

第4章

保健医療機関網における 痛み治療へのアクセス 改善を目指して

4.1 健康の権利、除去可能な痛みから解放される権利

WHO 憲章は、健康とは「ただ単に疾病（疾患）がなく、虚弱でないだけでなく、身体的に、精神的に、社会的に完全に良好な状態にあること」と定義している。人種、宗教、政治信条、経済的・社会的条件によって差別されることなく、最高水準の健康に恵まれることは、あらゆる人々にとっての基本的な権利の一つである。WHO 憲章では、さらに世界中すべての人々が健康であることは、平和と安全を達成するための基礎であり、その成否は、個人と国家の全面的な協力で依存していると述べている。

国際連合の児童の権利に関する条約（1989年）は、「到達可能な最高水準の健康を享受することと疾患の治療および健康への回復のためのリハビリテーションを供与されることは、児童の権利と認める」と強調している。この条約署名国は、「すべての児童に対して、この目的の保健サービスを利用する権利を確保することに努力する」⁹⁹と述べている。

国連経済社会理事会は、健康の権利の一部として「慢性および終末期疾患の人々を、回避しうる痛みから解放し、尊厳ある死を迎え入れられるようなケアの供与を可能にすることも権利に含まれる」と認めている⁹⁹。1972年議定書により改訂された麻薬に関する単一条約（1961年）は、オピオイド鎮痛薬（麻薬）の国際規制方針を定めているが、その前文で、不正麻薬の掃蕩を指示する一方、「各国政府は苦痛（痛み）の緩和のために確保する適切な処置を講じ、オピオイド鎮痛薬（麻薬）が十分に供給でき、十分に入手可能となることを確保すべきである」と述べている⁹⁹。

この国際条約の加盟国政府は、これらの責務を遵守して行動すべきである。政府の政策が痛みからの解放を重視するのは、これらの条約に課せられた責務を重視するからである。

4.2 オピオイド鎮痛薬に関する国際的な規制

各国は国際的な規制の枠組みの範囲内で行動する。例えば、鎮痛のために必要な医薬品であるモルヒネの活用は、1972年議定書で改訂された麻薬に関する単一条約（1961年）による国際的規制管理に従う。この条約は、麻薬に指定されている物質に対する特定の規制要件を概説し、医療目的のオピオイド鎮痛薬の使用に便宜を与えることを重視している。

この概念は、国連経済社会理事会の決議 2005/25（世界人口の80%が鎮痛のためのオピオイド鎮痛薬へのアクセスの不足がある地域の居住と認識）によって強化され、麻薬の不正使用と不正使用への横流し事件を防止する一方、医療での鎮痛目的の使用は障害なしに行えるようにするよう加盟各国に呼びかけている。この点についての必要性は、2005年の世界保健総会（WHOの最高決議機関）のがん予防と制圧に関する決議 WHA58.22によって支持されている。

薬に関する国際的な条約の加盟国は、条約の「規制物質の医学目的の使用を確保し、規制物質の不正使用を防止すること」の両面に従うべきである。各国は国内法令と規則に基づいて、この義務を果たすべきである。ただし、いくつかの国の法律や規則は麻薬に関する単一条約の管理の要件を超えた規定を含み、しばしば医療のオピオイド鎮痛薬（麻薬）へのアクセスを妨げている。

規制を再評価することは、中等度から高度の痛みの治療におけるオピオイド鎮痛薬へのアクセスを改善するために必要なステップである。保健医療機関網における痛み治療の普及を担う政策立案者や所轄官庁は、

生産、調達、保管、流通、処方、調剤、投与に関するオピオイド鎮痛薬の全国的な規制を見直すことから始めなければならない。医療目的のオピオイド鎮痛薬の使用を認めない国の法令や規則がある場合には、「麻薬に関する単一条約」に従った規則や法令に改正する必要がある。規制が厳しすぎる国々では、法律や規則を緩和改正し、実践的な規制になるよう努めるべきである。WHO は、国によるオピオイド鎮痛薬（麻薬）の規制政策において良好なバランスが取れるようにするためのガイドラインを 2011 年に最終修正した⁹⁸。

