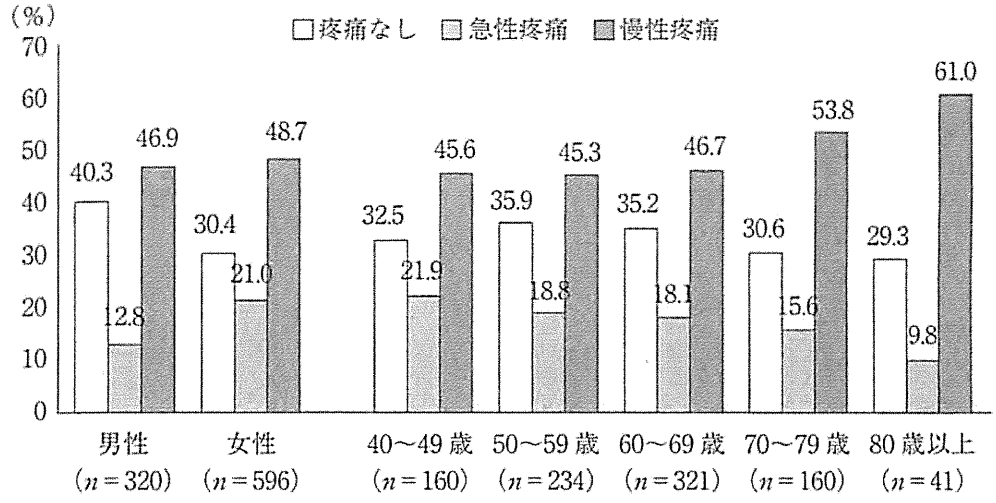

図2　性・年齢階級別にみた急性疼痛，慢性疼痛の割合

意に増加しており、総点が61点以上の失感情症ありの割合も、急性疼痛群で9.6%、慢性疼痛群で12.7%と痛みの持続期間が長い群ほど、有意に増加していた。SCL-90-Rで測定した抑うつ・不安の得点も痛みの持続期間が長いほど、ともに増加していた。

痛みの強さ（中央値）は、急性疼痛群でVAS 28mm、慢性疼痛群でVAS 42mmとなっており、日常生活障害は、それぞれVAS 5mm、VAS 10mmとなっており、痛みはあるものの、日常生活の障害は比較的少ない状態にあることがうかがわれた。

(2) 性・年齢階級別にみた痛みなし群、急性疼痛群、慢性疼痛群の割合

図2に、性・年齢階級別にみた痛みなし群、急性疼痛群、慢性疼痛群の割合を示した。40歳以上全体では、女性群で男性群よりも急性疼痛が多かった（21.0% vs. 12.8%）。

各年齢群では、痛みなし群は50歳代をピークとして29.3%から35.9%の割合であったが、急性疼痛群は40歳代が21.9%でピークとなり、年齢を追うごとに減少し、反対に慢性疼痛群は50歳代が45.3%と最も少なく、60歳を超えると年齢とともに増加し、80歳以上では61%に達していた。つまり、29～36%程度の住民は痛みなしを維

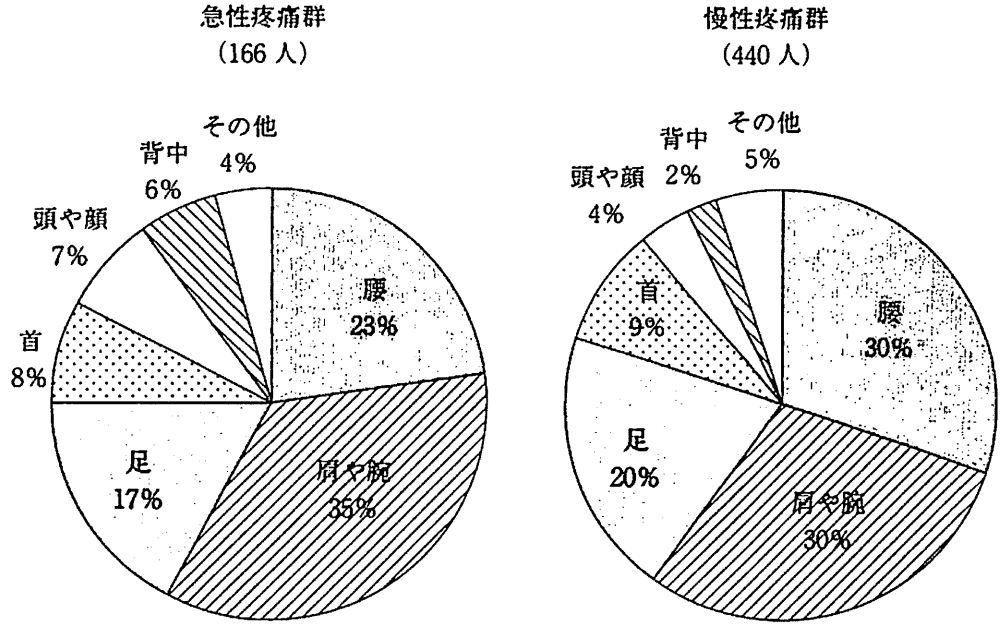

図３　急性疼痛・慢性疼痛の最も痛みの強い部位

持し、それ以外の住民は急性疼痛か慢性疼痛かのいずれかを持っている可能性がある。

(3) 急性疼痛群、慢性疼痛群での最も痛みの強い部位別分類

図３に、急性疼痛群 166 人と慢性疼痛群 440 人での最も痛みが強い部位を示した。急性疼痛群では、肩や腕、腰、足の順で多く、慢性疼痛群では、肩や腕と腰が同率で最も多く、次に足となっていた。

性別年齢群別での最も痛みの強い部位は、男性では、肩や腕と腰部がほぼ同率で、次に足と続き、女性では腰部、肩や腕の順であったが、最も痛い場所が足である割合が男性の 13.3％と比べて女性で 23.1％と多かった。また、年齢群による差をみると、全般に 40 歳以上の全年齢で最も痛い部位は腰部である割合が高かったが、50 歳代のみ肩や腕が 41.5％と最も多かった。年齢とともに増加しているのは、足であり、80 歳以上になると腰部をしのぎ、割合が 44％となっていた。

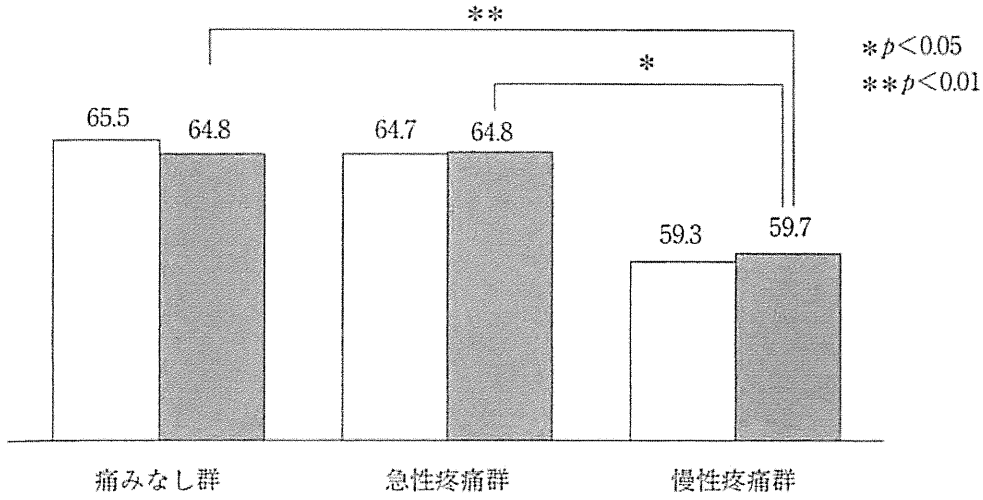

図４　疼痛群別にみた生活満足度の平均値の比較

(4) 疼痛群別にみた生活満足度の平均値の比較

図４に疼痛群別に見た生活満足度の平均値の比較を棒グラフで示した。性、年齢、婚姻状況、教育年数、経済状況で調整した後で生活満足度を比較すると、痛みなし群（64.8mm）および急性疼痛群（64.8mm）と比較して、慢性疼痛群（59.7mm）では生活満足度が有意に低下していた。

