

· 肝纤维化及肝硬化 ·

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病毒性、酒精性与胆源性肝硬化患者心脏结构和功能的比较分析

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摘要: **目的** 探索病毒性、酒精性与胆源性肝硬化患者心脏病变可能存在的差异。**方法** 回顾性收集2020年1月—2023年12月因肝硬化于湖南省人民医院住院的512例患者的临床资料。根据病因不同将患者分为3组,分别为病毒性肝硬化组($n=275$)、酒精性肝硬化组($n=70$)及胆源性肝硬化组($n=167$)。符合正态分布的计量资料多组间比较采用单因素方差分析,进一步两两比较根据方差齐性选择LSD- t 或Tamhane's T2检验;非正态分布的计量资料多组间比较采用Kruskal-Wallis H 检验;计数资料组间比较采用 χ^2 检验。**结果** 3组患者的性别分布差异显著,病毒性及酒精性肝硬化组以男性为主,其比例分别为71.3%和95.7%,而胆源性肝硬化组则以女性为主(64.7%)。胆源性肝硬化组年龄为(61.67 ± 9.59)岁,明显高于其他两组(P 值均 <0.05)。酒精性肝硬化组蔡尔德-皮尤评分(Child-Pugh评分)($H=30.598$)、球蛋白($H=13.350$)及QTc间期($F=9.956$)明显高于其他两组,血红蛋白($F=4.529$)、凝血酶原活动度($F=36.293$)及白蛋白($F=15.744$)均低于其他两组(P 值均 <0.05)。病毒性和酒精性肝硬化组心脏彩超各项指标比较,差异均无统计学意义(P 值均 >0.05);病毒性及酒精性肝硬化组左心房前后径($H=19.197$)、左心室舒张末期内径(LVEDD)($H=15.660$)、右心房横径($H=22.854$)、右心室中份横径($H=10.936$)、舒张末期室间隔厚度(IVSd)($H=13.539$)及舒张末期左室后壁厚度(LVPWd)($H=14.139$)均大于胆源性肝硬化组,病毒性肝硬化组二尖瓣口舒张早期时快速充盈峰/舒张晚期时快速充盈峰(E/A)大于胆源性肝硬化组(P 值均 <0.05)。病毒性、酒精性及胆源性肝硬化3组左心室舒张功能减退患者分别为170例(61.8%)、45例(64.3%)及125例(74.9%),3组比较差异有统计学意义($\chi^2=8.074, P=0.018$)。根据Child-Pugh评分将患者分为A、B及C3个等级,对比3组患者心脏彩超结果显示,LVEDD、IVSd、LVPWd、E/A及左心室射血分数均无统计学差异(P 值均 >0.05)。**结论** 不同病因肝硬化患者的心脏结构和功能存在差异,临床中应针对不同病因进行个体化心脏评估及干预。

关键词: 肝硬化; 心脏病变; 对比研究**基金项目:** 湖南省卫生健康委重点指导课题(C202303018917)

Cardiac structure and function in patients with viral, alcoholic or biliary cirrhosis: A comparative study

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Abstract: Objective To investigate the potential differences in cardiac lesions between the patients with viral, alcoholic or biliary cirrhosis. **Methods** A retrospective analysis was performed for the clinical data of 512 patients who were hospitalized in Hunan Provincial People's Hospital due to liver cirrhosis from January 2020 to December 2023, and according to the etiology, the patients were divided into viral cirrhosis group with 275 patients, alcoholic cirrhosis group with 70 patients, and biliary cirrhosis group with 167 patients. A one-way analysis of variance was used for comparison of normally distributed continuous data between multiple groups, and the least significant difference t -test or the Tamhane's T2 test was used based on homogeneity of variance for further comparison between two groups; the Kruskal-Wallis H test was used for comparison of non-normally distributed continuous data between multiple groups; the chi-square test was used for comparison of categorical data between groups. **Results** There was a significant difference in sex distribution between the three groups, and the male patients accounted for 71.3% in the viral

