

· 抑郁症专题 ·

抑郁症共病慢性疼痛患者焦虑情绪与疼痛强度、疼痛敏感性的相关性研究

郑梅 高莉玲 高桦 陈苑苑 杨德英 谢雯 朱翠珍

230022 合肥, 安徽医科大学精神卫生与心理科学学院(郑梅、谢雯); 230022 安徽医科大学附属心理医院 合肥市第四人民医院精神科(高莉玲、高桦、陈苑苑、杨德英), 焦虑抑郁科(谢雯), 科教科(朱翠珍)

通信作者: 谢雯, Email: xiewen0808@sina.com; 朱翠珍, Email: zhucuiizhenhi@163.com

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【摘要】目的 分析抑郁症共病慢性疼痛患者的焦虑情绪对疼痛强度和疼痛敏感性的影响。**方法** 采用横断面调查法, 选取2021年9月—2023年6月在安徽省精神卫生中心门诊就诊及住院治疗的108例抑郁症患者为研究对象, 根据是否共病慢性疼痛将患者分为共病组(52例)和非共病组(56例)。同期在社会公开招募48名健康者纳入对照组。采用贝克焦虑量表(BAI)、贝克抑郁量表(BDI- II)调查两组患者焦虑、抑郁症状。采用蒙特利尔认知评估量表(MoCA)、疼痛强度数值评定量表(PI-NRS)和疼痛敏感性问卷(PSQ)调查3组受试者认知功能、疼痛强度及疼痛敏感性。采用多重线性回归分析和受试者工作特征(ROC)曲线分析抑郁症共病慢性疼痛患者的焦虑情绪对疼痛强度和疼痛敏感性的影响。**结果** 两组患者的MoCA总分低于对照组, 共病组患者PSQ-total得分、PSQ-minor得分高于对照组, 共病组患者BAI总分、躯体性焦虑得分、精神性焦虑得分、BDI- II得分、PI-NRS得分高于非共病组, 差异均有统计学意义(均 $P < 0.05$)。多重线性回归分析显示, 抑郁症共病慢性疼痛患者的躯体性焦虑是疼痛强度的影响因素($P < 0.01$); 精神性焦虑是PSQ-minor、PSQ-moderate和PSQ-total的影响因素($P < 0.01$)。ROC曲线分析显示, BAI总分预测抑郁症共病慢性疼痛患者疼痛程度和敏感性的ROC曲线下面积为0.916, 最佳临界值为0.416, 敏感度为0.885, 特异度为0.875。**结论** 抑郁症共病慢性疼痛患者的焦虑情绪与疼痛强度和疼痛敏感性呈正相关, 焦虑情绪的严重程度是抑郁症共病慢性疼痛患者疼痛强度和疼痛敏感性的影响因素。

【关键词】 抑郁症; 慢性疼痛; 焦虑; 疼痛强度; 疼痛敏感性

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Correlation between anxiety, pain intensity, and pain sensitivity in comorbidity of depressive disorder and chronic pain

Zheng Mei, Gao Liling, Gao Hua, Chen Yuanyuan, Yang Deying, Xie Wen, Zhu Cuizhen
School of Mental Health and Psychological Science, Anhui Medical University, Hefei 230022, China (Zheng M, Xie W); Psychiatry Department, Anhui Medical University Affiliated Mental Hospital & Hefei Fourth People's Hospital, Hefei 230022, China (Gao LL, Gao H, Chen YY, Yang DY); Department of Anxiety and Depression, Anhui Medical University Affiliated Mental Hospital & Hefei Fourth People's Hospital, Hefei 230022, China (Xie W); Department of Science and Education, Anhui Medical University Affiliated Mental Hospital & Hefei Fourth People's Hospital, Hefei 230022, China (Zhu CZ)

Corresponding authors: Xie Wen, Email: xiewen0808@sina.com; Zhu Cuizhen, Email: zhucuizhenhi@163.com