(5) 失感情症の有無別にみた疼痛群の割合

上記では、ストレス検診参加者全体についての結果を示したが、次に、失感情症が疼痛症状に与える影響について、データを解析した結果を示す。

図５にTAS-20で61点以上の失感情症ありの症例を失感情症なしの群と比較した疼痛群別の割合を示した。両群とも、急性疼痛は18～19%と同程度であったが、失感情症なし群では慢性疼痛が46%であったのに対して、失感情症群では65%と有意に増加していた。失感情症の有無で、急性疼痛は両群で同程度であるが、急性疼痛群から

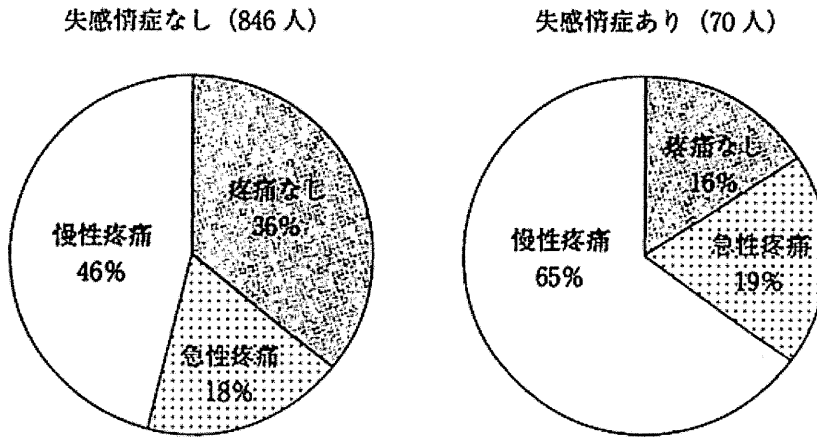

図5　失感情症の有無別に見た疼痛群の割合

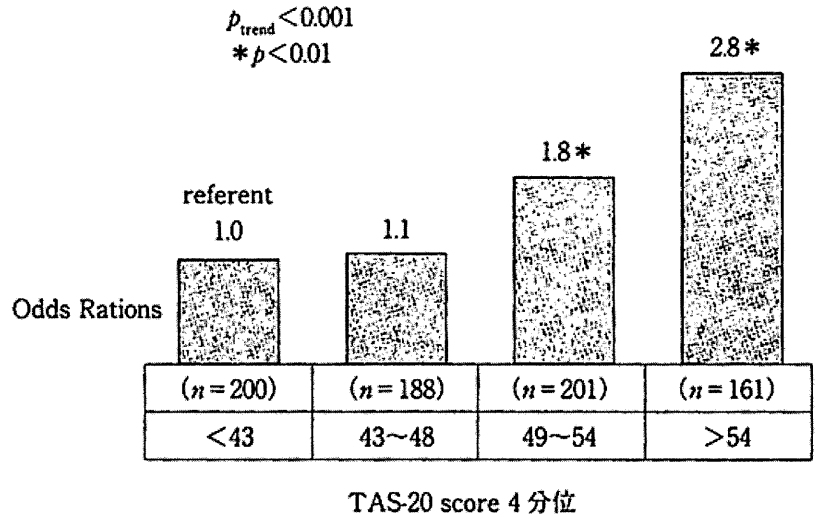

図6　失感情症の程度（TAS-20のスコア）別の慢性疼痛罹患のリスク（オッズ比）

疼痛なし群にもどるか、慢性疼痛群に移行するかの両方向への動きに差がある可能性が示唆された。

(6) 失感情症の程度別にみた慢性疼痛罹患のリスク

図6に、TAS-20のスコアを4分位し、慢性疼痛罹患のリスクをロジスティック回帰分析で解析した結果を示した。TAS-20のスコアが42以下の群と比較すると、43～48の群ではオッズ比は1.1倍である

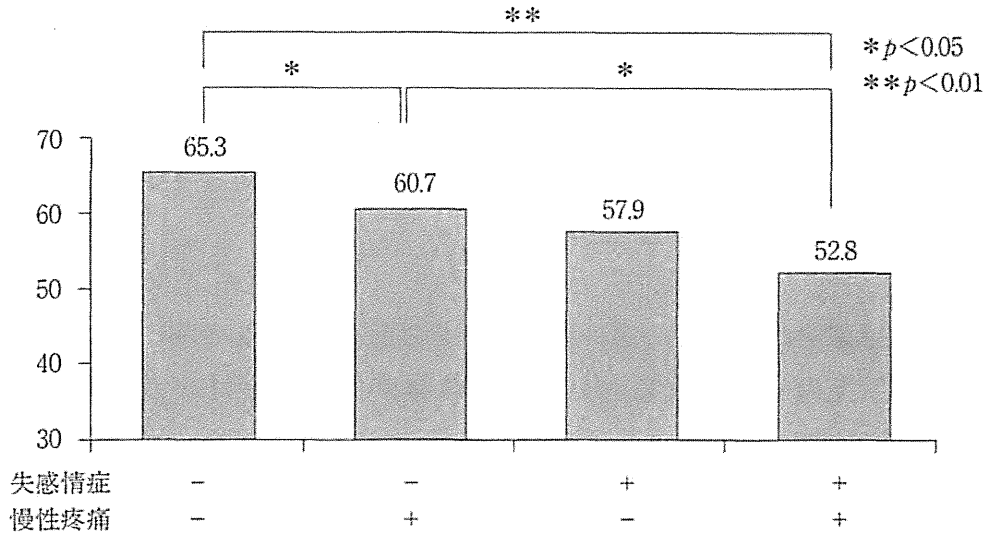

図7　慢性疼痛と失感情症別にみた生活満足度の平均値

年齢、性別、婚姻状況、教育年数、経済状況で調整

が、49～54の群では1.8倍、55以上になると2.8倍と慢性疼痛罹患のリスクが有意に増大していた。

TAS-20の各因子のスコアを4分位し、慢性疼痛罹患のリスクをロジスティック回帰分析で解析したところ、外的志向因子スコアでは、慢性疼痛罹患のリスクには差はなかったが、感情同定困難因子のスコアでは、9以下の群と比較して、10～12の群では1.6倍、13～16の群では2.5倍、17以上の群では3.5倍と、慢性疼痛罹患のリスクが有意に上昇しており、感情伝達困難因子のスコアでは、17以上の群で12以下の群と比較して2.1倍慢性疼痛罹患のリスクが有意に上昇していた。