cirrhosis group and 95.7% in the alcoholic cirrhosis group, while the female patients accounted for 64.7% in the biliary cirrhosis group. The biliary cirrhosis group had an age of 61.67 ± 9.59 years, which was significantly higher than that in the other two groups ($P < 0.05$). Compared with the viral cirrhosis group and the biliary cirrhosis group, the alcoholic cirrhosis group had significantly higher Child-Pugh score ($H = 30.598$, $P < 0.05$), globulin ($H = 13.350$, $P < 0.05$), and QTc interval ($F = 9.956$, $P < 0.05$) and significantly lower hemoglobin ($F = 4.529$, $P < 0.05$), prothrombin activity ($F = 36.293$, $P < 0.05$), and albumin ($F = 15.744$, $P < 0.05$). There were no significant differences in each echocardiography parameter between the viral cirrhosis group and the alcoholic cirrhosis group ($P > 0.05$); compared with the biliary cirrhosis group, the viral cirrhosis group and the alcoholic cirrhosis group had significantly larger left atrial anterior-posterior diameter ($H = 19.197$, $P < 0.05$), left ventricular end-diastolic diameter (LVEDD) ($H = 15.660$, $P < 0.05$), right atrial transverse diameter ($H = 22.854$, $P < 0.05$), mid-right ventricular transverse diameter ($H = 10.936$, $P < 0.05$), interventricular septal thickness in diastole (IVSd) ($H = 13.539$, $P < 0.05$), and left ventricular posterior wall thickness in diastole (LVPWd) ($H = 14.139$, $P < 0.05$); compared with the biliary cirrhosis group, the viral cirrhosis group had a significantly higher mitral ratio of peak early to late diastolic filling velocity (E/A) ($P < 0.05$). Left ventricular diastolic dysfunction was observed in 170 patients (61.8%) in the viral cirrhosis group, 45 patients (64.3%) in the alcoholic cirrhosis group, and 125 patients (74.9%) in the biliary cirrhosis group, with a significant difference between the three groups ($\chi^2 = 8.074$, $P = 0.018$). The patients were divided into grade A, B, and C groups based on Child-Pugh score, and comparisons of echocardiography findings between the three groups showed no significant differences in LVEDD, IVSd, LVPWd, E/A, and left ventricular ejection fraction (all $P > 0.05$).

Conclusion There are differences in cardiac structure and function between patients with different etiologies of liver cirrhosis, and in clinical practice, individualized cardiac assessment and intervention should be performed based on different etiologies.

Key words: Liver Cirrhosis; Cardiac Lesions; Comparative Study

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肝硬化是由多种病因引起的进行性肝病,是我国常见的慢性疾病^[1]。肝硬化患者因外周血管阻力降低、神经体液调节紊乱及血管活性物质异常,机体常处于高动力循环状态,导致心脏功能障碍,在静息状态下其心脏功能异常表现并不明显,但在应激状态下患者可出现各种心血管并发症,甚至心力衰竭^[2-3]。不同病因可致机体内环境呈现不同特征,对心脏的影响及改变亦有可能不同。例如,酒精对心脏有直接的毒性作用,可导致心肌收缩力逐渐下降,进而引发心力衰竭和心律失常^[4]。因此,本研究旨在通过回顾性分析,明确不同病因肝硬化患者的心脏病变差异,以期对早期识别高危患者和实施个体化治疗提供依据,改善患者的预后。

1 材料与方法

1.1 研究对象 回顾性收集2020年1月—2023年12月于本院住院治疗期间诊断为肝硬化的512例患者的临床资料。纳入标准:(1)病毒性、酒精性及胆源性肝硬化患者,诊断符合2019年版《肝硬化诊治指南》^[1]诊断标准;(2)年龄 ≥ 18 岁。排除标准:(1)混合型肝硬化患者;(2)原发性胆汁性胆管炎、原发性硬化性胆管炎所致的肝硬化患者;(3)冠状动脉粥样硬化性心脏病、扩张型心肌病、肥厚型心肌病、先天性心脏病、心脏瓣膜病、肺源性

心脏病、缩窄性心包炎等心脏疾病患者;(4)高血压患者;(5)糖尿病并发症、甲状腺功能异常、系统性红斑狼疮、严重的肾脏疾病、中-重度慢性贫血患者;(6)脓毒血症、多器官功能衰竭、脑血管意外等严重疾病患者;(7)除原发性肝癌外其他恶性肿瘤患者;(8)入院时休克患者;(9)既往有内镜下食管胃静脉曲张治疗术或经颈静脉肝内门体分流术史以及肝移植手术史患者;(10)住院期间临床资料不完整者。

纳入的患者中270例为代偿期肝硬化患者,242例为失代偿期肝硬化患者。左心室舒张功能(left ventricular diastolic function, LVDF)减退的定义:二尖瓣口舒张早期时快速充盈峰(E)与舒张晚期时快速充盈峰(A)的比值,即 $E/A < 1$ 。