アネックス（付属文書）6「オピオイド鎮痛薬と国際条約」は、痛み治療のためにオピオイド鎮痛薬を使用できるようにするための国際的な規制の枠組みに基づいて考慮すべき主要な側面についてのガイドラインである。痛み治療やオピオイド鎮痛薬へのアクセスにかかわる担当当局や政策立案当局は、オピオイド鎮痛薬に関する国内外の規制の両面に精通していなければならない。

4.3 国による痛みからの解放に向けた政策の広がり

痛み治療に必要な薬の供給には、国の政策や規制による支援が必要である。これを達成するために必要な国の政策の役割は大きい。また、オピオイド鎮痛薬の規制とは別に、痛み治療についての国の政策の優先順位を検討する必要がある。保健医療機関内での痛み治療の確保を目指している国の政策は、規制物質についての態度や教育における障害因子、規制および供給の障害因子など、痛み治療の実践を妨げるいくつかの側面に対処する必要がある。オピオイド鎮痛薬の規制の枠組みを変更すること、例えば、調剤する際の手続きの簡便化によって負担を減らせば臨床医、薬剤師、看護師、患者、その家族の間で自動的に鎮痛薬へのアクセスが増えるわけではなく、オピオイド鎮痛薬使用に対する理由のない恐怖心の減少に至るわけでもない。

このような状況を変えるためになすべき大きな努力は、オピオイド鎮痛薬の合理的な使い方についての教育を強化することである。しかし、知識や規則が変わらなければ、保健医療機関へのオピオイド鎮痛薬の供給も変わらず、薬価が手頃になったとしても、その使用には影響がない。

痛み治療を改善するための政策は、痛み治療に影響を及ぼすオピオイド鎮痛薬の規制、痛み治療の教育、鎮痛薬の供給の状況などを含む包括的な政策となるべきである。政府が政策改正を考慮し、痛み治療の計画を実施する際には、財源と、医療担当者の人員数についても考慮すべきである。そうすると、資源に制約のある国々でも適切な痛み治療が実践可能となる。

痛み治療専門家、患者、介護担当者団体は、政策立案に関与し、支援することに重要な役割を果たし、国の保健医療機関の中で痛み治療へのアクセスを大きく改善することができる。十分な痛み治療の実施とオピオイド鎮痛薬の入手に対する様々な障壁の分析研究は、治療提供に関連している団体組織（薬剤規制当局、すなわち厚生労働省から医療担当者の団体組織、遵法強化団体など）を巻き込むことによって可能となる。

4.4 国の制度としての痛みからの解放への財政支出

可能な限り、政府は費用対効果が最良で、適切な痛み治療が受け入れやすく、アクセスしやすい状況を保証すべきである。痛み治療には、薬による治療と薬以外の治療法を組み合わせた集学的な治療が必要である。どちらのタイプの介入もコストがかかる。本ガイドラインは、薬による痛み治療のエビデンスを評価し、勧告を策定することを目的に作成された。また、本ガイドラインは、病態に起因した小児の中等度から高度の持続性の痛み治療を確実に行うために不可欠な要素についての情報を提供している。同様に、薬以外の治療

1

2

3

4

法の選択においては、その使用を支持するエビデンス、費用対効果、実施可能性などを他の治療法と比較し、国の財政と人材の関連のもとに考慮する必要がある。

国が健康の権利として提供できる痛みからの解放の力量は、その国の医療財政制度が、どのように設計されているかに左右される。患者の自己負担では、鎮痛薬だけでなく、他の基本医薬品もほとんど入手することができない。自己負担の中でのオピオイド鎮痛薬の薬価が、発展途上国では先進諸国より高価なことがあり、基本医薬品が必要な患者にとって入手しにくくなっている^{99,100}。医療費の自己負担は、医学的ケアや必須医薬品を入手する人々の間の不平等を助長し、最貧層にとっての障壁となる^{99,100}。税金による健康保険または社会健康保険のような健康政策は、健康の権利の一部となることを持続的に保証する方法である。従来の医療保険制度が組織的枠組みとして脆弱な場合には、地域の医療保険制度などの資金調達機構に代替させてもよい。

痛みの治療機構の発展と維持の負担に同意しているとの理解は、痛み治療機構の導入と維持を計画する際に重要である。リスク・プーリング・スキーム（被保険者にとっての悲惨な財務的影響をカバーする制度）は、公共医療サービスへの支払いを実現可能とする方法であるだけでなく、一次、二次、三次医療や地域社会のレベルでの痛み治療の発展と維持に適合した方法である。