(7) 慢性疼痛と失感情症の有無別で分類した4群での生活満足度の比較

図7に、慢性疼痛と失感情症の有無別で分類した4群での生活満足度の比較を示した。失感情症なし慢性疼痛なし群が最も生活満足度が高く、失感情症なし慢性疼痛あり群、失感情症あり慢性疼痛なし群と続き、失感情症あり慢性疼痛あり群が、最も生活満足度が低かった。

失感情症あり慢性疼痛あり群は、失感情症なし慢性疼痛なし群および失感情症なし慢性疼痛あり群と比較して有意に生活満足度が低かった。

したがって、慢性疼痛があっても失感情症傾向が減ると生活満足度が上昇する可能性が示唆された。

●一般住民における慢性の痛み愁訴と失感情症研究からの考察

40歳以上の一般住民において、痛み強度を問わずに6カ月以上の慢性疼痛を持つかどうかという質問形式で調査した場合、慢性疼痛を有する人の割合は48%と約半分の一般住民が慢性疼痛を有するという結果が得られた。

痛みなし群よりも、急性疼痛群や慢性疼痛群で失感情症の得点が有意に高かった.また、抑うつ・不安・痛みの強さ、日常生活障害すべてにおいて、急性疼痛群よりも慢性疼痛群で症状が強く、生活満足度は急性疼痛群では痛みなし群と比べて変わらないが、慢性疼痛群では有意に低下していた。

以上より、住民のQOLという観点で、急性疼痛群から、慢性疼痛群に移行せずに痛みなし群にもどるような生活のあり方や工夫が必要であると考えられる。また、一般住民の生活満足度を低下させる要因として慢性疼痛の重要性が示唆された。

さらに、興味深いことに心身症のリスク因子として知られている失感情症が、一般住民においても慢性の痛み愁訴罹患のリスクを約2～3倍に増大していたという結果が得られた。失感情症はしばしば感情調整の障害であるともいわれており、抑うつ、不安などの否定的感情や他者との交流不全を介して生活満足度の低下へ関連している可能性がある。

失感情症の3つの因子のなかで、感情同定困難因子が慢性の痛み愁訴罹患のリスク増大にとくに重要であった。つまり、日本人には「辛

さを言葉に出さずに耐え忍ぶ」という認知行動特性がよくみられ、それを美徳とする日本文化があるが、この特性は慢性疼痛のリスク増大という観点では美徳にならないという可能性が提起された。さらにエビデンスを重ねるなかで慢性の痛み愁訴における失感情症の重要性が確認されれば、生活の舞台となる市町村、県、国という単位で、自らの気持ちを感じとれるようになるために、肯定的な感情のみならず否定的な感情を表出し、心理的に互いにサポートすることを促進するような心理教育的アプローチを含んだ健康活動が慢性疼痛の罹患リスクを下げたり、生活満足度を上げたりする可能性が示唆される。

また、本研究では慢性の痛み愁訴と失感情症の合併により生活満足度をみた分析結果で、慢性の痛み愁訴を有していても失感情症がない場合には失感情症がある場合よりも生活満足度が有意に高かったという結果が得られた。40歳以上の集団で多くみられる腰下肢疾患というと、変形性膝関節症、腰椎椎間板ヘルニアや腰部脊柱管狭窄症といったように長期化し、完治がなかなか困難な疾患が多いため、疾患そのものが治癒しないまでも生活満足度をあげるために、失感情症に対する心理教育的アプローチが奏効する可能性が考えられる。したがって、心身症の治療場面に限らず、一般住民の痛みに関連した生活満足度の改善に対して、失感情症という観点が重要であることが示唆された。

●一般住民における疫学研究のまとめ：慢性の痛み愁訴罹患リスクと生活満足度への影響

一般住民において、慢性の痛み愁訴は生活満足度の低下に関連し、慢性の痛み愁訴に失感情症を合併すると、さらに生活満足度が低下していた。

また、日本における一般住民において、失感情症は慢性の痛み愁訴の合併リスク上昇およびQOLの観点で、慢性疼痛医療や市民の健康

活動において、より注目されるべき心理特性である。したがって、慢性疼痛と失感情症について、さらなる包括的研究が必要である。

専門医におけるアンケート調査

●日本心身医学会および日本心療内科学会の専門医へのアンケート

厚生労働省による難治性慢性疼痛の実態と病態の解明に関する研究（牛田班）の分担研究（精神・心理学的要素を主要因とする難治性疼痛の調査研究；細井担当）として、日本心身医学会および日本心療内科学会の専門医（以下、専門医）575名を対象として、2010年12月20日に「慢性疼痛の心身医療の実態に関するアンケート票」を郵送し、2011年1月10日までに郵送での返信を依頼した。144名（回収率25%）の専門医からアンケート票が返信され、回収されたデータをSPSS 14.0を使用して解析した。

●アンケート結果のまとめ

①さまざまな医療機関で、心身医学および心療内科の専門医が慢性疼痛の心身医療を実践しており、心身症症例の27%で痛みが主訴であり、その54%が6カ月以上持続する慢性疼痛であった。

②専門医一人あたり1カ月に平均44人の疼痛患者を診療していた。

③痛み発症後平均約3カ所の医療機関を経て、1年後に専門医を受診し、その後2年間は通院していた。

④慢性疼痛の部位は、頭痛、腰痛、肩部痛の順に多かった。

⑤慢性疼痛に対する心理療法としては、図8に示すように、カウンセリング、認知行動療法、自律訓練法の順で有用と考えられ、適用されており、薬物としては、抗うつ薬、抗不安薬、NSAIDSの順に多く処方されていた。

