Review Article

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How Industry Effects Preventive Medicine Ultrasonography is Superior to Magnetic Resonance Imaging in Detection of Early Imaging Biomarker "Stressed Heart Morphology"

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Abstract

The rational approach in effective health care and early medical management for heart diseases support the importance of direct diagnostic tools such as ultrasound imaging which could be applicable in primary step health care centers. This perspective will decrease the number of patients with advanced disease. Ultrasound can detect early heart involvement under stress and take an important role to reduce target organ damage. On the other hand, medical industry seems to have a high opinion of high-tech modalities which are used for advanced heart diseases in hospitals instead of the classic paradigm of preventive medicine. Recent strong discussions regarding the power of medical industry also are pointed out in this review article.

Keywords: Stressed Heart Morphology; Hypertension; Heart Failure; Ultrasound; Echocardiography; Magnetic Resonance Imaging; Industry; Preventive Medicine

Introduction

Medical industry has become one of main components for diagnostic and therapeutic approaches for heart diseases. Heart failure (HF) represents a terminal part of the disease process and could be devastating process for the vast majority of HF patients. While medical technologies including ultrasound (USG) and Magnetic Resonance Imaging (MRI) as well as blood analyses play a role in HF diagnosis, drug industry provides therapy for HF. Industry in various sectors including information, education, commerce, entertainment and medicine has recently been much more efficient on world population. This exponential growth during economic dilemma due to pandemic process has turned out a new lifestyle with non-stop online platform for population and a great success for the industry with a huge profit. However, some people have found this as a skeptical success because they evaluate this recent incident as a previously planned strategy. On the other hand, potential complications due to online lifestyle as immobility and health problems are being discussed. For instance, Trump administration during first presidency period have supported the domestic productivity, even it is more expensive than the cheaper productivity of industrial investment in China. He has declared that the vaccine was postponed by the medical industry until postelection period to make sure that he lost. He has said that industry depressed his 2nd term by a modification of timing for the cure and manipulation for the election result. Then, he also has mentioned that he will respond by a new design with decreased prices for medicine according to the lowest prices in the world.

Therefore, this remarkable recent incident has produced a paradigm that this power should not be underestimated. If there is a manipulation which really can prevent his 2nd term as Trump has said this power should not support the guidelines to avoid any

potential suspicion that this also can be effective on diagnostic and therapeutic approaches. And moral values support that physicians should not feel that they are being forced to use expensive high-tech modalities instead of preventive medicine. Our observations support that heart USG or echocardiography is superior to MRI in detection of the early imaging biomarker, Stressed Heart Morphology (SHM) which is an early indicator for subclinical heart involvement in stressful conditions [1-4]. In fact, USG is able to visualize tissue distortion of septum base (Figure 1) [5-7] while MRI could provide a detection of whole septum wall involvement without any segmental detail [8-11]. Despite of USG as the direct and greatest opportunity for the earliest diagnosis, guidelines authors supported by industries could put an indirect diagnostic tool, brain natriuretic peptide on the top of echocardiograph in diagnosis of HF (Figure 2) [12]. Furthermore, early diagnostic tools as USG in primary health care steps by a supervision of tertiary hospitals could be very effective according to our documented observations [1-7] contribute on early diagnosis, medical management and reduce advanced diseases. However, industry naturally may have a high opinion of advanced diseases which need high-tech devices used in hospitals rather than earlier steps.

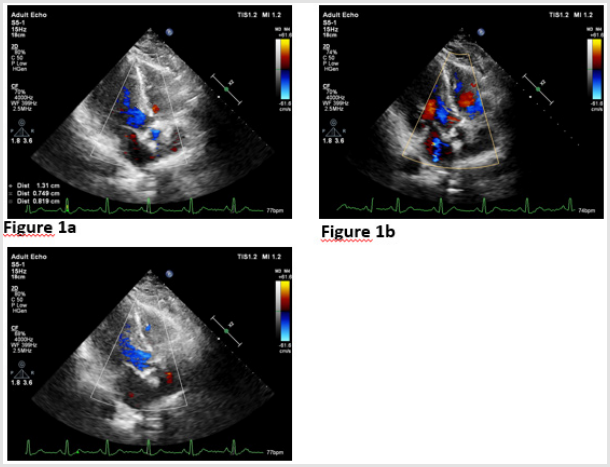

Figure 1a

Figure 1b

Figure 1:

a) Stressed Heart Morphology is described for patients who have thicker myocardial segment at base than 12 mm.

b) As seen in this patient with early stage hypertension, diastolic segmental prominence at septum base

c) Systolic protruding base into the cavity.

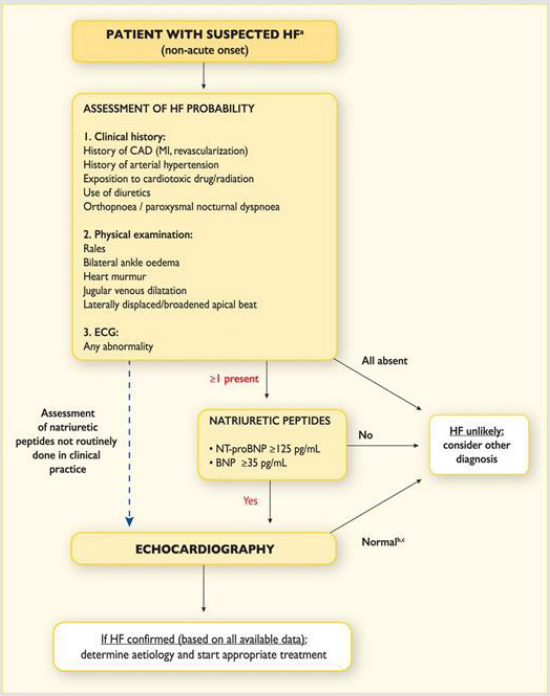

Figure 2: Algorithm for the diagnosis of heart failure in the non-acute setting.

Hypertension is the main risk for diastolic HF and 20% of previously undiagnosed hypertension leads to target organ damage including subclinical heart involvement even in developed countries as Finland [13]. Early medical management possibly reduce mortality due to advanced heart diseases. USG as a direct diagnostic modality easily detects early hypertensive heart involvement [14] and could be applicable in primary step health care which possibly contributes to more efficient diagnosis of heart diseases. High mortality in diastolic HF which is similar with systolic HF as clearly documented by the Olmstead County Study is possibly due to the very low prevalence of appropriate medical management. In this community-based study, only 17 % of patients were on ACE inhibitor therapy [15]. According to another comprehensive study from the Johns Hopkins University, patients with diastolic HF who are on an effective medical therapeutic regimen (68 % use of ACE inhibitor) have similar endocardial and mid-wall fractional shortening compared to patients with subclinical hypertensive hypertrophy [16]. As a result, recent observations support that overused high-tech medical modalities possibly make physicians focus on advanced heart diseases instead of prevention and this could be problematic for early diagnosis and management of diseases. This approach might lead to an underestimation of echocardiography which is the direct and gold standard modality in early diagnosis of heart diseases. In fact, patient-physician conversations have recently been modified and we have not heard some classic questions like "Is MRI necessary for me, Doc?" anymore. Instead of rational questions, we have been hearing some questions like "Could you please order an MRI for me, Doc?".

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