1.2 研究方法 收集患者性别、年龄、蔡尔德-皮尤评分(Child-Pugh评分)及是否合并糖尿病;入院时的检验结果,包括血红蛋白(hemoglobin, HGB)、血小板(platelet, PLT)、凝血酶原活动度(prothrombin activity, PTA)、血清白蛋白(albumin, Alb)、球蛋白(globulin, GLB)、总胆红素(total bilirubin, TBil)、总胆汁酸(total bile acid, TBA)、肾小球滤过率(estimated glomerular filtration rate, eGFR)、乳酸脱氢酶(lactate dehydrogenase, LDH)、肌酸激酶同工酶MB(creatine kinase-myocardial band, CK-

MB)、肌红蛋白(myoglobin, MYO);入院时常规十二导联心电图QT、QTc间期以及心脏彩超的结果,包括左心房前后径(left atrial anterior-posterior diameter, LA-ap)、左心室舒张末期内径(left ventricular end-diastolic diameter, LVEDD)、舒张末期室间隔厚度(interventricular septal diameter, IVSd)、舒张末期左心室后壁厚度(left ventricular posterior wall diameter, LVPWd)、右心房横径(right atrial transverse diameter, RA-t)、右心室中份横径(mid-right ventricular transverse diameter, RV-m)、E/A及左心室射血分数(left ventricular ejection fraction, LVEF)。

1.3 统计学方法 采用SPSS 27.0软件对数据进行统计分析。符合正态分布的计量资料以 $\bar{x} \pm s$ 表示,多组间比较采用单因素方差分析,进一步两两比较根据方差齐性选择LSD-*t*或Tamhane's T2检验;非正态分布的计量资料以 $M(P_{25} \sim P_{75})$ 表示,多组间比较采用Kruskal-Wallis *H*检验;计数资料组间比较采用 χ^2 检验。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 基线资料比较 512例肝硬化患者根据病因分为3组,其中病毒性组275例(53.7%)、酒精性组70例

(13.7%)、胆源性组167例(32.6%)。结果显示,病毒性和酒精性组以男性患者为主,而胆源性组以女性患者为主;胆源性组平均年龄高于其他2组(P 值均 <0.05)。酒精性组Child-Pugh评分、GLB、TBA及QTc间期均高于其他2组,HGB、PTA及Alb均低于其他2组,胆源性组LDH及CK-MB均低于其他2组(P 值均 <0.05)(表1)。根据Child-Pugh评分将患者分为A、B及C三个等级,分别为263例(51.4%)、185例(36.1%)及64例(12.5%)。

2.2 心脏彩超结果比较 3组患者间E/A及LVEF比较,差异均无统计学意义(P 值均 >0.05);病毒性组与酒精性组各指标比较差异均无统计学意义(P 值均 >0.05);病毒性组及酒精性组的LA-ap、LVEDD、RA-t、RV-m、IVSd及LVPWd均大于胆源性组(P 值均 <0.05),病毒性组E/A值大于胆源性组($P < 0.05$)(表2)。病毒性、酒精性及胆源性3组患者中,LVDF减退分别为170例(61.8%)、45例(64.3%)、125例(74.9%),3组比较差异有统计学意义($\chi^2=8.074, P=0.018$)。

2.3 不同Child-Pugh分级肝硬化患者的心脏彩超结果比较 Child-Pugh A级、B级、C级患者间LVEDD、IVSd、LVPWd、E/A及LVEF比较差异均无统计学意义(P 值均 >0.05)。Child-Pugh A级患者组的LA-ap与其他2组比较有统计学差异,RA-t小于Child-Pugh B级组(P 值均 $<$