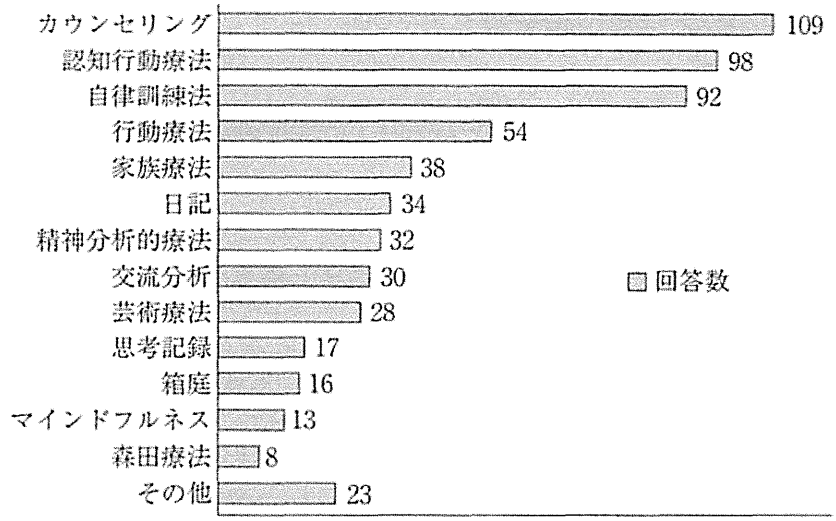

図８　慢性疼痛治療に有効と思われる心身医学的治療

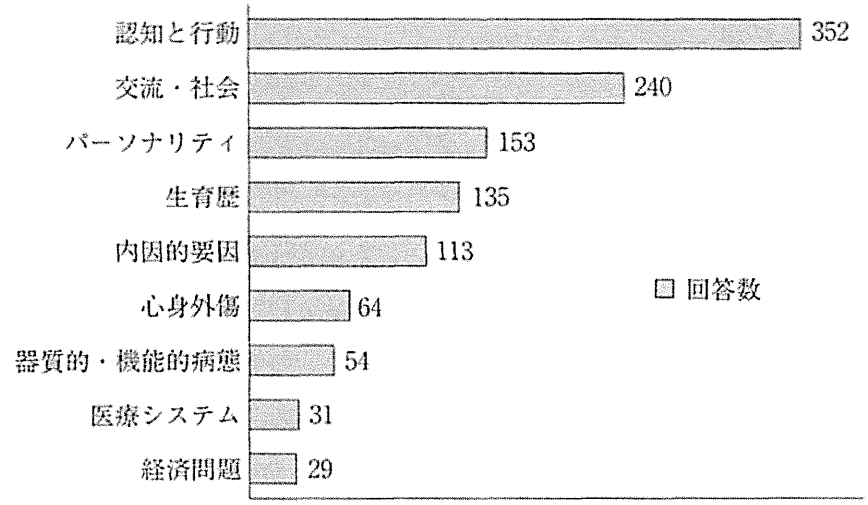

図９　専門医（アンケート回答者 575 人）が慢性疼痛の難治化の因子として考えている要因

⑥専門医のいる施設の 62％で臨床心理士が勤務しており、その 63％が慢性疼痛医療に関与していた。

⑦図９に示すように、専門医は、難治化の因子として、１位：認知と行動の問題、２位：交流・社会的問題、３位：失感情症を含むパー

ソナリティの問題 の順に重要視していた。

九州大学病院心療内科外来を受診した慢性疼痛患者における失感情症の役割

●九州大学病院心療内科外来の慢性疼痛患者における TAS-20 得点と慢性疼痛のアウトカムの相関

2006 年 11 月から 2008 年 8 月まで、痛みを主訴に九州大学病院心療内科を受診した外来および入院患者は男性 33 名、女性 95 名、総数 128 名（初診時平均年齢 52.3 歳、SD＝16.3、range 22 ～ 83 歳、罹病期間平均 5.1 年、SD＝6.84、range 3 カ月 ～ 36 年）に、TAS-20、Hospital Anxiety and Depression Scale（HAD）、Pain Catastrophizing Scale（PCS）、Brief Pain Inventory（BPI）の記入を依頼し、TAS-20 の総点およびその下位尺度と、痛みの強さ・破局化・抑うつ・不安および痛みによる生活障害との関係を SPSS 14.0 を利用して解析した。

その結果、表 2 に示すような相関関係が得られ、TAS-20 総点と感情同定困難因子得点が、不安、抑うつ、破局化、痛みの生活障害に有意に相関していた（Makino, Jensen, Arimura, Obata, Anno, Iwaki, Kubo, Sudo, Hosoi（2012））。また、TAS-20 得点および感情同定困難得点と痛みの生活障害および破局化の相関は、抑うつ、不安といった否定的感情を調整すると有意差がなくなることから、否定的感情を介して失感情傾向がこれらの痛みの臨床アウトカムに影響していることが判明した。

●心療内科の慢性疼痛医療における失感情症の役割

慢性疼痛の臨床的なアウトカムとして重要な痛みの強さや痛みによる生活障害に影響を与えることが知られている破局化（Iwaki,

表2　心療内科外来における慢性疼痛患者の失感情症スコア（TAS-20総点と感情同定困難得点）、不安、抑うつ、破局化、痛みの強さおよび痛み障害との相関

Measure	1	2	3	4	5	6
1 TAS-20総点						
2 TAS-感情同定困難	.85**					
3 不安（HADS-A）	.35**	.49**				
4 抑うつ（HADS-D）	.34**	.35**	.53**			
5 破局化（PCS）	.32**	.35**	.49**	.35**		
6 痛みの強さ（NRS）	−.02	.04	.20	.15	.31**	
7 痛み障害（BPI-平均）	.26*	.29*	.38**	.53**	.38**	.52**

*$p<0.1$、**$p<0.01$

注：TAS-20 = the 20-item Toronto Alexithymia Scale
HADS = Hospital Anxiety and Depression Scale
PCS = Pain Catastrophizing Scale
NRS = Numerical Rating Scale
BPI = Brief Pain Inventory

Arimura, Jensen, Nakamura, Yamashiro, Makino, Obata, Sudo, Kubo, Hosoi（2012））は、心身医学的な治療対象として重要であると考えられている。この痛みの破局化に加えて、痛み症状に合併する抑うつ、不安といった否定的感情や、QOLに影響を与える生活障害のスコアは、失感情症傾向とくに感情同定困難傾向が強いほど高かった。この結果は、一般住民で得られた失感情症の慢性の痛み愁訴に対する悪影響と関連して、一般住民と同様に、病院での慢性疼痛臨床にも失感情症が臨床的なアウトカムに重要な因子であるというエビデンスが得られた。一般住民が、心療内科に最終的に紹介受診するまでに通常経由する身体科である内科、整形外科、ペインクリニックといった臨床現場における失感情症の役割については、海外ではエビデンスがあるが、日本人についてはまだ明らかでない部分もある。しかし、一般住民から心療内科慢性疼痛患者まで影響がある「感情を言葉にできない傾向」ともいうべき日本人の感情同定困難傾向については、心身医学のみならず、痛み医学一般に広く理解されていくことが必要である知

識であろう。

慢性疼痛の心身医学的治療対象

さて、ここまで心身医学の治療対象ともいうべき失感情症について、痛みとの関連について述べてきたが、実際の慢性疼痛医療での心身医学的治療対象はどのようなものがあるのかを最後に考察する。

近年では、脳画像研究の進歩から、従来ペインマトリクスと呼ばれてきた脳部位である体性感覚野、視床、島皮質、背側前部帯状回などのうち、痛みの感情成分とされてきた島皮質、背側前部帯状回といった部位は、身体的な痛み（physical pain）のみならず、社会的な痛み（social pain）でも共通して活性化されることが知られるようになった（守口（2011））。さらに、これらの部位は他者の痛みに対する共感（empathy）でも活性化されることも知られてきている（Bird, Silani, Singer（2010）；Lamm, Decety, Singer（2011））。つまり、あらゆる人間は生育の過程で身体的な痛みのときに感じる不快な感情体験を学習するが、不公平待遇や疎外感などの社会的ストレスや他者の痛みを目にしたときに感じる苦しみも同様な脳部位が活性化するため、いわゆる「心の痛み」として、学習されていくことが想定される。そのうえで、身体的な痛みのときのパターンといくぶん異なる脳体験が起こり（Eisenberger（2012））、そのパターンは前頭前野などで統合されて認識されると考えられているが、失感情症傾向がある人間では、その感情成分が感知できず、多くの人が社会的ストレスの際に身体の緊張に伴い経験する機能的な筋肉痛や関節痛などの感覚成分にのみ注目がいき、医療では身体的な痛みのみ訴えられるという事象が推定される。physical pain と social pain の混合体験が未分化な不快体験として語られるが、十分に傾聴を行いながら、背景の心理的葛藤を言語化

