Folia Cardiologica 2018
tom 13, nr 3, strony 210–215
DOI: 10.5603/FC.2018.0043

ISSN 2353–7752

Electrocardiographic and echocardiographic changes in dependence of gallbladder condition

Zmiany parametrów elektrokardiograficznych i echokardiograficznych zależnie od stanu pęcherzyka żółciowego

Larysa Mykolajivna Strilchuk[1], Dmytro Besh[1], Oleg Rafalyuk[2]

[1]National Medical University named after Danylo Halytsky, Lviv, Ukraine
[2]Lviv Regional State Clinical Cardiological Centre of Treatment and Diagnostics, Lviv, Ukraine

Larysa Strilchuk graduated from Lviv National Medical University named after Danylo Halytsky in 2008; after an internship she finished a postgraduate course and has defended a PhD thesis in 2013. Her PhD paper was dedicated to peculiarities of hypertonic disease in patients with overweight/obesity and gallbladder diseases. Now Dr. Strilchuk works as an assistant professor at the Department of Therapy # 1 and Medical Diagnostics of Alma Mater university and as a therapeutist in Rivne Regional Clinical Therapeutic and Diagnostic Centre named after V. Polishchuk. Dr. Strilchuk is the author or co-author of 102 publications in national and international journals. Additional professional activity of Dr. Strilchuk includes working as a lecturer for pharmaceutical companies, as a medical journalist for a newspaper "Health of Ukraine" and as a trainer of World Bank and Ministry of Health of Ukraine Project "Healthcare at the service of people". Scientific interests of Dr. Strilchuk include arterial hypertension, overweight, cholecystocardial syndrome and postgraduate medical education.

Abstract

It is widely known, that gallbladder (GB) disorders are accompanied by heart changes, but electrocardiographic (ECG) and echocardiographic (EchoCG) alterations still remain unestablished. This fact determines the importance of our work. Its aim was to investigate ECG and EchoCG changes in dependence of GB condition in patients with ischaemic heart disease (IHD), who underwent coronary bypass surgery (CBS). We have analysed the data of 98 patients (mean age 61.7 ± 1.6 years), which were grouped in dependence of GB condition. Intact GB was revealed only in 29.6% patients; biliary sludge and GB cholesterosis — in 13.3%, bent GB body — in 13.3%, GB neck deformations — in 27.5%, cholelithiasis — in 11.2%, previous cholecystectomy — in 5.1%. Analysed ECG and EchoCG parameters of IHD patients, who underwent CBS, were dependent from GB condition. Patients with sludge differed by absence of conduction disorders, the most often scars on ECG, alterations of aortal valve (61.5%) and left ventricle hypokinesias (92.3%), which were accompanied by minimal ejection fraction among all the groups (45%). Patients with bent GB body often had mitral valve changes (76.9%), maximal size of left ventricle among all the groups (4.04 cm) and decreased ejection fraction (52.7%). GB neck deformations were accompanied by left ventricle hypertrophy (100%), ST depression (55.5%) and ejection fraction decrease (52.67%). Patients with IHD and cholelithiasis were characterised by tendency to ST interval depressions (63.6%), tachycardia (84.2 bpm), the most often alterations of rhythm (36.4%) and conduction (45.4%), maximal sizes of aorta and interventricular septum.

Key words: ECG, EchoCG, coronary bypass surgery, ST interval depression, gallbladder

Folia Cardiologica 2018; 13, 3: 210–215

Address for correspondence: Larysa Mykolajivna Strilchuk MD, PhD, National Medical University named after Danylo Halytsky, Pekarska Str., № 69, Lviv, Ukraine, 79000, phone +38 098 706 77 53, e-mail: larysa.stril4uk@ukr.net

