

The Dressler - de Winter sign of acute proximal LAD occlusion

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In 2008, de Winter et al described a new electrocardiographic (ECG) pattern of acute proximal left anterior descending coronary artery (LAD) occlusion [1]. Instead of ST-segment elevation, it was characterized by ST-segment depression at the J point in leads V1-V6 with upsloping ST segments leading to tall positive symmetrical T waves. In most patients, there was also slight ST-elevation in lead aVR [1]. Retrospective but systematic analysis of 1890 patients who underwent primary percutaneous coronary intervention (PCI) for anterior myocardial infarction over an approximately 10-year period revealed that 98% of those patients had frank STEMI, whereas 2% of patients had this new distinct ECG pattern [2]. Since the original description, there has been a plethora of publications on what is now called the de Winter sign. Its significance is that with acute proximal LAD occlusion, a large area of myocardium is at risk. Computer interpretation softwares, however, do not recognize the de Winter sign and if providers also fail to diagnose it, the need for emergent PCI may easily be missed.

Although both in the original articles [1,2] and in numerous subsequent publications the de Winter sign of proximal LAD occlusion had been labeled as being new, it is important to recognize that, as has been noted by Eskola et al [3], the first description was actually made by William Dressler in 1947, 61 years before the de Winter article [4]. Dressler and Roesler presented 27 instances of acute myocardial infarction in 24 patients where the initial ECG showed very tall T waves (more recently referred to as “hyperacute T waves”) rather than ST-segment elevation. In at least one of the patients (case 4), the ECG pattern was completely identical to the de Winter sign. Fig. 1 is a modified and labeled reproduction of Fig. 3 of the Dressler article [4]. The initial ECG demonstrated depressed J points, upsloping ST-segments and very high, peaked T waves, a typical de Winter pattern. Follow-up ECGs then displayed evolving anterior myocardial infarction. It is

interesting to note that in the de Winter series many patients were young males; Dressler’s patient too was a 36-year-old man. Also, the leading hypothesis today is that the de Winter sign reflects subtotal obstruction of the LAD which can lead to frank STEMI if the LAD occlusion becomes complete [5,6]. Importantly, Dressler and Roesler in 1947 have already postulated that the unique pattern of ECG evolution described in their article probably depicted a transitional stage reflecting progression from incomplete to complete coronary occlusion [4]. It should be noted that the original Dressler report did not focus upon the LAD, but the evolution of anterior MI in general [4]. From this perspective, it was fair to label the de Winter discovery as a new ECG sign of proximal LAD occlusion [1].

Dr. William Dressler was born in Poland in 1890 but received his education in Austria. In 1938, when Austria was occupied by Nazi Germany, Dressler fled to the United States where he became Director of Cardiology and head of the Electrocardiology Laboratory at Maimonides Hospital in Brooklyn, New York. Dr. Dressler was an astute observer who had numerous important contributions to clinical cardiology and electrocardiology. He was the first to describe the post-myocardial infarction pericarditis syndrome (“Dressler syndrome”) [7], the significance of fusion complexes in ventricular tachycardia (“Dressler beats”) [8], and the ECG manifestations of myocardial infarction in the presence of left and right bundle branch block [9,10]. He also reported on bradycardia-dependent bundle branch block [11] as well as Wenckebach periods with empty pauses [12]. Dr. Dressler wrote several cardiology textbooks and numerous articles, mostly in the field of electrocardiology [13].

It has been debated if the de Winter sign should be a new named syndrome [14]. Eponyms, however, are popular as they can help teach and recall important clinical phenomena. Huge credit goes to Dr. de Winter and the Wellens group in the Netherlands for raising awareness to and popularizing the de Winter sign. In their first two publications on this topic, they described the time frame of ECG changes more precisely, added 12 visible examples of variation of the

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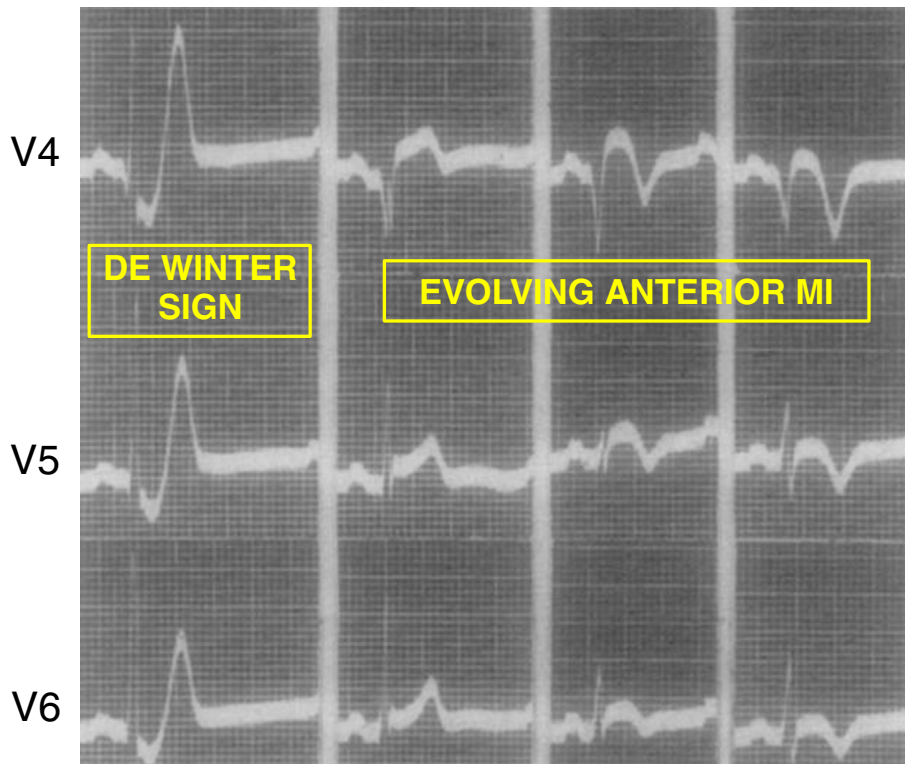


Fig. 1. ECG progression of acute myocardial infarction. Reproduced and modified from Dressler W, Roesler H: *Am Heart J* 1947;34:627–45 [4]. In the left panel, note the typical “de Winter” sign. Subsequent columns demonstrate evolution of anterior infarct.

phenomena, as well as validating its relatively low incidence of appreciation (~2%) by electrocardiography [1,2]. Nevertheless, because of the unquestionable fact that Dr. Dressler was the first to describe both the unique ECG pattern as well as the clinical significance of what is usually referred to as the de Winter sign, it appears to be justified to change the name to Dressler - de Winter sign.

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