【Abstract】 Objective To explore the influence of anxiety on pain intensity and sensitivity in comorbidity of depressive disorder and chronic pain. **Methods** This study was a cross-sectional survey. From September 2021 to June 2023, 108 patients with depressive disorder who received outpatient and inpatient treatment at the Anhui Mental Health Center were selected as the research subject. Patients were divided into a comorbid group (52 cases) and a non-comorbid group (56 cases) based on whether there was comorbid chronic pain. During the same period, 48 healthy individuals were recruited from the public to be included in the control group. Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI- II) were used to investigate anxiety and depression symptoms in two groups of patients. Montreal Cognitive Assessment (MoCA), Pain Intensity Numerical Rating Scale (PI-NRS), and Pain Sensitivity Questionnaire (PSQ) were used to investigate cognitive function, pain severity, and pain sensitivity among three groups of participants. Multiple linear regression analysis and receiver operating characteristic (ROC) curve were used to analyze the impact of anxiety on pain intensity and sensitivity in comorbidity of depression and chronic pain. **Results** The total MoCA scores of the two groups of patients were lower than those of the control group, the PSQ-total scores and PSQ-minor scores of the comorbid group were higher than those of the control group, and the total BAI scores, physical anxiety scores, psychological anxiety scores, BDI- II scores, and PI-NRS scores of the comorbid group were higher than those of the non-comorbid group, and the differences were statistically significant (all $P < 0.05$). Multiple linear regression analysis showed that physical anxiety was a factor influencing pain intensity in comorbidity of depressive disorder and chronic pain, and psychological anxiety was a factor influencing PSQ-minor, PSQ-moderate, and PSQ-total, and the differences were statistically significant (all $P < 0.01$). ROC curve analysis showed that the area under the ROC curve for predicting pain severity and sensitivity in comorbidity of depressive disorder and chronic pain based on BAI total score was 0.916, with an optimal critical value of 0.416, sensitivity of 0.885, and specificity of 0.875. **Conclusions** The anxiety of patients with comorbidities of depressive disorder and chronic pain is positively correlated with pain intensity and sensitivity. The severity of anxiety is a factor influencing the intensity and sensitivity of pain in comorbidity of depressive disorder and chronic pain.

【Key words】 Depressive disorder; Chronic pain; Anxiety; Pain measurement; Pain sensitivity

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抑郁症是一种以情绪低落、愉悦感缺失为特征,伴躯体及自主神经功能紊乱的疾病。流行病学调查显示,西方发达国家的抑郁症终身患病率约为18%,我国约为7.4%^[1]。抑郁症患者不仅存在情绪处理、应对方式及认知功能受损,还常常出现模糊、无法分类的疼痛感知觉异常^[2-3]。研究表明,50%~70%的抑郁症患者共病慢性疼痛^[4]。此外,相比于单相抑郁患者,抑郁症共病慢性疼痛患者的治疗效果差,症状容易反复发作,更容易发展为难治性抑郁症,增加患者及其家庭、社会的医疗负担。

持续的慢性疼痛会引发抑郁情绪^[5]。脑影像学研究表明,慢性疼痛会改变神经可塑性,导致大脑中与疼痛、情绪相关的区域发生结构和功能变化^[6-7],

影响个体的情绪调节能力和认知功能,从而增加抑郁症的发生风险^[8]。而负性情绪可影响个体对疼痛的感知和解释,将疼痛视为不可控制的体验,并削弱对积极情绪的感知^[9]。负性情绪和慢性疼痛的这种相互影响可能加剧抑郁和慢性疼痛症状^[10-11]。基于此,本研究分析抑郁症共病慢性疼痛患者焦虑情绪与疼痛感受和疼痛体验的相关性,为临床治疗提供参考。

一、对象与方法

1. 研究对象: 选取2021年9月—2023年6月在安徽省精神卫生中心住院治疗及门诊就诊的108例抑郁症患者为研究对象,根据是否共病慢性疼痛将患者分为共病组(52例)和非共病组(56例)。共

病组纳入标准: (1) 同时符合DSM-5中抑郁症的诊断标准^[12]和国际疼痛研究协会(The International Association for the Study of Pain, IASP)中慢性疼痛的诊断标准^[13]; (2) 年龄16~60岁; (3) 慢性疼痛不是由身体创伤、严重的躯体疾病或炎症性疾病引起; (4) 小学以上文化程度。非共病组纳入标准: (1) 符合DSM-5中抑郁症的诊断标准, 但不符合IASP中慢性疼痛的诊断标准; (2) 年龄16~60岁; (3) 小学以上文化程度。两组排除标准: (1) 有颅脑外伤或躯体外伤史; (2) 有严重炎症性疾病、神经系统疾病或肿瘤相关疾病史; (3) 有酒精、其他药物滥用史或其他精神障碍史; (4) 有糖尿病、高血压病、内分泌疾病史; (5) 处于妊娠期或哺乳期; (6) 入组前3个月接受过无抽搐电休克治疗。由2名主治医师使用简明国际神经精神访谈量表(Mini-International Neuropsychiatric Interview, MINI)6.0.0对所有被试者进行筛选评估^[14]。