4.5 痛みからの解放のために必要なこと

保健医療機関網のすべてにおいて痛み治療の実施を開始し、維持していくために必要な総資源と関連コストを明確にすることは、戦略的計画の鍵となる要素である。需要の検討は、必要とされているサービスと現在提供されているサービスとの間の乖離を究明する公的、組織的な重要な試みである。検討は現状と望ましい成果の間の乖離を明らかにし、次いで乖離がどの順で埋められるべきかの決定に寄与する。コストの見積もりには、薬による治療と薬以外の治療法の提供を拡大する様々な筋書きを含める必要がある。

薬による痛み治療を改善する必要性とコストの見積もりには、下記の項目を含むべきである。

教育の必要性

- ・痛み治療に携わる医療担当者の研修費用：これまでの教育の格差を考察し、薬による治療についての研修計画を国のレベルで採用しなければならない。これは、医学部のカリキュラムを上方修正すること、および看護師、薬剤師、その他の医療担当者の職場での指導訓練（OJT）を強化することである。国の痛み治療ガイドラインが編纂されたら、配布・普及させ、全国的な研修計画を準備しなければならない。
- ・オピオイド鎮痛薬の入手、供給、調剤に携わるすべての担当者と専門家の研修費用：対象となる専門家と、専門家が必要としている国の薬物規制要件とオピオイド鎮痛薬の規制についての研修費用が見積もらなければならない。この研修の対象には、医療担当者、麻薬取締規制当局および麻薬取締官を含むべきである。国の規制政策が変更されたときには、規制の適切な理解につながり、適切な適用につながっていることを確認するためにも、この種の研修が必要である。この研修は、国の薬物規制についての不正確な知識によって規制薬が医療に適用できないという問題が生じたときに、とくに必要となる。
- ・市民に対して、痛みからの解放と緩和ケアの普及のためにオピオイド鎮痛薬を医療に用いることの必要性についての情報を広報、普及するための広報費：この費用は、薬の入手、供給、処方と調剤で役割を果たしているすべての医療担当者と専門家の研修費用の追加費用として考慮する必要がある。一部の

国では、オピオイド鎮痛薬を痛み治療目的に用いることについての市民教育が、市民の間にあるオピオイド鎮痛薬（麻薬）についての誤解と偏見を克服するために重要である。

供給経路の確保と需要量の定量化

- ・規制下にあるオピオイド鎮痛薬（麻薬）の横流し事件を確実に防止するための設備費：保管と流通の間に起こる横流し事件を回避するための手段が、民間部門と公共部門で実施されている。薬の規制制度は、不正使用への麻薬の横流し事件を防止するため、オピオイド鎮痛薬を守るための措置（例えば、貯蔵庫の施錠）を義務付けている。これらの安全対策は国レベルで決められており、国際条約レベルでは規定していないが、横流し事件が起こらないことに貢献している。この方法を確実性と費用対効果の面から検討し、医療用麻薬の入手性と薬価に影響を及ぼさないようにしなければならない。
- ・医薬品のコスト、保管および流通のコスト：これらのコストは、医薬品供給のための国の医療制度の予算の中に織り込まれている必要がある。複数の供給網が並行して存在するような制度は、通常、費用対効果が良くない^{101, 102)}。
- ・需要量の見積もり：治療の需要量を見積もることは、治療を供給する計画や、別の新たな母集団での治療への容易なアクセスを検討するときに重要視される。痛み治療の実施に必要なオピオイド鎮痛薬の予測量を知るための基礎となる。

政策と規制の面において必要なこと

- ・政策の転換や検討、法律、規制の改正費用：これらの費用には、直接的費用と間接的費用とがある。直接的費用は政策や規制の評価と改正に、間接的費用は改正した政策や規制が国内に周知され、適用されていることを確認し、様々なレベルでのサービスを拡大していくことにかかわる費用で、一部は研修費用と重なるかもしれない。痛み治療へのアクセスを改善するための計画に関連する費用と考慮することが重要である。