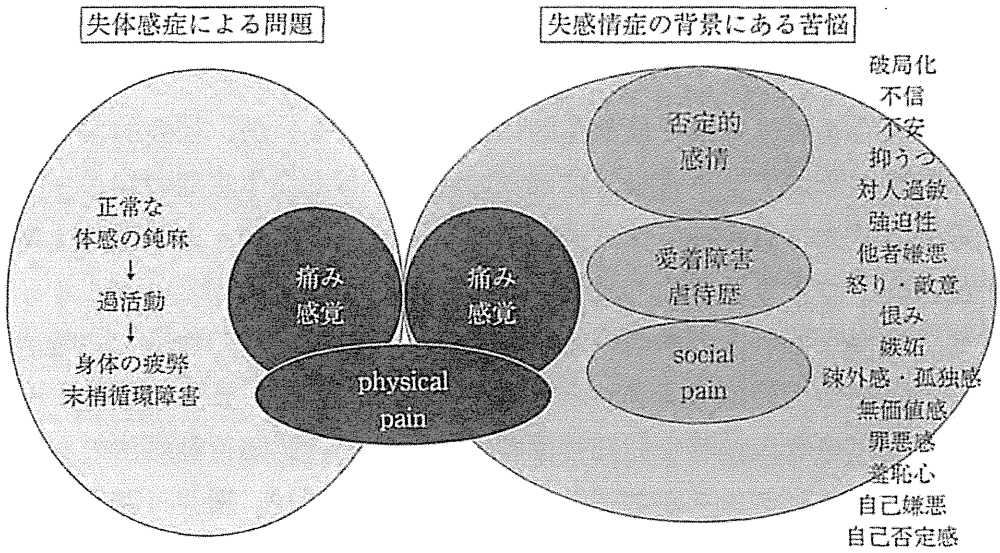

図 10　慢性疼痛の身体的痛み愁訴の背景にある心身医学的治療対象

させる専門的なアプローチがなければ、「自らの感情を同定できない」人が、「ストレスはありますか？」と尋ねられても実感できていないために自らの苦境を弁明できないわけである（河田，細井(2012)）。したがって、心身医療に到達する以前の状態でも痛み医療に携わる医療専門家はこうした事象に対する知識をあらかじめ備え、少なくとも傾聴すれば患者が弁明できるような医療環境を設定することが、医療の効率化や医療における不信感情を増大させないために必要であると考えられる。

さらに、簡単な傾聴ではなかなか理解しにくい慢性疼痛症例で、九州大学病院心療内科に入院となった難治化した慢性疼痛の心理的葛藤の様相について、図 10 に示した。

失感情症の症例で、時間をかけた治療経過のなかで、信頼関係の形成に十分な時間をとって患者の心境をうかがっていくなかでようやく表現される否定的感情がある。そのなかで、表面的な破局化や不信の背景に、不安、抑うつ、対人過敏、強迫性、他者嫌悪、怒り・敵意、恨み、嫉妬、疎外感・孤独感、無価値感、罪悪感、羞恥心、自己嫌

悪、自己否定感といったより深い患者の苦悩が存在することが理解されてきた。

それとともに、本稿では具体的には触れていないが、社会的ストレスの持続のなかで、正常な身体感覚の鈍麻である失体感症が起こり、強迫的な認知行動特性に伴う過活動の末、身体の疲弊・末梢循環障害が身体的アウトカムとして慢性疼痛の身体的背景になっていることも併せて重要な心身医学的治療対象であることが、当科の数多くの難治性慢性疼痛症例の臨床経験から理解されてきている。また、このような慢性疼痛患者の独特な認知行動特性に対して、認知行動療法の有用性についてエビデンスが蓄積されてきている（有村，細井（2011））。

したがって、心身相関の医学・医療を考えるときに、慢性疼痛の病態は失感情症という観点から検討すると心身相関が合理的にも理解しやすい典型的な心身の障害であることが理解される（細井（2011））。心身医学的治療対象を見据えた心身医療の現場から得られる知見が、心身医学の専門医療機関のみならず、痛み医療一般やひいては一般市民の痛み愁訴遷延化の予防策として社会へ広く浸透していくことが期待される。

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Alexithymia and Chronic Pain
The Role of Negative Affectivity

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Objectives: Alexithymia has been shown to be associated with key pain-related variables in persons with chronic pain from western countries, but the generalizability of these findings across cultures has not been examined adequately. Also, there remain questions regarding the importance of alexithymia to patient functioning over and above the effects of the general negative affectivity.

Methods: Alexithymia, pain intensity, pain interference, depression, anxiety, and pain catastrophizing were measured in 128 Japanese patients with chronic pain. Because of the low internal consistency coefficients for 2 of the alexithymia scales (measuring difficulty describing feelings and externally oriented feelings) in our sample, we limited our analyses to a scale assessing difficulty identifying feelings and the total alexithymia scale score.

Results: Although the 20-item Toronto Alexithymia Scale total and the Difficulty Identifying Feelings scale scores were not significantly associated with pain intensity, these scales were associated with pain interference, catastrophizing, and negative affectivity in our sample. However, these associations became nonsignificant when measures of negative affectivity were controlled.

Discussion: The findings support the cross-cultural generalizability of significant associations between alexithymia and both pain interference and catastrophizing. However, whether (1) alexithymia influences patient functioning indirectly by its effects on negative affect or (2) the univariate associations found between alexithymia and measures of patient functioning are a byproduct of both being influenced by negative affect needs to be tested using longitudinal and experimental research.

Key Words: alexithymia, chronic pain, pain interference, pain catastrophizing, negative affectivity

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Alexithymia is a term used to describe a reduced emotional awareness and inability to describe feelings.[1] Sifneos noted that alexithymic patients commonly complain of anxiety and depression. However, when questioned further about their anxiety, patients with alexithymia talk "...only about nervousness, agitation, restlessness, irritability and tension." Also, when asked about depression, they tend to talk about "sensations of emptiness, void, boredom, and pain."[2] Thus, paradoxically, although individuals with alexithymia struggle with describing their feelings, they also report more distress than individuals who do not have alexithymia, perhaps in part because a common method of coping with negative feelings (ie, talking about feelings) is not available to them. Alexithymia also tends to be more common in men than in women, perhaps because of cultural factors that inhibit emotional expression among men.[3]

Alexithymia has also been shown to be associated with pain and pain-related functioning in individuals with chronic pain from western countries,[4–7] although the associations found between alexithymia and pain intensity is less consistent than those between alexithymia and a negative mood. Regarding associations with pain intensity, for example, some investigators have not found significant associations,[8–10] some have found significant positive associations,[4,11] and others have found both significant and nonsignificant associations.[6,12] However, when significant associations are found, alexithymia is always associated positively with pain intensity. Although the findings regarding alexithymia and pain intensity are inconsistent, researchers have consistently found positive associations between measures of alexithymia and both pain interference[7,13–15] and depression.[7,16]

It is possible that cultural background and ethnicity could influence alexithymia and its associations with symptom reporting.[6,17] Japan has unique cultural characteristics that differ from western countries in many ways, including in the areas of religion,[18] ideas about virtue,[19] and styles of communication.[21] Although there is some limited research suggesting that the concept of alexithymia may translate to Japanese samples who do not have chronic pain,[21,22] it is not known if the findings regarding the associations between alexithymia and pain-related variables found in western samples have cross-cultural generalizability. We were able to identify only 1 study that has examined the relationship between alexithymia and pain in Japanese people.[23] This study found that healthy subjects with high alexithymia scores undergoing colonic distension stimulation reported a stronger response to stimulation—including more pain—than subjects with low alexithymia scores. However, we were not able to identify any research that has examined the associations between alexithymia and pain-related variables in Japanese patients with chronic pain.