Introduction

Since a long time ago it has been known that gallbladder (GB) disorders are accompanied by heart changes. Jiang et al. [1] discovered, that the prevalence of gallstone disease is significantly greater in patients with coronary artery disease than in patients without it (19.5% vs 11.3%, $p < 0.01$). EPIC — Germany cohort study ($n = 46,468$) showed, that subjects with gallstones had an increased risk of cardiovascular diseases (hazard rate ratio = 1.24, 95% confidence interval [CI]: 1.02, 1.50) and patients, who previously underwent cholecystectomy, had a 1.32-fold increased risk (95% CI: 1.05, 1.65). These results show high cardiovascular risk for patients with gallstone disease, which cannot be influenced by gallbladder removal [2]. However, many questions of GB-heart association still remain unclear. This also applies to the main diagnostic methods of cardiology, namely, electrocardiography (ECG) and echocardiography (EchoCG). Diseased gallbladder has been associated with ECG changes similar to those of ischaemic heart disease (IHD) since 1878 [3]. Inversion or voltage decrease of T wave, depression of ST interval or its elevation in case of coronary heart disease, elongation of P wave, atrioventricular conduction impairment, elongation of ST interval or its pseudocoronary changes, isolated right bundle branch block or both bundle branches block etc., are described as displays of cholecystocardial syndrome [4–7]. Acute cholecystitis has been reported to mimic ECG changes associated with IHD (ST-segment depressions, T-wave inversions) [8]. Differentiation between cardiac ischaemia and acute cholecystitis is crucial for appropriate diagnosis and timely start of treatment, thereby leading to a reduction in morbidity/mortality, and also reduction of costs needed. Needless to say, that reperfusion therapy in case of wrong diagnosis is associated with excessive expenditures and high risk. On the other side, delays in diagnosing cholecystitis may lead to life-threatening complications (sepsis, pancreatitis) [3]. Literature data regarding EchoCG diagnostics and GB disorders is very scarce, particularly, there is an investigation on topic of EchoCG role in prognosis of outcomes of GB surgery (with ejection fraction being the most substantial criteria) [9]. These facts determined the relevance of our investigation.

The aim of this paper was to investigate the changes of ECG and EchoCG in dependence of GB condition in patients with IHD, who underwent coronary bypass surgery (CBS).

Materials and methods

We have analysed data of 98 patients with IHD (40% with acute myocardial infarction (AMI) and 60% with unstable angina pectoris), who underwent CBS in cardiosurgical department of Lviv Regional State Clinical Cardiological Centre of Treatment and Diagnostics. The authors have received written consent of all the patients for CBS and scientific processing of their data. Investigation group included 79% male and 21% female patients with mean age of 61.7 ± 1.6 years. The participants were divided into groups in dependence of GB condition, which was defined with the help of ultrasound. Diagnosis, examination and treatment were held according to Decree of Ministry of Health of Ukraine no. 436 dated by 3.07.2006 ("About approval of medical care protocols for "Cardiology specialty"). We have received Bioethical Committee of Lviv National Medical University named after Danylo Halytsky approval (no. 4, 02.03.2017). Digital data was processed statistically with the help of software package Statistica 6.0 (Statsoft, USA). The results were considered significant if p-value was less than 0.05.

Results and discussion

It was established, that intact GB was present only in 29 (29.6%) patients (all of them were male, mean age 61.2 years), which underwent CBS for treatment of AMI (51.7%) or unstable angina (48.3%). Majority of the analysed patients (70.4%) had certain changes of GB condition or structure. Particularly, biliary sludge and GB cholesterosis were diagnosed in 13 (13.3%) patients (69.2% — males, 30.8% — females; mean age 60.5 years), who approximately equally often underwent CBS because of AMI and angina (53.8% and 46.1% respectively). Bent GB body was revealed with the same frequency (13 [13.3%] patients, all of them male, mean age 60.5 years). The most frequent GB disorder was its neck deformation (27 [27.5%] patients; males — 65.5%, females — 34.5%, mean age 59.6 years), where the patients, in contrast to previously listed groups, significantly more often underwent CBS because of unstable angina (69.2%, significant difference with intact GB group, $p < 0.05$) and more rarely — because of AMI (30.8%, significant difference with angina frequency and the corresponding figure in intact GB group, $p < 0.05$). Eleven (11.2%) patients had cholecystolithiasis (60% males and 40% females, mean age 67.8 years). In this group, the percentage share of angina was the biggest among all the groups (70.0%, $p < 0.05$ in comparison to AMI share), and AMI share was minimal (30.0%). GB was previously removed in five (5.1%) participants (three women, two men, mean age 60.2 years).