同期在社会中招募48名健康者纳入对照组。纳入标准: (1) 经我院体检中心检查无躯体性疾病; (2) 年龄16~60岁; (3) 小学以上文化程度。排除标准: 同共病组和非共病组排除标准(1)~(5)。本研究已获得安徽省精神卫生中心医学伦理委员会审批(批件号: HSY-IRB-PJ-YN2019023), 所有受试者均已签署知情同意书。

2. 研究工具: (1) 一般资料调查表。收集3组受试者的性别、婚姻状况、家庭人均月收入、受教育年限、体重指数以及两组患者的病程。(2) 贝克焦虑量表(Beck Anxiety Inventory, BAI)^[15]。为自评量表, 用于评估患者的焦虑症状严重程度。该量表包括躯体性焦虑(13个条目)和精神性焦虑(8个条目)2个维度, 共21个条目, 每个条目计0~3分, 量表总粗分为0~63分, 再通过公式 $Y = \text{int}(1.19X)$ 取整转化为标准分为该量表总分, 躯体性焦虑分量表总分为0~39分, 精神性焦虑分量表总分为0~24分, 分数越高焦虑症状越严重。本研究中总量表的Cronbach's α 系数为0.94。(3) 贝克抑郁量表(Beck Depression Scale, BDI- II)^[16]。为自评量表, 用于评估患者的抑郁症状严重程度。该量表包含21个条目, 每个条目计0~3分, 总分0~63分, 分数越高抑郁症状越严重。量表在本研究中的Cronbach's α 系数为0.83。(4) MoCA^[17]。用于评估受试者的认知功能损害程度。该量表包括视空间与执行功能、命名、注意力、语言、抽象、延迟回忆、定向力领域, 总分0~30分, 分数越低认知功能损害越严重。量表在本研究中的Cronbach's α 系数为0.83。(5) 疼痛强度数值评定量表

(Pain Intensity Numerical Evaluation Scale, PI-NRS)^[18]。用于评估患者的疼痛强度。该量表由0~10共11个数字组成, 其中0表示没有疼痛, 10表示最剧烈的疼痛。(6) 疼痛敏感性问卷(Pain Sensitivity Questionnaire, PSQ)^[19-20]。用于评估受试者在现实生活中对疼痛的敏感程度。该问卷包含17个日常生活情境条目, 受试者可根据自己对情境的预期反应对每个条目进行评分, 从“不痛”到“最痛”评0~10分。其中有3个条目描述没有疼痛的情况, 作为受试者无疼痛感觉的参考。PSQ分为PSQ-total、PSQ-minor、PSQ-moderate 3个评分维度, 其中PSQ-minor包含7个条目均分<4分的轻度疼痛条目; PSQ-moderate包含7个条目均分为4~6分的中度疼痛条目; PSQ-total排除掉3个没有疼痛情况的条目, 14个条目的条目均分为该维度得分。3个维度在本研究中的相关性分别为0.70(PSQ-minor与PSQ-moderate)、0.89(PSQ-minor与PSQ-total)和0.95(PSQ-moderate与PSQ-total)。

3. 资料收集方法: 研究人员在开展研究前均已接受量表一致性培训。BAI、BDI- II、PI-NRS、PSQ自评量表统一由主治医师发放, 以统一的指导语讲解后由受试者当场填写并独立完成。MoCA由主治医师进行面对面评估。由2名精神病学专业的硕士研究生独立录入数据、进行数据核对, 剔除无效问卷。