表1 研究人群的基线比较

Table 1 Baseline comparison of the study population

指标	病毒性组($n=275$)	酒精性组($n=70$)	胆源性组($n=167$)	统计值	P 值
男性[例(%)]	196(71.3)	67(95.7) ¹⁾	59(35.3) ¹⁾²⁾	$\chi^2=94.949$	<0.001
年龄(岁)	57.50 ± 10.81	56.24 ± 10.89	61.67 ± 9.59 ¹⁾²⁾	$F=10.509$	<0.001
糖尿病[例(%)]	17(6.2)	3(4.3)	12(7.2)	$\chi^2=0.713$	0.700
Child-Pugh评分(分)	6(5~8)	8(6~10) ¹⁾	6(5~8) ²⁾	$H=30.598$	<0.001
HGB(g/L)	116.63 ± 21.86	108.73 ± 23.12 ¹⁾	117.26 ± 18.93 ²⁾	$F=4.529$	0.011
PLT($\times 10^9/L$)	86.00(58.00~150.50)	97.50(74.75~134.75)	177.00(115.25~240.00) ¹⁾²⁾	$H=84.091$	<0.001
PTA(%)	75.94 ± 22.45	69.24 ± 22.37 ¹⁾	92.62 ± 24.78 ¹⁾²⁾	$F=36.293$	<0.001
Alb(g/L)	33.03 ± 6.69	30.36 ± 5.85 ¹⁾	35.22 ± 5.65 ¹⁾²⁾	$F=15.744$	<0.001
GLB(g/L)	28.70(25.52~32.59)	32.36(27.90~36.18) ¹⁾	29.09(25.64~32.48) ²⁾	$H=13.350$	0.001
TBil($\mu\text{mol/L}$)	20.71(13.85~32.50)	34.66(20.45~83.75) ¹⁾	26.41(12.75~62.87) ¹⁾	$H=20.082$	<0.001
TBA($\mu\text{mol/L}$)	25.16(10.20~53.87)	39.70(21.34~72.92) ¹⁾	17.23(5.83~50.37) ²⁾	$H=18.146$	<0.001
eGFR	102.01(93.28~110.27)	105.65(95.77~118.34)	103.43(94.46~110.09)	$H=4.167$	0.124
LDH(U/L)	205.30(170.60~255.30)	228.95(180.01~282.95)	188.20(165.10~230.50) ¹⁾²⁾	$H=12.721$	0.002
CK-MB(U/L)	25.00(13.00~38.00)	22.00(15.46~34.25)	11.00(9.00~17.00) ¹⁾²⁾	$H=85.742$	<0.001
MYO(ng/mL)	45.00(30.60~61.50)	41.00(28.35~61.43)	35.60(26.40~49.00) ¹⁾	$H=15.257$	<0.001
QT间期(ms)	399.18 ± 33.59	398.60 ± 25.72	397.01 ± 31.31	$F=0.241$	0.786
QTc间期(ms)	440.04 ± 24.77	453.77 ± 31.97 ¹⁾	436.60 ± 29.23 ²⁾	$F=9.956$	<0.001

注:与病毒性组比较,1) $P < 0.05$;与酒精性组比较,2) $P < 0.05$ 。Child-Pugh评分,蔡尔德-皮尤评分;HGB,血红蛋白;PLT,血小板;PTA,凝血酶原活动度;Alb,血清白蛋白;GLB,球蛋白;TBil,总胆红素;TBA,总胆汁酸;eGFR,肾小球滤过率;LDH,乳酸脱氢酶;CK-MB,肌酸激酶同工酶MB;MYO,肌红蛋白。

表2 不同病因肝硬化患者心脏彩超结果比较

Table 2 Comparison of echocardiographic findings in cirrhotic patients with different etiologies

指标	病毒性组(n=275)	酒精性组(n=70)	胆源性组(n=167)	H值	P值
LA-ap(mm)	33.00(30.00 ~ 36.00)	34.00(30.75 ~ 37.00)	31.00(28.00 ~ 34.00) ¹⁾²⁾	19.197	<0.001
LVEDD(mm)	46.00(43.00 ~ 48.00)	46.00(44.00 ~ 48.00)	44.00(42.00 ~ 47.00) ¹⁾²⁾	15.660	<0.001
RA-t(mm)	30.00(28.00 ~ 32.00)	30.00(26.00 ~ 32.25)	28.00(26.00 ~ 30.00) ¹⁾²⁾	22.854	<0.001
RV-m(mm)	28.00(25.00 ~ 30.00)	28.00(25.00 ~ 30.00)	27.00(25.00 ~ 29.00) ¹⁾²⁾	10.936	0.004
IVSd(mm)	10.00(9.00 ~ 10.00)	10.00(9.00 ~ 11.00)	9.00(8.40 ~ 10.00) ¹⁾²⁾	13.539	0.001
LVPWd(mm)	9.30(9.00 ~ 10.00)	10.00(8.75 ~ 10.78)	9.00(8.00 ~ 10.00) ¹⁾²⁾	14.139	0.001
E(m/s)	0.70(0.57 ~ 0.88)	0.70(0.60 ~ 0.81)	0.70(0.57 ~ 0.80)	2.018	0.365
A(m/s)	0.78(0.66 ~ 0.95)	0.80(0.62 ~ 0.92)	0.81(0.70 ~ 0.98)	5.394	0.067
E/A	0.83(0.70 ~ 1.27)	0.83(0.71 ~ 1.22)	0.76(0.67 ~ 1.00) ¹⁾	8.210	0.016
LVEF(%)	67.00(64.00 ~ 71.00)	67.00(62.00 ~ 69.25)	67.00(63.00 ~ 71.00)	0.605	0.739