同様に、薬以外の治療法の実施費用は、包括的保健医療システムの中に組み込んだ痛み治療に統合されるとよい。

4.6 痛み治療による資源の救済

痛みが、個人、家族、地域および社会にもたらす負担の大きさは、しばしば過小評価されている。有病率と発生率のような疾患の経済的負担を推定するための従来の方法は、急性の痛みや持続性の痛みによる負担の測定には困難を伴い、痛みの経過や日常生活への影響を考慮に入れていない。慢性的な痛みは労働市場への参加条件と生産性に大きな影響を及ぼし、しばしば早期退職の理由となる。同じように、小児の持続性の痛みは、本人の学校の欠席、両親や介護担当者の仕事の常習的な欠勤の原因となる。

治療を受けていない痛みは、患者個人のみが感じている痛みではなく、家族や地域、さらに社会全体にまで影響を及ぼすことになる。痛みが、抑うつ、不安、身体的制約など他の症状につながり、患者とその兄弟姉妹の社会的孤立まで引き起こす。薬理的、身体的、行動的、スピリチュアルな諸側面まで考慮した包括的アプローチによる適切な治療対応は、患者を痛みから解放するだけでなく、痛みの裏に隠されていた損失（コスト）まで取り除くという成果をもたらす。

1

2

3

4

政策立案者は、痛みの治療に全システムによるアプローチを採用し、これを国全体の健康と社会活動に開くシステムに浸透させ、その不可欠な要素とする必要がある。成人と小児の痛みの十分な治療の実践は、社会の負担コストを削減し、国の保健医療制度の活用度に合理性を与え、国の経済面と社会面へ多大な還元をもたらす^{103, 104)}。

4.7 痛み治療の守備範囲

痛み治療は、医療の3つのすべてのレベル、すなわち、三次医療、二次医療、一次医療（プライマリケア）で行われるべきである。本ガイドラインは、これらの3つのレベルのすべてで活用でき、適用できるよう考案されている。痛み治療の対象を地域社会レベルまで拡大させていくことが可能である。

緩和ケアの負担を一次医療が維持できない状況の場合に、二次医療レベルへのアプローチで緩和ケアを維持することが採用されている。このアプローチは、医療担当者の深刻な不足のある国で導入されている。保健医療の基盤構造が非常に限られたところに、緩和ケアへの強い要望がある場合に、在宅ケアに主眼をおいた地域医療が緩和ケアの要望に応える鍵となり、実践されている。

いくつかの国では、エイズや、がん、他の慢性疾患の継続的なケアを一次医療システムと連携させて、強力な在宅ケアネットワークを地域に発展させている。緩和ケアへの新しい重要な取り組みは、政府系機関と非政府系団体によるもので、多くの場合、国際機関が支援している。これらの取り組みは、資源の少ないなかで、安価に、質の高い緩和ケアを提供する確かな知識の土台を作り、地域のメンバーのネットワークとつながり、一次医療圏の緩和ケアチームが教育や指導を受けている^{105, 106)}。

4.8 痛み治療の人的資源

痛み治療は、各国の保健医療機関網の中の医療担当者によって提供されなければならない。いくつかの国では医療担当者が不足し、医療が提供すべき仕事量が多すぎている。国は地域社会レベルへの痛み治療の拡大を行う一方で、費用対効果の良い方法で現存医療担当者を活用する方法を検討する必要がある。各国は、医療担当者の状況（医療担当者の種類と数、痛み治療に関するトレーニングのレベル、国内の地理的分布、例えば地方と都市部の差）を考慮して医療制度を設計し、調整する必要がある。

勧告

20. 病態に起因した小児の持続性の痛みの標準化された治療法、そのために必要な薬、とくにオピオイド鎮痛薬の取り扱い方についての医療担当者の教育強化を勧告する。
21. その専門的免許が許す範囲において医療担当者が、付加的な免許を必要とせずに、オピオイド鎮痛薬を取り扱えるように考慮すべきと勧告する。
22. 加えて、国はその状況に応じて、柔軟性、効率性、適用の拡大、およびケアの質の向上・拡大および/またはクオリティ・オブ・ライフ (QOL) 改善のために、(医師以外の) 他の医療担当者にも痛みの診断、オピオイド鎮痛薬 (麻薬) の処方、調剤を許容するよう考慮するとよい。
23. このように許容する条件は、医療行為にかかわる適格性、的確な能力、十分な研修、職業上の行為に対する個々の説明責任などを基盤とする。