4. 统计学方法: 采用SPSS 26.0软件进行统计学分析。计数资料采用频数、百分数(%)表示, 组间比较采用 χ^2 检验。采用Kolmogorov-Smirnov检验法对计量资料进行正态性检验, 符合正态分布用均数 \pm 标准差($\bar{x} \pm s$)表示, 两组间比较采用两独立样本 t 检验, 多组间比较采用单因素方差分析, 若多组间比较差异有统计学意义, 采用LSD- t 检验进行两两比较; 不符合正态分布的计量资料用中位数和四分位数 $[M(P_{25}, P_{75})]$ 表示, 组间比较采用Wilcoxon秩和检验。采用Spearman相关分析可能的相关因素与疼痛强度、疼痛敏感性的相关性。采用多重线性回归分析、受试者工作特征(receiver operating characteristics, ROC)曲线分析抑郁症共病疼痛患者的焦虑症状与疼痛强度和疼痛敏感性的关系。双侧检验, $P < 0.05$ 为差异有统计学意义。

二、结果

1. 3组受试者一般资料、认知功能及对疼痛的敏感度比较: 3组受试者的性别、婚姻状况、家庭人均月收入、受教育年限、体重指数比较, 差异均无统计学意义(均 $P > 0.05$)。3组受试者的MoCA总分、

PSQ-total得分、PSQ-minor得分比较,差异均有统计学意义(均 $P < 0.05$)。两两比较结果显示,非共病组和共病组患者的MoCA总分低于对照组,共病组患者PSQ-total得分、PSQ-minor得分高于对照组,差异均有统计学意义(均 $P < 0.05$)。共病组和非共病组患者病程比较,差异无统计学意义($P > 0.05$)。共病组患者BAI总分、躯体性焦虑得分、精神性焦虑得分、BDI- II得分、PI-NRS得分均高于非共病组,差异均有统计学意义(均 $P < 0.01$)。见表1。

2. 抑郁症共病慢性疼痛患者的疼痛强度、疼痛敏感性与一般资料、临床症状的相关性:抑郁症共病慢性疼痛患者PI-NRS得分与BAI总分、躯体性焦虑分量表得分呈正相关($P < 0.05$); PSQ-minor得分与BAI总分、躯体性焦虑分量表得分及精神性焦虑分量表得分呈正相关($P < 0.05$); PSQ-moderate得分与MoCA总分、BAI总分、躯体性焦虑分量表得分、精神性焦虑分量表得分及BDI- II总分呈正相关($P < 0.05$); PSQ-total得分与BDI- II总分、BAI总分、躯体性焦虑分量表得分、精神性焦虑分量表得分呈正相关($P < 0.05$)。见表2。

3. 抑郁症共病慢性疼痛患者疼痛强度及疼痛敏感性的影响因素分析:分别以PI-NRS、PSQ-minor、PSQ-moderate和PSQ-total得分为因变量,以躯体性焦虑得分、精神性焦虑得分、MoCA总分、BAI总分及BDI- II总分作为自变量进行多重线性回归分析。结果显示,躯体性焦虑为疼痛强度的影响因素($P < 0.01$),精神性焦虑为PSQ-minor、PSQ-moderate和PSQ-total的影响因素($P < 0.01$)。见表3。

4. ROC曲线分析:基于回归分析结果,将抑郁症共病慢性疼痛患者躯体性焦虑、精神性焦虑和BAI总分作为检验变量,以PI-NRS、PSQ-minor、PSQ-moderate和PSQ-total得分作为结果变量,绘制ROC曲线。结果显示,躯体性焦虑预测PI-NRS的ROC曲线下面积为0.910(95%CI=0.850~0.970),最佳分界值为2.500,敏感度为0.787,特异度为0.933;精神性焦虑预测PSQ-minor的ROC曲线下面积为0.582(95%CI=0.465~0.700),最佳分界值为2.500,敏感度为0.596,特异度为0.556;精神性焦虑预测PSQ-moderate的ROC曲线下面积为0.593(95%CI=0.480~0.705),最佳分界值为3.483,敏感度为0.615,特异度为0.604;精神性焦虑预测PSQ-total