注:与病毒性组比较,1) $P<0.05$;与酒精性组比较,2) $P<0.05$ 。LA-ap,左心房前后径;LVEDD,左心室舒张末期径;RA-t,右心房横径;RV-m,右心室中份横径;IVSd,舒张末期室间隔厚度;LVPWd,舒张末期左室后壁厚度;E,二尖瓣口舒张早期时快速充盈峰;A,二尖瓣口舒张晚期时快速充盈峰;LVEF,左心室射血分数。

0.05);Child-Pugh C级患者组的E值大于Child-Pugh A级组,A值大于其他2组(P 值均 <0.05)(表3)。Child-Pugh A、B及C级患者中,LVDF减退分别为182例(69.2%)、112例(60.5%)及46例(71.9%),3组比较差异无统计学意义($P=0.099$)。

3 讨论

肝硬化患者因长期处于高动力循环状态,持续维持高心输出量,最终引发心室重构,表现为收缩功能减退、舒张功能障碍及心律失常等电生理异常^[5]。本研究通过回顾性分析病毒性、酒精性、胆源性肝硬化患者的临床资料,发现胆源性肝硬化组以女性为主,其他2组以男性为主,与既往研究结果一致^[6-7];且其平均年龄高于其他2组,这主要源于胆源性肝硬化本身的疾病特性,即肝

内外胆管结石、肿瘤或胆管炎等疾病引发的晚期并发症。这些基础病变导致胆管长期狭窄或梗阻,进而引发肝功能持续异常与肝纤维化,并最终发展为肝硬化^[8]。由于这一病理过程漫长,患者确诊时年龄普遍较大。酒精性肝硬化组Child-Pugh评分、GLB及QTc间期明显高于其他2组,PTA及Alb低于其他2组,提示患者Child-Pugh评分越高,肝功能越差,QTc间期越长,与既往研究结果相似^[9-11]。此外,有研究发现QTc间期延长会影响肝硬化患者的预后^[12-13],李叶等^[14]研究发现QTc间期是肝硬化合并腹水患者短期死亡的独立预测因子,故建议关注肝硬化患者的QTc间期。胆源性肝硬化组LDH及CK-MB低于其他2组,3组患者LDH、CK-MB及MYO大致处于正常范围,未见明显异常增高。

分析不同病因肝硬化患者的心脏彩超结果显示,E、

表3 不同Child-Pugh分级肝硬化患者心脏彩超结果比较

Table 3 Comparison of echocardiographic findings in cirrhotic patients with different Child-Pugh classifications

观察指标	Child-Pugh A级(n=263)	Child-Pugh B级(n=185)	Child-Pugh C级(n=64)	H值	P值
LA-ap(mm)	32.00(29.00 ~ 35.00)	33.00(30.00 ~ 36.00) ¹⁾	34.00(31.00 ~ 37.00) ¹⁾	20.000	<0.001
LVEDD(mm)	45.00(42.00 ~ 48.00)	46.00(43.00 ~ 49.00)	45.50(42.00 ~ 48.00)	4.157	0.125
RA-t(mm)	29.00(27.00 ~ 31.00)	30.00(28.00 ~ 32.50) ¹⁾	30.00(26.25 ~ 32.00)	8.239	0.016
RV-m(mm)	27.00(25.00 ~ 29.00)	27.00(25.00 ~ 30.00) ¹⁾	28.00(26.25 ~ 30.00) ¹⁾	17.789	<0.001
IVSd(mm)	10.00(8.90 ~ 10.00)	10.00(9.00 ~ 10.00)	10.00(9.00 ~ 10.63)	0.076	0.963
LVPWd(mm)	9.00(8.60 ~ 10.00)	9.00(8.00 ~ 10.00)	9.95(9.00 ~ 10.00)	0.970	0.616
E(m/s)	0.66(0.55 ~ 0.80)	0.70(0.60 ~ 0.85)	0.77(0.64 ~ 0.90) ¹⁾	11.068	0.004
A(m/s)	0.80(0.67 ~ 0.94)	0.77(0.65 ~ 0.90)	0.93(0.76 ~ 1.00) ¹⁾²⁾	16.899	<0.001
E/A	0.79(0.68 ~ 1.18)	0.84(0.72 ~ 1.25)	0.80(0.70 ~ 1.17)	5.556	0.062
LVEF(%)	67.00(64.00 ~ 70.00)	67.00(63.00 ~ 70.00)	67.50(65.00 ~ 71.00)	1.160	0.560