The analysis of ECG results, received before CBS, showed, that patients did not significantly differ by heart rate (HR) and frequency of detection of rhythm disturbances, although the attention was drawn to the fact, that minimal meanings of both parameters were detected in the group with biliary sludge (15.4% of patients with sludge had rhythm disorders; mean HR in this group was 69.2 bpm) and maximal — in the group with cholelithiasis (frequency

of rhythm violations — 36.4%, mean HR — 84.18 bpm) (Table 1). On pre-CBS EchoCG we did not reveal significant difference between groups by following parameters: right ventricle size (from 2.28 cm in patients with intact GB and after cholecystectomy to 2.39 cm in sludge group), left atrium size (from 3.84 cm in GB neck deformation group to 4.04 cm in bent GB body group), thickness of posterior wall of left ventricle (from 1.10 cm in postcholecystectomy

Table 1. Peculiarities of electrocardiographic (ECG) and echocardiographic (EchoCG) findings in patients with ischaemic heart disease, who underwent coronary bypass surgery, in dependence of gallbladder (GB) condition

Parameters	Group (0) with intact GB N = 29	Group (1) with sludge N = 13	Group (2) with bent GB body N = 13	Group (3) with GB neck deformation N = 27	Group (4) with cholelithiasis N = 11	Group (5) with past cholecyste-ctomy N = 5
ECG						
Heart rate [bpm]	71.1 ± 2.3	69.2 ± 1.12	71.1 ± 2.1	70.3 ± 2.8	84.2 ± 9.5	80.4 ± 9.5
Rhythm disorders [%]	20.7 ± 7.5	15.4 ± 10.0	23.1 ± 11.7	18.5 ± 7.4	36.4 ± 14.5	20.0 ± 17.9
Conduction impairments [%]	17.2 ± 7.0 $p_{0-1} < 0.05$ $p_{0-2} < 0.05$	0 $p_{0-1} < 0.05$ $p_{1-4} < 0.05$	0 $p_{0-2} < 0.05$ $p_{2-4} < 0.05$	11.1 ± 6.0	45.4 ± 15.0 $p_{1-4} < 0.05$ $p_{2-4} < 0.05$	20.0 ± 17.9
Scars after AMI [%]	79.3 ± 7.5 $p_{0-4} < 0.05$	84.6 ± 10.0 $p_{1-4} < 0.05$	69.2 ± 12.8	59.2 ± 9.4	45.4 ± 15.0 $p_{0-4} < 0.05$ $p_{1-4} < 0.05$	40.0 ± 21.9
Left ventricle hypertrophy [%]	89.6 ± 5.7	84.6 ± 10.0	69.2 ± 12.8 $p_{2-3} < 0.05$	100 ± 0 $p_{2-3} < 0.05$	90.9 ± 8.7	60.0 ± 21.9
ST interval depression [%]	31.0 ± 8.6 $p_{0-2} < 0.05$	15.4 ± 10.0 $p_{1-3} < 0.05$ $p_{1-4} < 0.05$	0 $p_{0-2} < 0.05$ $p_{2-3} < 0.05$ $p_{2-4} < 0.05$	55.5 ± 9.5 $p_{1-3} < 0.05$ $p_{2-3} < 0.05$	63.6 ± 14.5 $p_{1-4} < 0.05$ $p_{2-4} < 0.05$	40.0 ± 21.9
EchoCG						
Right ventricle [cm]	2.28 ± 0.06	2.39 ± 0.07	2.31 ± 0.08	2.31 ± 0.04	2.31 ± 0.06	2.28 ± 0.15
Left atrium [cm]	3.92 ± 0.07	3.93 ± 0.10	4.04 ± 0.15	3.84 ± 0.10	4.03 ± 0.13	3.98 ± 0.19
Aorta [cm]	3.34 ± 0.07	3.26 ± 0.10	3.31 ± 0.11	3.14 ± 0.07 $p_{3-4} < 0.05$	3.42 ± 0.04 $p_{3-4} < 0.05$	3.34 ± 0.24
Interventricular septum [cm]	1.23 ± 0.03	1.30 ± 0.06	1.16 ± 0.06 $p_{2-4} = 0.06$	1.21 ± 0.03	1.31 ± 0.06 $p_{2-4} = 0.06$	1.24 ± 0.02
Posterior wall of left ventricle [cm]	1.15 ± 0.02	1.21 ± 0.04	1.15 ± 0.05	1.13 ± 0.02	1.14 ± 0.06	1.10 ± 0.13
End-diastolic size of left ventricle [cm]	5.00 ± 0.08	5.41 ± 0.20 $p_{1-3} = 0.06$	5.15 ± 0.21	4.98 ± 0.10 $p_{1-3} = 0.06$	5.02 ± 0.16	5.10 ± 0.14
Ejection fraction [%]	50.14 ± 1.71	45.00 ± 2.53 $p_{1-3} < 0.05$ $p_{1-4} < 0.05$	51.15 ± 2.99	52.67 ± 1.56 $p_{1-3} < 0.05$	56.09 ± 3.09 $p_{1-4} < 0.05$	52.00 ± 4.90
Hypokinesias[%]	75.0 ± 8.0 $p_{0-2} < 0.05$	92.3 ± 7.4 $p_{1-2} < 0.05$ $p_{1-3} < 0.05$ $p_{1-4} < 0.05$ $p_{1-5} < 0.05$	46.1 ± 11.7 $p_{0-2} < 0.05$ $p_{1-2} < 0.05$	63.0 ± 9.3 $p_{1-3} < 0.05$	45.4 ± 15.0 $p_{1-4} < 0.05$	40.2 ± 21.9 $p_{1-5} < 0.05$
Mitral valve changes [%]	44.8 ± 9.2 $p_{0-2} < 0.05$ $p_{0-3} < 0.05$	69.2 ± 12.8	76.9 ± 11.7 $p_{0-2} < 0.05$	70.4 ± 8.8 $p_{0-3} < 0.05$	72.7 ± 13.4	80.0 ± 17.9
Aortal valve changes [%]	13.8 ± 6.4 $p_{0-1} < 0.05$ $p_{0-3} < 0.05$	61.5 ± 13.5 $p_{0-1} < 0.05$	38.5 ± 13.5	37.0 ± 9.3 $p_{0-3} < 0.05$	45.4 ± 15.0	20.0 ± 17.9