表1 3组受试者一般资料、临床症状及疼痛情况比较

项目	对照组(n=48)	非共病组(n=56)	共病组(n=52)	$\chi^2/F/t/Z$ 值	P值
女性[例(%)]	20(41.7)	31(55.4)	34(65.4)	5.689	0.058
婚姻状况[例(%)]					
未婚	19(39.6)	28(50.0)	19(36.5)	2.213	0.331
已婚	29(60.4)	28(50.0)	33(63.5)		
家庭人均月收入[例(%)]					
≤ 5 000元	32(66.7)	31(55.4)	33(63.5)	1.519	0.468
> 5 000元	16(33.3)	25(44.6)	19(36.5)		
受教育年限[例(%)]					
≤ 9年	13(27.1)	11(19.6)	21(40.4)	5.757	0.056
> 9年	35(72.9)	45(80.4)	31(59.6)		
体重指数(kg/m ² , $\bar{x} \pm s$)	22.41 ± 3.29	21.55 ± 3.59	22.53 ± 3.38	1.725	0.182
MoCA总分(分, $\bar{x} \pm s$)	27.27 ± 3.21	25.09 ± 3.77 ^a	24.12 ± 4.28 ^a	8.980	< 0.001
PSQ-total得分(分, $\bar{x} \pm s$)	2.71 ± 1.37	3.02 ± 1.64	3.56 ± 1.63 ^a	3.793	0.025
PSQ-minor得分(分, $\bar{x} \pm s$)	1.94 ± 1.14	2.44 ± 1.60	2.92 ± 1.54 ^a	5.685	0.004
PSQ-moderate得分(分, $\bar{x} \pm s$)	3.49 ± 1.77	3.59 ± 1.85	4.19 ± 1.98	2.134	0.122
病程[例(%)]					
< 1年	-	19(33.9)	13(25.0)	1.031	0.310
≥ 1年	-	37(66.1)	39(75.0)		
BAI总分(分, $\bar{x} \pm s$)	-	39.95 ± 13.62	51.35 ± 14.71	4.182	< 0.001
躯体性焦虑	-	15.95 ± 5.44	20.60 ± 6.09	4.194	< 0.001
精神性焦虑	-	18.09 ± 6.32	22.92 ± 7.13	3.734	< 0.001
BDI- II得分(分, $\bar{x} \pm s$)	-	22.13 ± 10.53	28.58 ± 12.02	2.972	0.004
PI-NRS得分[分, $M(P_{25}, P_{75})$]	-	0(0, 2)	5(4, 7)	-6.879	< 0.001

注: MoCA 蒙特利尔认知评估量表; PSQ 疼痛敏感性问卷; BAI 贝克焦虑量表; BDI- II 贝克抑郁量表; PI-NRS 疼痛强度数值评定量表; ^a与对照组比较, $P < 0.05$; - 无数据

表2 抑郁症共病慢性疼痛患者疼痛强度、疼痛敏感性与一般资料、临床症状的相关性

变量	PI-NRS		PSQ-minor		PSQ-moderate		PSQ-total	
	r值	P值	r值	P值	r值	P值	r值	P值
性别	-0.049	0.749	0.244	0.081	0.129	0.361	0.185	0.190
受教育年限	-0.136	0.373	0.063	0.658	0.172	0.222	0.124	0.381
婚姻状况	0.090	0.558	0.167	0.238	0.060	0.673	0.133	0.347
家庭人均月收入	-0.022	0.885	-0.024	0.866	0.176	0.213	0.128	0.367
体重指数	0.172	0.259	0.146	0.302	0.015	0.915	0.068	0.632
病程	0.051	0.739	0.107	0.452	0.041	0.770	0.087	0.538
MoCA总分	0.016	0.914	0.181	0.200	0.302	0.003	0.266	0.057
BAI总分	0.414	0.005	0.408	0.003	0.511	<0.001	0.479	<0.001
躯体性焦虑	0.469	0.001	0.310	0.026	0.418	0.002	0.379	0.006
精神性焦虑	0.281	0.061	0.417	0.002	0.518	<0.001	0.490	<0.001
BDI-II得分	0.114	0.454	0.250	0.074	0.289	0.038	0.279	0.045

注: MoCA 蒙特利尔认知评估量表; BAI 贝克焦虑量表; BDI-II 贝克抑郁量表; PI-NRS 疼痛强度数值评定量表; PSQ 疼痛敏感性问卷

表3 抑郁症共病慢性疼痛患者疼痛强度及疼痛敏感性的多重线性回归分析

因变量	自变量	偏回归系数	标准误	回归系数	t值	P值	R ²	ΔR ²
PI-NRS	躯体性焦虑	0.162	0.047	0.464	3.432	0.001	0.215	0.197
PSQ-minor	精神性焦虑	0.083	0.028	0.383	2.935	0.005	0.147	0.130
PSQ-moderate	精神性焦虑	0.129	0.033	0.465	3.884	<0.001	0.571	0.299
PSQ-total	精神性焦虑	0.113	0.028	0.493	4.006	<0.001	0.243	0.228

