necropsy findings. On the contrary he was advising the use of blistering agents on the precordium under the hypothesis, that they would draw pericardial fluid through the chest wall into the blister. The preferred agent was cantharides – „the Spanish fly” [4]. Similar unsuccessful attempts have been made with the ventusa technique, a form of acupressure that uses heated glasses with the idea to remove the effusion through the chest wall. Even in the XXI century in the middle of Europe, the authors of this book had the opportunity to see skin injuries from ventusa glasses made by an “alternative medicine practitioner” in a disastrous attempt to remove the pericardial effusion.