AMI — acute myocardial infarction

patients to 1.21 cm in patients with sludge). Other parameters showed some significant differences.

The group of IHD patients with sludge and GB cholesterosis, in contrast to intact GB group, was characterised by the absence of conduction impairments (0% vs. 17.2 ± 7.0%, p < 0.05), trend to increase of end-diastolic size of left ventricle (5.41 ± 0.20 cm vs. 5.00 ± 0.08 cm, p = 0.06) and much more often changes of aortal valve (61.5 ± 13.5% vs. 13.8 ± 6.4%, p < 0.05) (Table 1). In comparison to all other groups, patients with sludge had minimal incidence of rhythm impairments (15.4%) and conduction impairments (were not revealed at all), and also the lowest HR (69.2 bpm). This group had maximal sizes of right ventricle (2.39 cm) and left ventricle during diastole (5.41 cm), the biggest thickness of posterior wall of left ventricle (1.21 cm) and minimal ejection fraction (45%). Zones of hypo- and akinesia were diagnosed in 92.3% of patients of this group (it was the biggest value among the investigated groups); the incidence of aortal valve changes was also the highest in patients with sludge and cholesterosis (61.5%). In patients of this group, sonographic size of left ventricle was inversely proportional to age (r = –0.54, p < 0.05) and directly proportional to the grade of stenosis of anterior interventricular coronary artery, revealed during coronarography (r = 0.59, p < 0.05).

The patients with bent GB body, in contrast to research participants with intact GB, also did not have conduction impairments (0% vs. 17.2 ± 7.0%, p < 0.05) and ST depression beyond the angina attacks (0% vs. 31.0 ± ± 8.6%, p < 0.05) (Table 1). They also had lower frequency of detection of hypokinesia zones on EchoCG (46.1 ± ± 11.7% vs. 75.0 ± 8.0%, p < 0.05), but higher frequency of mitral valve changes (76.9 ± 11.7% vs. 44.8 ± ± 9.2%, p < 0.05). The patients with bent GB body differed from sludge group by less frequent detection of hypokinesia zones on EchoCG (46.1 ± 11.7% vs. 92.3 ± 7.4%, p < 0.05). Comparing to all other groups, patients with bent GB body did not have conduction impairments and ST depressions beyond the angina attacks. They also had minimal thickness of interventricular septum (1.16 cm) and maximal size of left atrium (4.04 cm), which is an unfavourable prognostic sign for cardiovascular diseases [10]. Thickness of left ventricle posterior wall in these patients was inversely dependent from grade of stenosis of circumflex coronary artery, revealed during coronarography (r = –0.78, p < 0.05).