注: 本表只展示有统计学意义的数据; PI-NRS疼痛强度数值评定量表; PSQ疼痛敏感性问卷; BAI 贝克焦虑量表

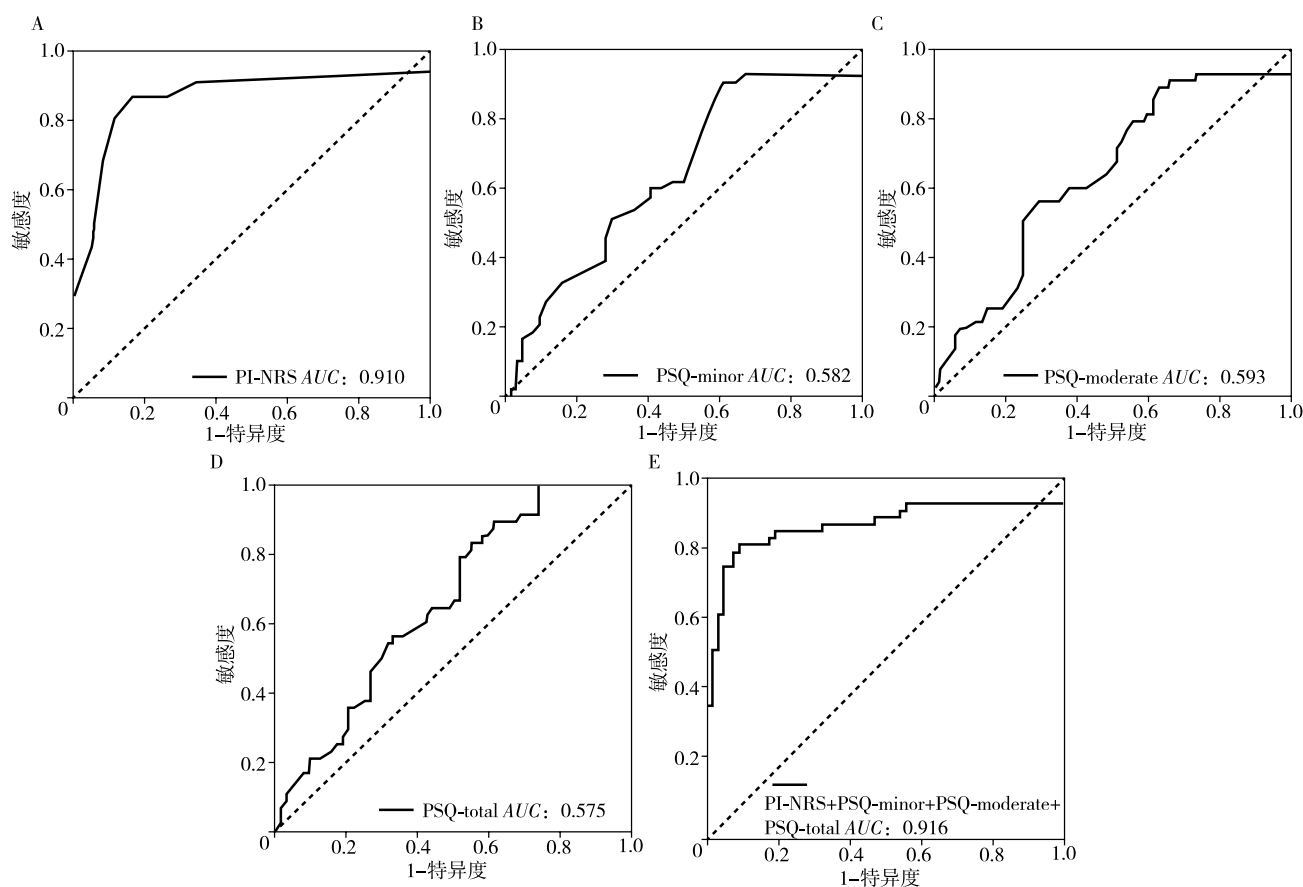
的ROC曲线下面积为0.575(95%CI=0.457~0.693),最佳分界值为3.143,敏感度为0.533,特异度为0.600;BAI总分预测PI-NRS、PSQ-minor、PSQ-moderate和PSQ-total的ROC曲线下面积为0.916,最佳临界值为0.416,敏感度为0.885,特异度为0.875,预测效果提升。见图1。

