

Fragmented QRS frequency in patients with cardiac syndrome X

The term "cardiac syndrome X" (CSX) was introduced more than 40 year ago by Kemp (1) who described a group of patients with angina-like chest pains and normal coronary artery angiograms. Since then, the mosaic of knowledge has gradually built up; however, the letter "X" in this term characterizes the fact that evidence and knowledge on this syndrome are still limited and controversial (2).

CSX is seen more frequently in women and is defined as a combination of the following (3, 4):

- angina-like chest pains,
- ST segment depression during angina/exercise test,
- normal coronary arteries at angiography,
- absence of known comorbidities associated with microvascular dysfunction.

Initially, this syndrome was assumed to have a benign prognosis. Gradually, the evidence on structural and functional alterations of myocardium and vascular involvement has been accumulated (5–7). It has been also shown that CSX is associated with worst prognosis and higher prevalence of adverse cardiovascular events (8, 9).

The pathophysiology of CSX is still open. Presently, two main theories are accepted (for review see example 4):

- (1) microvascular dysfunction, i.e., myocardial ischemia due to impaired microvascular function and
- (2) abnormal cardiac pain sensitivity, i.e., exaggerated pain perception.

In the paper "Fragmented QRS frequency in patients with cardiac syndrome X" by Daman et al. (10) in this issue, the higher frequency of fragmented QRS (fQRS) complex in patients with CSX is documented in comparison with that in control group. The fQRS complex has been documented in a number of cardiac pathology cases (11–14). It was also shown that it is associated with structural changes of myocardium (11, 13, 15) and represents an adverse diagnostic and prognostic sign. In this context, the finding of fQRS complex in SCX patients is very interesting. It adds a new piece of evidence that perception of pain in these patients has structural and functional background.

Each piece of knowledge to the mosaic of this clinically significant syndrome is of a great value.

Thinking in terms of future meta-analysis and review papers, it would be of great value if papers with original investigation will provide more details on the clinical status, ECG findings at rest and during exercise, and coronarography.

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