GB neck deformations, which are mainly the consequence of chronic cholecystitis, were the most frequent GB changes in the examined patients with IHD. Unlike the group with intact GB, in patients with GB neck deformations, we have revealed a trend to increase of ST depression frequency at rest (55.5 ± 9.5% vs. 31.0 ± 8.6%, p = 0.06) and significantly more often changes of mitral (70.4 ± 8.8% vs. 44.8 ± 9.2%, p < 0.05) and aortal (37.0 ± 9.3% vs. 13.8 ± 6.4%, p < 0.05) valves (Table 1). In comparison to patients with sludge and GB cholesterosis, there were tendencies to less frequent detection of scar tissue on ECG (59.2 ± 9.4% vs. 84.6 ± 10.0%, p = 0.07), smaller left ventricle size (4.98 ± 0.10 cm vs. 5.41 ± 0.20 cm, p = 0.06) and acceleration time in pulmonary artery (102.88 ± 2.83 m/s vs. 112.00 ± 3.59 m/s, p = 0.06). The group with GB neck deformations was also characterised by significantly more often ST interval depressions on ECG (55.5 ± 9.5% vs. 15.4 ± 10.0%, p < 0.05) and higher ejection fraction (52.67 ± 1.56% vs. 45.00 ± 2.53%, p < 0.05), but less often hypokinetic changes of left ventricle (63.0 ± 9.3% vs. 92.3 ± 7.4%, p < 0.05) than in sludge and cholesterosis group. In comparison to the group with bent GB body, patients with GB neck deformations significantly more often had left ventricle hypertrophy according to ECG (100% vs. 84.6 ± 10.0, p < 0.05) and ST interval depressions, which were not revealed at all in GB body deformation group (55.5 ± 9.5%, p < 0.01). Comparing to all other groups, patients with GB neck deformations were characterised by minimal absolute values of some EchoCG parameters: left atrium size (3.84 cm), aorta diameter (3.14 cm), left ventricle size (4.98 cm), acceleration time in pulmonary artery (102.88 m/s), which, however, were accompanied by ECG signs of left ventricle hypertrophy in all these patients. Diameter of aorta mouth in patients with GB neck deformation was the smallest among all the examined groups and directly proportional to sizes of both ventricles (both r = 0.40, both p < 0.05) and thickness of interventricular septum (r = 0.39, p < 0.05).

The group of IHD patients with GB stones differed from intact GB group by marked susceptibility to ST segment depressions (63.6 ± 4.5% vs. 31.0 ± 8.6%, p = 0.06) and less frequent detection of scars (45.4 ± 15.0% vs. 79.3 ± 7.5%, p < 0.05) on ECG (Table 1). Unlike people with sludge, this group members significantly more often had conduction impairments (45.4 ± 15.0% vs. 0%, p < 0.05) and ST interval depressions (63.6 ± 14.5% vs. 15.4 ± 10.0%, p < 0.05), less frequent myocardium scars on ECG (45.4 ± 15.0% vs. 84.6 ± 10.0%, p < 0.05), higher ejection fraction (56.09 ± 3.09% vs. 45.00 ± 2.53%, p < 0.05) and smaller incidence of hypokinesias according to EchoCG data (45.4 ± 15.0% vs. 92.3 ± 7.4%, p < 0.05). In comparison to the patients with bent GB body, participants with cholelithiasis significantly more often had conduction impairments (45.4 ± 15.0% vs. 0, p < 0.05), ST interval depressions (63.6 ± 14.5% vs. 0, p < 0.05) and a tendency to increase of thickness of interventricular septum (1.31 ± 0.06 cm vs. 1.16 ± 0.06 cm, p = 0.06). The group with gallstones had significantly bigger value of aorta diameter than group with GB neck deformations (3.42 ± 0.07 cm vs. 3.14 ± 0.07 cm, p < 0.05). In general, comparing to all other groups, patients with cholelithiasis the most often had rhythm violations (36.4%), conduction

disturbances (45.4%), ST interval depressions (63.6%) and maximal HR (84.18 bpm) according to ECG. EchoCG revealed maximal values of aorta diameter (3.42 cm), interventricular septum thickness (1.31 cm) and ejection fraction (56.09%).

The group with IHD patients, which previously underwent cholecystectomy because of cholelithiasis, was the least numerous (5.1%) (Table 1). This fact can explain insignificancy of differences with other groups, although there were revealed some specialties: these patients differed from sludge and cholesterosis group by smaller frequency of hypokinesias on EchoCG (40.0 ± 21.9% vs. 92.3 ± 7.4%, $p < 0.05$), which was minimal in this group. Cholecystectomy patients also had minimal values of right ventricle size (2.28 cm) and thickness of left ventricle posterior wall (1.10 cm). However, the patients of this group the most often had mitral valve changes (80%).