The 20-item Toronto Alexithymia Scale (TAS-20)[24,25] assesses global alexithymia and 3 alexithymia subdomains: (1) difficulty identifying feelings (DIF); (2) difficulty describing feelings (DDF); and (3) externally oriented thinking (EOT). Although, as mentioned above, research does

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not always find significant associations between TAS-20 scale scores and pain intensity,[8–10] when significant associations are found, they are positive and are most often found with the TAS-20 Difficulty Identifying Feelings (TAS-DIF) scale.[5,6,15]

Recently, we reported that the TAS-DIF and TAS-20 DDF (TAS-DDF) scales were significantly associated with reports of more pain intensity and pain interference in a sample of predominantly white individuals with neuromuscular disease and pain.[15] We also found that the associations between alexithymia and both pain intensity and pain interference became nonsignificant after controlling for a measure of psychological distress, consistent with the possibilities that general negative affectivity may drive the significant associations found between alexithymia and patient functioning[7,15] or that the effects of alexithymia on patient functioning are mediated by its effects on negative affect.

One key pain-related factor linked to both pain intensity and negative affect is catastrophizing.[26] Given previous findings that alexithymia is associated with "emotional constriction" and experiential avoidance,[27] it is reasonable to hypothesize that individuals reporting higher levels of alexithymia may be more likely to catastrophize about their pain. This hypothesis has been supported in 2 studies of patients from western cultures.[7,28] In the first of these, alexithymia was moderately associated with pain catastrophizing ($r = 0.47$),[7] and had a strong positive association with depression ($r = 0.71$).[7] In the second study, measures of alexithymia, especially the TAS-DIF scale, showed a moderate association with pain catastrophizing ($r = 0.43$),[28] and demonstrated a moderate association with anxiety sensitivity ($r = 0.35$).[29] However, the extent to which these associations generalize to patients with chronic pain from other cultures, including the Japanese culture, has not yet been tested. In addition, findings have supported that the decreasing of catastrophizing may be a potential factor to improve pain outcomes.[30,31] However, the studies that examined the association between catastrophizing and alexithymia are limited, and there has been no study that has examined the associations between alexithymia and pain catastrophizing when controlling for the negative affectivity (eg, measures of depression and anxiety) in patients with chronic pain.

People with alexithymia tend to show lower empathy[31] with others' beliefs, emotions, and desires,[32] perhaps because of their lack of knowledge of their own emotional experience.[31] This lack of empathy may also contribute to the higher rates of interpersonal problems reported by persons with alexithymia.[33] Because Japanese people place a high priority on harmony,[19] they may be less likely to directly express their negative feelings and intent, relative to people from western cultures. In addition, to succeed in the Japanese society, it is necessary to have a well-developed ability to empathize with others and understand others' intentions without verbal communication. Given these considerations, alexithymic individuals in Japan may experience even more distress in daily life than those living in western cultures, which could result in alexithymia having a greater (negative) impact on all outcomes.

Given these considerations, we hypothesized that alexithymia would be more strongly associated with pain intensity, pain interference, and pain catastrophizing in our sample of patients from Japan than has been found in patients from western countries. Also, given the possibility that (1) alexithymia might impact functioning by its negative impact on negative emotions or that (2) the negative affect might drive both alexithymia and negative outcomes in both cultures, we hypothesized that, similar to what we found in a study of alexithymia and pain in patients from the United States, the significant associations between alexithymia and pain and functioning will disappear when negative affectivity is controlled.

METHODS

Participants

Participants were consecutive Japanese outpatients with chronic pain (pain of at least 3-month duration) seen in the outpatient clinic of the department of psychosomatic medicine at Kyushu University Hospital in Japan from November 2006 to August 2008. To participate in the study, patients must have been at least 18 years old and not have symptoms of dementia or other significant cognitive deficits or severe psychopathology (ie, suicidal patients, severe depression, and psychosis). All of the 142 eligible patients seen in the clinic during this time period agreed to participate. However, 14 of these did not provide complete responses to the study questionnaires. This left a final sample size of 128 (90% response rate) participants. All participants did not have a history of psychiatric disorders except 2 patients who had a history of bipolar affect disorder, although symptoms of this disorder were not present at the time of the participation in this study.

The sample contained 95 women (74.2%), and the mean age of the participants was 52.31 years (SD = 16.30 y; range, 22 to 83 y). The mean duration of pain was 5.1 years (SD = 6.84 y; range, 3 mo to 36 y). The educational level of the participants varied widely; 15 participants (11.7%) graduated from junior high school, 62 (48.4%) graduated from high school, 25 (19.5%) completed junior college or vocational school, 24 (18.8%) graduated from a 4-year university, and 2 (1.6%) held a postgraduate degree. Seventy patients (54.7%) were married/living with significant other, 14 (10.9%) were divorced, 11 (8.6%) were widowed, and 33 (25.8%) were never married. Primary pain sites included the abdomen in 21 (16.4%), the lower back in 18 (14.1%), shoulder or arm in 13 (10.2%), the upper back in 14 (10.9%), head in 14 (10.9%), the lower limb in 12 (9.4%), neck pain in 9 (7.0%), chest pain in 6 (4.7%), and other sites in 21 (16.4%) participants. The percentage of patients taking prescribed medications for pain relief at the time of assessment was 21.1%, including nonopioid analgesics (17.9%), opioid analgesics (1.6%), antiepileptics (7.0%), and antidepressants (16.4%).

Procedures

The study participants were asked to complete the measures described below and also provide demographic and medical history information while waiting to be examined in the clinic. The study procedures were approved by the Kyushu University IRB.

Predictors and Covariate Measures

TAS

Alexithymia was assessed using the TAS-20.[24,25] The TAS-20 has 3 scales assessing 3 components of alexithymia: the TAS-DIF scale, the TAS-DDF scale, and the TAS-EOT scale. The TAS-20 items are rated on 5-point Likert scales, ranging from 1 (strongly disagree) to 5 (strongly agree). The

TAS-20 scales have demonstrated strong psychometric properties including good test-retest reliability and criterion validity.[24] The original 3-factor model of the TAS-20 items has been supported in the Japanese community and clinical samples.[22] Good internal consistency has been demonstrated in previous patient samples for total TAS-20 scale and 2 of the TAS-20 scales (TAS-DIF and TAS-DDF). However, the TAS-EOT scale has not demonstrated adequate internal consistency in some studies.[34] Consistent with previous research, the TAS-DIF scale in our sample evidenced adequate internal consistency (Cronbach $\alpha = 0.75$), whereas the TAS-DDF and TAS-EOT scales did not evidence acceptable reliability (Cronbach $\alpha = 0.63$ and 39, respectively). The total TAS-20 scale also evidenced adequate internal consistency (Cronbach $\alpha = 0.74$). Because of the low internal consistency coefficients for TAS-DDF and TAS-EOT scales in our sample, we limited our analyses to TAS-DIF scale and the total TAS-20.

Hospital Anxiety and Depression Scale (HADS)

Negative affectivity was assessed using the HADS.[35] The 14 HADS items ask respondents to indicate the frequency or severity of different symptoms of depression and anxiety during the past week on 4-point (0 to 3) scales. Optimal balance between sensitivity and specificity for HADS as a screening instrument was achieved most frequently at a cut-off score of 8 + for both HADS-anxiety (HADS-A) and HADS-depression (HADS-D), yielding sensitivities and specificities for both subscales of approximately 0.80.[36] A great deal of evidence supports the validity of the HADS for assessing depression and anxiety in patients with various medical conditions.[35] The Japanese version of HADS has been shown to have adequate validity and reliability.[37] The internal consistencies of both the HADS-D and the HADS-A scales in our sample were adequate (Cronbach $\alpha = 0.78$ and 0.77, respectively).

