



## Miokarditis

## Myocarditis

**Vjeran Nikolić-Heitzler, Marin Pavlov, Zdravko Babić, Nikola Bulj**

*Clinical Hospital "Sestre milosrdnice", Zagreb*

Obratite pažnju na knjige posvećene ehokardiografiji. U pravilu u njima ne nalazite tekstove niti slikovne zapise posvećene miokarditisu. Ehokardiografske manifestacije miokarditisa su brojne i nažalost nespecifične. Postavlja se ipak pitanje kada će nam transtorakalna ehokardiografija biti presudna u postavljanju dijagnoze?

Miokarditis se klinički može manifestirati sa brojnim simptomima uključujući bol u prsištu, akutnim zatajivanjem srca sistoličkog ili dijastoličkog tipa, atrijskim i ventrikularnim poremećajima ritma, kardiogenim šokom sve do slike nagle smrti. U 1% do 9% rutinskih te 5% do 12% autopsija kod osoba koje su umrle naglom smrću postavlja se dijagnoza miokarditisa. U velikoj seriji umrlih s dilatacijskom kardiomiopatijom kod 9% patohistološki nalaz je upućivao na miokarditis kao osnovnu bolest. Biopsija miokarda je prema mnogima još uvijek zlatni standard u dijagnostici miokarditisa. Međutim, da li je to baš tako? Koristeći se "Dallas" kriterijima iz 1987. koji se temelje na infiltraciji miokarda limfocitima uz oštećenje miocita, a bez znakova ishemije, biopsijom miokarda se tek u 10% do 22% bolesnika može postaviti dijagnoza miokarditisa. Ono što je bitno, negativan nalaz ne isključuje dijagnozu miokarditisa.

U ehokardiografskom prikazu lijevi ventrikul je uobičajeno normalne veličine ili blago dilatiran. Prisutni se segmentalni do višesegmentalni ispadi kinetike. U ranim stadijima fokalne upalne promjene dovode do žarišnih nekroza i edema miokarda koji u kasnijim stadijima mogu dovesti do globalnog zadebljanja stijenki. Miokarditis može simulirati asimetričnu ili simetričnu hipertrofiju miokarda. Pojačana ehogenost miokarda odraz je intersticijskog edema i infiltracije miocita. Fulminantni miokarditis kao što mu samo ime kaže, nastaje naglo sa izrazito teškom kliničkom slikom do kardiogenog šoka, sa začudo dobrom prognozom. Lijevi ventrikul je uredne dijastoličke dimenzije ( $5.3 \pm 0.9$  cm) sa zadebljalim iv. septumom ( $1.2 \pm 0.2$  cm),. Akutni miokarditis sa razlikom od toga u pravilu se u početku prezentira sa uvećanom dijastoličkom dimenzijom lijevog ventrikula i urednim iv. septumom, međutim sa značajno lošijim oporavkom sistoličke funkcije od fulminantnog miokarditisa. Veoma je značajno pitanje proširenja upalnog procesa i na desni ventrikul. Reducirana kinetike ne samo lijevog već i desnog ventrikula je značajan predskazatelj loše prognoze bolesnika. Doppler ehokardiografijom registriraju se smetnje dijastoličke relaksacije miokarda i prolazna mitralna regurgitacija bez elemenata endokarditisa.

Zaključak: transtorakalna ehokardiografska manifestacija miokarditisa između ostalog najčešće uključuju prolazno edematozno zadebljanje stijenki, poglavito lijevog ventrikula uz pojačanu ehogenost i poremećaje kinetike.

Pay your attention to the books dedicated to echocardiography. In general, the books neither contain texts nor illustrations relating to myocarditis. Echocardiographic manifestations of myocarditis are numerous and unfortunately non-specific. The question is therefore posed as to when will transthoracic echocardiography be decisive in obtaining a diagnosis?

Myocarditis may clinically be manifested with numerous symptoms including chest pain, acute heart failure of a systolic or diastolic type, atrial and ventricular disorders in rhythm, cardiogenic shock including sudden death. Between 1% and 9% of routine and from 5% to 12% of autopsies in persons who have passed away a sudden death, the diagnosis is myocarditis. In a large number of deaths of dilatative cardiomyopathy, 9% of pathohistological findings have indicated myocarditis as the fundamental illness. Myocardium biopsy according to many remains the golden standard in myocarditis diagnosis. However, is this exactly so? Using the "Dallas" criteria from 1987, which is based on the infiltration of myocardium by lymphocytes with damages to myocytes, and without signs of ischemia, myocardium biopsy in only 10% to 22% of patients leads to a diagnosis of myocarditis. What is important is that a negative finding does not exclude a myocarditis diagnosis.

In echocardiographic presentation, ordinarily the left ventricle has a normal size or is slightly dilated. There are signs of segmental or multi-segmental kinetic distortions. In earlier studies, focal inflammatory changes had led to intensive necrosis and myocardial edema which may in later studies lead to global thickening of the walls. Myocarditis may simulate asymmetrical or symmetrical hypertrophic myocardium. Stronger echogenic myocardium results from interstitial edema and infiltration of myocytes. Fulminant myocarditis as the name itself suggests, occurs suddenly with an exceptionally serious clinical state up to cardiogenic shock, with a surprisingly good prognosis. The left ventricle is of an orderly diastolic dimension ( $5.3 \pm 0.9$  cm) with thickening of the iv. septum ( $1.2 \pm 0.2$  cm). Acute myocarditis in comparison, in general is presented with an increased diastolic dimension of the left ventricle and orderly iv. septum, however, with significantly poorer recovery of systolic function than fulminant myocarditis. A very important question relates to the spreading of the inflammatory process to the right ventricle as well. Reduced kinetics of not only the left but also the right ventricle is an important indicator of a poor diagnosis for a patient. The Doppler echocardiography registers impediments in diastolic relaxation of myocardium and transitional mitral regurgitation without signs of endocarditis.

Conclusion: transthoracic echocardiographic manifestation of myocarditis otherwise most often includes transitional edematous thickening of the walls, especially of the left ventricle along with increased echogenic and kinetic disorders.