There is some relevant literature data dedicated mostly to the acute influence of GB inflammation on heart, which can be explained by the excess of pro-inflammatory mediators evoking ischaemic changes in myocardium [3, 7, 8]. However, our investigation showed, that even less prominent structural and functional changes of GB are accompanied by alterations of ECG and EchoCG in patients with IHD, verified by coronarography. We must underline, that such changes emerge on the early stage of functional GB disorders (sludge), which was accompanied by the most often myocardial scars, changes of aortal valve, hypokinesias and minimal ejection fraction. Such tendency was not described before. Irritation of GB wall receptors leads to deceleration of coronary blood flow and reflex coronary vasospasm through influence of efferent sympathetic mechanisms and alpha-adrenoreceptors of coronary vessels. This leads to the increase of heart rate and blood pressure [4, 8]. Our work has proved this finding, because among our patients cholelithiasis (even without clinical and laboratory signs of active GB inflammation) was accompanied by a tendency to tachycardia and increased frequency of rhythm disorders, independently of stones removal. That's why, to our mind, treatment of patients with IHD and cholelithiasis must include medications, which decrease heart rate (ivabradine, beta-blockers). Although ST interval depression is thought to be a typical sign of acute cholecystitis and cholecystocardial syndrome [3–5], according to our results, chronic GB inflammations, which lead to increase of GB wall thickness, neck deformations and deceleration of bile flow, were also accompanied by ST interval depression and ejection fraction decrease. This focuses attention of the clinicians on timely treatment of all GB changes with the aim of prophylaxis of GB deformations and stone formation. GB condition must be taken into account during planning of diagnostic and therapeutic procedures of patients with IHD, especially, of advanced age [9]. In our opinion, all the patients with GB changes must undergo standard ECG and EchoCG, whereas patients with diagnosed IHD need to undergo GB ultrasound and correction of revealed changes. Already on the sludge stage patients must take medications, which improve biochemical properties of bile, facilitate its liquefaction, activate GB contractility on the background of stoppage of bile ducts' spasms (ursodeoxycholic acid, choleretics, cholekinetics). This is aimed at prophylaxis of GB pathology progress and elimination of possible influences of pathological efferent reflex impulses and excess of pro-inflammatory mediators of heart condition and IHD course. Investigation of coronary arteries condition together with metabolic background in dependence of GB condition and methods of its pharmacological correction is a promising field of future researches.

Conclusions

1. ECG and EchoCG parameters of patients with IHD, who underwent CBS, were dependent on GB condition. 2. Patients with sludge differed by absence of conduction impairments, the most often detection of scar tissue on ECG, the most often changes of aortal valve (61.5%) and hypokinesias (92.3%), which was accompanied by minimal ejection fraction (45%). 3. For patients with bent GB body conduction, impairments and ST depressions were not typical. However, these patients often had changed mitral valve (76.9%), maximal left atrium size (4.04 cm) and decreased ejection fraction (52.7%). 4. GB neck deformations were accompanied by left ventricle hypertrophy (100%), ST interval depression (55.5%) and ejection fraction decrease (52.67%). 5. Patients with IHD and cholelithiasis were characterised by tendency to ST interval depressions (63.6%), tachycardia (mean HR 84.2 bpm), the most frequent rhythm disorders (36.4%) and conduction impairments (45.4%), maximal sizes of aorta and interventricular septum.

Authorship

Conception, design: Strilchuk, Besh, Rafalyuk.
Coronary bypass surgery, collection of primary data: Besh, Rafalyuk.
Statistics procession, text writing: Strilchuk.
Final proofreading: Strilchuk, Besh, Rafalyuk.

Acknowledgements

The authors did not receive any grants, funding or financial support.

Conflict of interest(s)

The authors report no conflict of interests.