Criterion Measures

Pain Catastrophizing Scale (PCS)

Pain catastrophizing was assessed using a Japanese version of the PCS.[38] The PCS is a 13-item scale measuring 3 domains of pain-catastrophizing cognitions, including rumination, magnification, and helplessness. Respondents indicate the frequency with which they experience each catastrophizing item on a 0 to 4 scale. The PCS does not ask respondents to consider a specific time period when rating pain-catastrophizing responses, but research supports the conclusion that pain catastrophizing is relatively stable over time in individuals with chronic pain.[39] Evidence supports the reliability and validity of the PCS total score and the individuals' PCS scale scores as measures of pain catastrophizing in samples of individuals with chronic pain.[40] The Japanese version of PCS has been shown to have adequate validity and reliability.[41] The reliability of the PCS total scale score in our sample was excellent (Cronbach $\alpha = 0.84$).

Numerical Rating Scales (NRS)

Pain intensity was assessed by asking participants to rate the intensity of their pain in the last 24 hours on 0 to 10 NRSs assessing average, least, worst, and current pain. These 4 ratings were then averaged to create a composite score of the usual pain intensity. A 24-hour recall period was chosen over a 7-day recall period because evidence suggests that a 24-hour recall for pain intensity is more accurate than a 7-day recall.[42] NRS have been shown to be reliable and valid measures of pain intensity in numerous patient samples,[43] and the 0 to 10 NRS has been recommended as the pain intensity scale with the most psychometric strengths and the fewest psychometric weaknesses of all available pain scales.[43]

Brief Pain Inventory (BPI)

Pain interference was assessed using the pain interference scale of the BPI.[44] This measure asks respondents to indicate the amount of interference in 7 daily activities (general activity, walk, work, relations with others, sleep, enjoyment of life) caused by pain during the past 24 hours on 0 (no interference) to 10 (complete interference) NRSs. The BPI interference scale has evidenced high levels of reliability and validity in numerous samples of patients with chronic pain. The reliability and validity of the Japanese version of the BPI is established in cancer pain.[45] In the current sample, the internal consistency was high (Cronbach $\alpha = 0.88$), indicating excellent reliability.

Data Analysis

Before examining the study questions, the predictor, covariates, and criterion measures were examined for outliers and normality. All variables met requirements for analysis and so no transformations were necessary. To examine the hypothesized associations between alexithymia and pain intensity, pain interference, and pain catastrophizing, we first computed the correlation coefficients between the total TAS-20 and the TAS-DIF scale scores and the criterion variables assessing pain intensity, interference, and catastrophizing. We then divided the sample into alexithymic and nonalexithymic groups on the basis of their total TAS-20 scores (total TAS-20 score ≥ 61 and total TAS-20 score < 61, respectively),[2] and used t tests to compare the 2 groups on the criterion variables. We used regression analyses to test our hypothesis that any significant univariate associations found between alexithymia and the study criterion variables would become nonsignificant when measures of negative affectivity were controlled. The criterion variables that evidenced significant univariate associations with alexithymia were the dependent variables in these analyses. Previous research has shown higher alexithymia in men than in women[3] and also the possibility that lower educational level is associated with higher alexithymia.[46] Research also indicates that the pain site is associated with the level of patient functioning.[47] We performed 4 linear regression analyses (1 for each criterion variable) with the TAS-DIF scale scores and the total TAS-20 scores as the predictor variables separately while controlling for demographic variables [age, sex, education, and pain site (coded as low-back pain vs. other pain site)] by entering them in the first steps of the regression analyses to control for their possible confounding effects. For each model, 2 separate steps 3 and 3′ are presented, 1 using the TAS-DIF scale score as a predictor and the other using the total TAS-20 score as a predictor. The measures of negative affect (HADS-D and HADS-A) were entered in the second step. Finally, the TAS-DIF scale score or the total TAS-20 score was entered (in separate regression analyses) to determine whether they remain as the significant predictors when the demographic and negative affect variables were controlled. We set α at .01 for all analyses to balance the need to control for type I errors (detecting a significant

TABLE 1. Means and SDs for Each of the Measures (N = 128)

Measures	Mean	SD	Range
TAS-20 total	53.20	10.64	31-79
TAS-DIF	18.32	6.19	7-34
Anxiety (HADS-A)	7.98	4.79	0-21
Depression (HADS-D)	9.99	4.82	0-21
Catastrophizing (PCS)	34.37	10.16	5-52
Pain intensity (NRS)	5.84	2.06	1-10
Pain interference (BPI-mean)	5.85	2.56	0-10

BPI indicates Brief Pain Inventory; HADS, Hospital Anxiety and Depression Scale; NRS, Numerical Rating Scale; PCS, Pain Catastrophizing Scale; TAS-20, the 20-item Toronto Alexithymia Scale; TAS-DIF, Toronto Alexithymia Scale Difficulty Identifying Feelings scale.

effect in the sample when it is not present in the population) while also avoiding type II errors (determining that an effect is not significant in the sample when in fact it is present in the population). SPSS 17.0 was used for all analyses.

RESULTS

Descriptive Statistics

Table 1 lists the means and SDs for each of the study variables. The average score for the total TAS-20 was consistent with other (non-Japanese) samples of persons with chronic pain (mean ± SD: 53.5 ± 16.4),[48] and slightly higher than normative Japanese scores (48.3 ± 8.9)[22] (50.5 ± 9.5).[49] The average score for HADS-D was consistent with other non-Japanese samples of persons with chronic pain HADS-D (9.67 ± 3.86),[50] although the average score for HADS-A scales was somewhat lower than that reported in a sample of non-Japanese patients with chronic pain (11.18 ± 4.34).[50] The average score for pain catastrophizing (PCS score) was higher than that reported in a sample of non-Japanese patients with chronic pain (25.63 ± 12.4)[51] (16.76 ± 10.04).[52] The average usual pain intensity over the 24 hours was similar to the average pain intensity rating from other samples of patients with chronic pain. The mean pain interference (BPI interference scale) was slightly lower than those from a sample of non-Japanese patients with chronic pain (6.04 ± 2.26).[53]

Correlation Analyses

Table 2 presents the correlation coefficients between the total TAS-20 and TAS-DIF scale scores and the study criterion variables. Neither of the TAS-20 scales was significantly associated with pain intensity in our sample. However, the total TAS-20 and TAS-DIF scores were both associated significantly (and moderately) with pain interference and pain catastrophizing. The total TAS-20 and TAS-DIF scores were also associated significantly and positively with both anxiety and depression.

Differences Between Alexithymic and Nonalexithymic Groups

We examined whether or not there were differences between the alexithymic and nonalexithymic groups in pain-related outcomes. The alexithymic group showed significantly higher scores on pain catastrophizing (alexithymic group vs. nonalexithymic group, mean ± SD: 38.86 ± 8.19 vs. 32.81 ± 10.34; $t = -3.41$, $P = 0.001$) and anxiety (10.33 ± 4.08 vs. 7.16 ± 4.76; $t = -3.68$, $P < 0.001$), and showed a nonsignificant trend to report higher levels of pain interference (6.64 ± 1.96 vs. 5.57 ± 2.69; $t = -2.43$, $P = 0.02$) and depression (11.95 ± 5.06 vs. 9.31 ± 4.57; $t = -2.65$, $P = 0.01$). However, alexithymic group membership was not significantly related to pain intensity (5.69 ± 1.77 vs. 5.89 ± 2.16; $t = 0.53$, $P = 0.60$).