注:与Child-Pugh A级比较,1) $P<0.05$;与Child-Pugh B级比较,2) $P<0.05$ 。Child-Pugh分级,蔡尔德-皮尤分级;LA-ap,左心房前后径;LVEDD,左心室舒张末期径;RA-t,右心房横径;RV-m,右心室中份横径;IVSd,舒张末期室间隔厚度;LVPWd,舒张末期左室后壁厚度;E,二尖瓣口舒张早期时快速充盈峰;A,二尖瓣口舒张晚期时快速充盈峰;LVEF,左心室射血分数。

A及LVEF在3组间无统计学差异,且LVEF均大于60%,这一结果表明,肝硬化患者在静息状态下左心室收缩功能障碍的表现十分隐匿,其LVEF多为正常或偏高。有研究报道,肝硬化合并LVDF减退患者的LVEF平均值均大于68%^[15];叶玉玲等^[16]研究显示,乙型肝炎肝硬化患者的LVEF为 60.10 ± 1.80 ,与乙型肝炎患者及健康人比较无明显差异。对比病毒性与酒精性肝硬化患者在静息状态下的各项指标,结果显示均无明显差异,表明二者心脏结构与功能基本相似,与张旭辉等^[17]的研究结论相同。然而,这2组患者的LA-ap、LVEDD、RA-t、RV-m、IVSd及LVPWd均高于胆源性肝硬化组,考虑肝炎病毒感染本身可引发心肌炎^[18],且有研究发现HBV感染可能与右心衰竭和肺动脉高压相关^[19],致使心脏出现增厚、增大等改变;而酒精及其代谢产物乙醛会破坏心肌细胞膜和细胞器,影响心肌细胞的代谢与舒缩功能。酒精性肝硬化患者因长期大量饮酒,易发生心肌损害,严重时可发展为酒精性心肌病,典型特征包括心室质量增加、心脏扩大,以及收缩和舒张功能均受累的心力衰竭^[20-22]。E/A是评估肝硬化患者LVDF最常用的指标,胆源性肝硬化组E/A小于病毒性肝硬化组,且3组患者的LVDF减退比例均大于60%,与Papastergiou等^[23]的研究结果59.8%相似,但高于Sampaio等^[24]研究中的40.4%,其中胆源性肝硬化组占比最高,达74.9%,可能与胆源性肝硬化患者病程较长且以中老年女性为主有关。有研究表明,LVDF减退的患病率随年龄增长而呈现升高的特征,且中老年女性的患病率明显高于男性^[25]。LVDF减退是肝硬化性心肌病早期标志之一,主要表现为舒张早期左心室松弛异常、舒张中晚期心肌顺应性降低及左心室充盈受损^[26],早期无明显临床症状。LVDF减退与肝硬化患者围术期心血管不良事件、急性移植排斥反应、肝移植失败和术后病死率显著相关^[27-29]。当患者存在心脏舒张功能障碍时,其对容量变化非常敏感,因此围手术期需维持出入量平衡或适当限制液体入量。此外,LVDF减退时,左心室需更长时间完成充盈以接受左心房射血并维持最佳前负荷,术中应尽量维持窦性节律,避免心率过快。因此,建议临床医师积极关注肝硬化患者心脏情况,特别是LVDF。

不同Child-Pugh分级患者的LVEDD、IVSd、LVPWd、E/A、LVEF,以及LVDF减退占比均无统计学差异,这与蔡晶等^[30]既往报道的Child-Pugh分级越高,E/A越小不一致,考虑与研究纳入的患者肝硬化病因、性别及年龄等不同有关。

本研究是一项回顾性、单中心研究,需要大规模、前瞻性、多中心的临床研究进一步验证,从而更好地为临床提供指导。

综上所述,不同病因肝硬化患者的心脏结构和功能存在差异,建议临床医师针对不同病因患者进行个体化心脏评估及干预,特别是外科手术患者的心脏舒张功能评估,以期改善患者预后。

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