Streszczenie

Powszechnie wiadomo, że patologiom w obrębie pęcherzyka żółciowego (GB) towarzyszą zaburzenia sercowe, ale nie określono dotychczas związanych z nimi zmian w badaniach elektrokardiograficznym (EKG) i echokardiograficznym (echo). Z tego względu wyniki badania autorów mają ważne znaczenie. Przeprowadzono je w celu oceny zmian w EKG i echo zależnie od stanu GB u pacjentów z chorobą niedokrwienną serca (IHD), których poddano pomostowaniu aortalno-wieńcowemu (CBS). Autorzy przeanalizowali dane 98 chorych (średnia wieku 61,7 ± 1,6 roku), których podzielono na grupy zależnie od stanu GB. Prawidłowy GB stwierdzono u 29,6% chorych, złogi w drogach żółciowych i cholesterolozę GB — u 13,3%, GB zagięty — u 13,3%, deformacje szyjki GB — u 27,5%, kamicę żółciową — u 11,2%, a 5,1% chorych było po cholecystektomii. Analizowane parametry elektro- i echokardiograficzne u chorych z IHD, u których wykonano CBS, zależały od stanu GB. Chorych ze złogami w drogach żółciowych odróżniał brak zaburzeń przewodzenia, jednocześnie była to grupa, w której najczęściej stwierdzano blizny w badaniu EKG — głównie wykrywano zmiany zastawki aortalnej (61,5%) i hipokinezę lewej komory (92,3%), którym towarzyszyła najniższa frakcja wyrzutowa spośród wszystkich grup (45%). U chorych z GB zagiętym często występowały zmiany w obrębie zastawki mitralnej (76,9%), rozmiar lewej komory był większy niż w pozostałych grupach (4,04 cm), a frakcja wyrzutowa była zmniejszona (52,7%). Deformacje szyjki GB wiązały się z przerostem lewej komory (100%), obniżeniem odcinka ST (55,5%) oraz zmniejszeniem frakcji wyrzutowej (52,67%). Chorzy z IHD i kamicą żółciową charakteryzowali się tendencją do obniżenia odcinka ST (63,6%), tachykardią (84,2/min), najczęstszym występowaniem zaburzeń rytmu (36,4%) i przewodzenia (45,4%) oraz największymi wymiarami aorty i przegrody międzykomorowej.

Słowa kluczowe: EKG, echokardiografia, pomostowanie aortalno-wieńcowe, obniżenie odcinka ST, pęcherzyk żółciowy

Folia Cardiologica 2018; 13, 3: 210–215

References

1. Jiang ZY, Sheng X, Xu CY, et al. Gallbladder gallstone disease is associated with newly diagnosed coronary artery atherosclerotic disease: a cross-sectional study. PLoS One. 2013; 8(9): e75400, doi: 10.1371/journal.pone.0075400, indexed in Pubmed: 24058685.
2. Wirth J, di Giuseppe R, Wientzek A, et al. Presence of gallstones and the risk of cardiovascular diseases: the EPIC-Germany cohort study. Eur J Prev Cardiol. 2015; 22(3): 326–334, doi: 10.1177/2047487313512218, indexed in Pubmed: 24177267.
3. Patel N, Ariyarathenam A, Davies W, et al. Acute cholecystits leading to ischemic ECG changes in a patient with no underlying cardiac disease. JSLS. 2011; 15(1): 105–108, doi: 10.4293/108680811X13022985131534, indexed in Pubmed: 21902954.
4. Kremer SV. Diagostika i taktika vedeiya pacietov pri abdomialo-kardialom sindrome. Ivanovo 1999: 22.
5. Panfilov BK. Varianty biliarno-kardialnogo sindroma Botkina pri ostrom holecystite. Hirurgiya. 2002; (2): 28–30.
6. Vetshev PS, Nogtev PV. Holetsystokardialnyj sindrom — mif ili realnost. Hirurgiya. 2005; (3): 59–64.
7. Furuhashi M, Uno K, Satoh SI, et al. Right bundle branch block and coved-type ST-segment elevation mimicked by acute cholecystitis. Circ J. 2003; 67(9): 802–804, indexed in Pubmed: 12939560.
8. Demarchi MS, Regusci L, Fasolini F. Electrocardiographic changes and false-positive troponin I in a patient with acute cholecystitis. Case Rep Gastroenterol. 2012; 6(2): 410–414, doi: 10.1159/000339965, indexed in Pubmed: 23055951.
9. Panfilov BK, Shelepin AA, Stepanov NV, et al. Znachenie ehokardiografii v prognoze ishoda operatsij pri holecystite u pozhilyh lyude. Hirurgiya. 2002; (3): 11–13.
10. Tsang TSM, Barnes ME, Gersh BJ, et al. Prediction of risk for first age-related cardiovascular events in an elderly population: the incremental value of echocardiography. J Am Coll Cardiol. 2003; 42(7): 1199–1205, indexed in Pubmed: 14522480.