Predictors of Pain Interference and Catastrophizing, Controlling for Negative Affect

The results of the regression analyses predicting pain interference and catastrophizing from the total TAS-20 scale or the TAS-DIF scale (controlling for age, gender, education, pain site, and negative affect) are presented in Tables 3 and 4. As can be seen, neither TAS scale was a significant predictor of either criterion variable once the demographic variables and negative affect were controlled.

DISCUSSION

There are 3 primary findings from this study. First, we found that alexithymia was not significantly associated with pain intensity in our sample. Second, we found that alexithymia was moderately associated with pain interference and catastrophizing, although these associations became nonsignificant when demographic variables and measures of negative affectivity were controlled. Finally, the associations between alexithymia and both pain interference and

TABLE 2. Zero-Order Correlations Among Measures of Alexithymia (TAS-20 total, TAS-DIF), Anxiety, Depression, Catastrophizing, Pain Intensity, and Pain Interference

Measures	1	2	3	4	5	6
1. TAS-20 total						
2. TAS-DIF	0.85**					
3. Anxiety (HADS-A)	0.35**	0.49**				
4. Depression (HADS-D)	0.34**	0.35**	0.53**			
5. Catastrophizing (PCS)	0.32**	0.35**	0.49**	0.35**		
6. Pain intensity (NRS)	−0.02	0.04	0.20	0.15	0.31**	
7. Pain interference (BPI-mean)	0.26*	0.29*	0.38**	0.53**	0.38**	0.52**

*$P < 0.01$.
**$P < 0.001$.
BPI indicates Brief Pain Inventory; HADS, Hospital Anxiety and Depression Scale; NRS, Numerical Rating Scale; PCS, Pain Catastrophizing Scale; TAS-20, the 20-item Toronto Alexithymia Scale; TAS-DIF, Toronto Alexithymia Scale Difficulty Identifying Feelings scale.

TABLE 3. Regression Analysis Results Predicting Pain Interference

Steps	Total R^2	ΔR^2	F-change	β to Enter	t
Criterion: pain interference (BPI interference score)					
Step 1: demographics	0.11	0.11	3.87*		
Age				0.01	0.09
Sex				0.04	0.51
Education				−0.21	−2.30
Pain site				−0.25*	−2.92
Step 2: anxiety and depression	0.39	0.27	26.92**		
HADS-A				0.15	1.79
HADS-D				0.44**	5.15
Step 3: alexithymia	0.39	0.01	1.02		
TAS-DIF				0.09	1.01
Step 3′: alexithymia.	0.39	0.00	0.70		
TAS-20 total				0.07	0.84

Each criterion variable was predicted with TAS-DIF scale and TAS-20 total entered into the final step (steps 3 or 3′, respectively).

*$P < 0.01$.

**$P < 0.001$.

BPI indicates Brief Pain Inventory; HADS, Hospital Anxiety and Depression Scale; PCS, Pain Catastrophizing Scale; TAS-20, the 20-item Toronto Alexithymia Scale; TAS-DIF, Toronto Alexithymia Scale Difficulty Identifying Feelings scale.

catastrophizing were moderate and consistent with findings from western countries.[7,15,28]

Not all studies—including ours—find support for a significant association between pain intensity and alexithymia in individuals with chronic pain. This inconsistency suggests the possibility that there may be contextual factors that influence the strength of the associations between alexithymia and pain intensity. Although it is not clear what those factors are, 1 possibility is the diagnosis or the type of the pain. The studies showing significant associations appear to include patients who have a clear medical diagnosis associated with their pain, such as neuromuscular disease and cancer,[15,54] whereas the studies not showing significant associations tend to include patients with nonspecific pain problems (eg, the current study and others).[48,55] Also, research has shown that among patients with nonspecific pain problems, the association between alexithymia and the affective component of pain is stronger than the association between alexithymia and the sensory component of pain, consistent with the possibility and alexithymia might influence pain intensity (when it does) by factors related to the processing and expression of emotions.[5,7,56] Consistent with this idea, previous findings have shown that chronic pain that is not secondary to a specific organic disease was associated with a number of psychosocial factors that are likely associated with emotional functioning, such as a history of sexual and physical abuse,[57,58] personality types,[59] and psychological trauma.[60] Interestingly, these factors also appear to contribute to secondary alexithymia, and may increase affective distress, which could then contribute to an increase in the affective or suffering component of pain.[61–63] Future research should specifically test the moderating effects of pain type (ie, pain associated with a specific illness/diagnosis vs. pain not associated with a specific illness/diagnosis) on the association between alexithymia and pain intensity, and the extent to which such association may be due to the effects of alexithymia on the affective (vs. the sensory) components of pain.

TABLE 4. Regression Analysis Results Predicting Pain Catastrophizing

Steps	Total R^2	ΔR^2	F-change	β to Enter	t
Criterion: pain catastrophizing (PCS score)					
Step 1: demographics	0.01	0.01	0.18		
Age				0.06	0.66
Sex				−0.04	−0.46
Education				0.01	0.14
Pain site				0.02	0.24
Step 2: anxiety and depression	0.27	0.27	22.01**		
HADS-A				0.43**	4.72
HADS-D				0.14	1.53
Step 3: alexithymia	0.29	0.02	3.54		
TAS-DIF				0.17	1.88
Step 3′: alexithymia	0.31	0.04	6.15		
TAS-20 total				0.22	2.48

Each criterion variable was predicted with TAS-DIF scale and TAS-20 total entered into the final step (steps 3 or 3′, respectively).

**$P < 0.001$.

HADS indicates Hospital Anxiety and Depression Scale; PCS, Pain Catastrophizing Scale; TAS-20, the 20-item Toronto Alexithymia Scale; TAS-DIF, Toronto Alexithymia Scale Difficulty Identifying Feelings scale.

The results of this study replicate the findings showing significant associations between alexithymia and both pain interference[7,15] and catastrophizing[7,28] that have been found in patients with chronic pain from western countries. However, inconsistent with our hypothesis, these associations were not stronger in our sample than those found in samples of patients from western cultures.[7,28] These findings suggest that the concept of alexithymia for pain interference and catastrophizing translates well across cultures, and whatever influence alexithymia may have appears to be similar in both the cultures.

A previous finding that examined the association between alexithymia and pain disability in patients with rheumatoid arthritis among individuals with 2 different ethnicities showed that the total TAS-20, the TAS-DIF, and the TAS-DDF scores were correlated with disability for the African Americans but not for the whites. However, these differences between ethnicities were eliminated after controlling for other demographic variables.[6] These researchers also found that the total TAS-20 score was correlated with disability for the whites but not for African Americans with migraine headache, although these differences were also eliminated after controlling for other demographic variables.[6] In addition, previous findings have suggested that alexithymia is associated with pain interference in different cultures (ie, Finland,[14] France,[13] and the US[7,15]). As a group, these findings suggest that the influence of alexithymia on the pain interference generalize well across different ethnicities and cultures. Further support for this conclusion comes from research showing that the association between alexithymia and negative affect is consistent across different western countries (ie, Turkey and[8,16] Finland[64]). However, research has shown that this association—like that between alexithymia and pain interference—becomes nonsignificant when negative affect is controlled.[7,15] These findings are consistent with previous research in patients with chronic pain from western