讨论 负性情绪会导致个体对疼痛耐受性的降低和对疼痛主观感知的增加,使个体更容易感受到疼痛^[21-22]。相关研究显示,焦虑情绪会增高个体对环境威胁和疼痛关注的关注,导致中枢神经系统过度激活,引发伤害性神经递质信号传递,影响疼痛的传导和感知^[23-24]。此外,焦虑情绪会影响自主神经系统失衡,导致交感神经系统的异常活跃,促进肾上腺素水平的升高,进一步启动β₂受体,启动了复杂的细胞信号传导网络,导致一系列促炎事件的级联反应,增加患者的疼痛体验^[25-26]。因此,针对焦虑情绪和疼痛感知异常之间的相互关系研究,有助于深化对这个领域的理解^[27]。

本研究结果显示,共病组患者感受到的疼痛强度、疼痛敏感性高于非共病组患者,躯体性焦虑和精神性焦虑与疼痛强度、疼痛敏感性呈正相关,而抑郁症状仅与疼痛敏感性呈正相关,与疼痛强度不存在相关性,与既往研究结果相似^[28]。既往研究表

明,抑郁、焦虑情绪会增加个体对疼痛的敏感性,可能是患者主诉躯体不适频率增加的原因之一。此外,疼痛强度的改变会增加机体不愉快的情感体验,尤其是焦虑情绪严重程度,最终会影响疼痛的主观感受。另外,本研究结果显示,共病组患者的认知功能受损程度较非共病组患者严重,可能因为共病组患者沉浸在对疼痛的恐惧情绪和负性评价中,产生认知错误^[29]。负性的认知会影响个体对疼痛的感知和解释,使患者发生注意力偏向,过度关注疼痛,将疼痛视为不可控制的感觉,导致对疼痛过度敏感,进而加深疼痛体验,从而更难调整焦虑情绪,增加抑郁症状的严重程度^[30-32]。本研究结果进一步证实了心理疼痛调节的复杂机制,它包含了情绪和认知因素,也为针对精神疾病共病慢性疼痛进行有效多模态治疗提供了依据。

本研究存在一定的局限性:(1)本研究纳入的样本量较小,需要更大样本量的进一步研究来验证负性情绪对疼痛强度及疼痛敏感性的影响。(2)本研究中针对疼痛强度和疼痛敏感性评估是通过患者自评,存在主观评价偏移。在未来的研究中,可使用基于客观疼痛测量仪器来评估疼痛的特征。(3)本研究中,共病组和非共病组患者在研究期间均使用了SSRIs,考虑到患者的用药情况存在差异,会对研



注: A为躯体性焦虑预测PI-NRS的ROC曲线; B为精神性焦虑预测PSQ-minor的ROC曲线; C为精神性焦虑预测PSQ-moderate的ROC曲线; D为精神性焦虑预测PSQ-total的ROC曲线; E为BAI总分预测PI-NRS、PSQ-minor、PSQ-moderate和PSQ-total的ROC曲线; ROC 受试者工作特征; PI-NRS 疼痛强度数值评定量表; AUC 曲线下面积; PSQ 疼痛敏感性问卷

图1 不同焦虑水平预测抑郁症共病慢性疼痛患者疼痛感知和疼痛敏感性的ROC曲线

究结果造成偏倚。在未来的研究中,可考虑将用药情况作为可能的影响因素进行研究,从而更全面地探讨焦虑、抑郁情绪与疼痛之间的关系,以及这种关系对疾病发生和发展的影响。

利益冲突 文章所有作者共同认可文章无相关利益冲突

作者贡献声明 数据整理和分析、论文撰写为郑梅,数据收集为郑梅、高桦、陈苑苑、杨德英,研究设计为高莉玲、谢雯、朱翠珍,论文修订及审校为朱翠珍

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