ガイドライン作成グループの意見

痛み治療のいくつかの業務は、痛み治療の専門医から他の医療担当者に委任できる。委任とは痛みの診断評価と痛みの治療を委譲することを意味し、オピオイド鎮痛薬 (麻薬) の処方も含んでよい。業務の委任は、医療担当者と治療やケアを受ける人々の双方を保護するための適切なチェックとバランスのあるシステムとして実行されなければならない。いくつかの国々では、看護師およびクリニカルオフィサー (准医師: 医師に代わって一定の医療職務を果たす医療補助員で、発展途上国の地方で主要な働きをしている) が痛みからの解放を推進するためにオピオイド鎮痛薬を処方することを可能にする政策および規制の変更を行っている。上記の勧告は、ガイドライン作成グループによって作成されたが、他の医学的状態における痛みからの解放での経験 (既発表のもの或未発表のものがある) や国全体でのケアの質向上のために行われたものである [アネックス (付属文書) 3 「保健医療機関網への勧告の背景」]。ケアの質を維持向上させ、サービスの範囲と内容を向上させるための有効な方法であると政策立案者に知らせるためには、さらなる文書化されたエビデンスが必要である。WHO は、HIV 感染への対策の業務委譲を一連の地球規模の勧告に示しているが、その原則は、他の業務の委任にも採用できる¹¹⁷。

業務委譲についての地球規模の勧告とガイドラインには、下記のものがある。

- ・人材の分析と乖離を考慮してから、健康問題について業務委譲を採用する。
- ・委譲された医療担当者に業務を実施する権限を与える法的環境を構築する。
- ・ケアの質と保健医療制度におけるこのアプローチの持続性を保証する。

4.9 利用可能とすべき痛み治療法

小児の痛み治療における有効性と安全性のエビデンスは、小児の痛み治療のために使用すべき薬や製剤の種類を計画的に選択するための前提条件である。薬価、入手の可能性、実現可能性などを検討することは、効果と副作用がほぼ同等な薬の中から薬を選ぶための参考となる。

本ガイドラインは、病態に起因した小児の持続性の痛みを治療するための、最低限度の薬による治療法をカバーしている。この特定の対象である小児の痛みを治療するために、非オピオイド鎮痛薬、オピオイド鎮痛薬、可能性のある鎮痛補助薬の使用についてのエビデンスが、検索され評価された。この明白かつ正確なプロセスの一部として、薬による治療に不足しているエビデンスについての研究指針が、この研究分野の国際的科学者たちを導くために作成された [アネックス (付属文書) 5 「研究指針」]。

1

2

3

4

エビデンスに基づいたガイドラインの採用は、国の保健制度上において基本薬を選択するための基盤を提供する。それぞれの国が基本薬モデルリストを持っている必要がある。この重要な政策手段は、成人と小児のために必要不可欠な薬の WHO 基本薬モデルリストの考え方の影響を受け、国の医薬品部門が、薬の入手と手頃な薬価を計画するために用いられている。国の基本薬モデルリストが目指すものは、優先順位の高い疾患および病態を治療するための、基本的な医療において必要な、最も効果的かつ安全で費用対効果の高い薬の最小限度のリストである。優先順位の高い疾患は、各国の現在および将来に推定される公衆衛生上の問題事項に基づき選択される。

WHO のガイダンスの勧告に基づいて加盟国がエビデンスに基づく痛み治療のガイドラインを作成し、併せて、小児の痛み治療のための薬 (鎮痛効果の強さが十分な製剤) が国の基本薬モデルリスト、その調達過程や健康保険制度に含まれるよう保証するべきである。

オピオイド鎮痛薬は、中等度から高度の痛みの治療に必要な強力な薬であるが、国ごとに大なり小なりの差があるものの、乱用と横流し事件の危険性がある。オピオイド鎮痛薬の乱用のリスクを減らす手段は、不正使用への警戒と、注意深い患者選択などの留意のもとでの適切な処方である。家族による不測の過量投与を防ぐために、家族、介護担当者、患者はチャイルドプルーフ付きの容器に薬を入れ、安全な場所に保管するよう注意しなければならない。両親のいずれかがオピオイド依存で、小児に処方したオピオイド鎮痛薬を親が使用する可能性も考慮すべきである。

(訳: 的場元弘・鳥越一宏)

Survey on recognition of post-mastectomy pain syndrome by breast specialist physician and present status of treatment in Japan

Keiko Y. Kojima · Masaki Kitahara ·
Motohiro Matoba · Naohito Shimoyama ·
Shoichi Uezono

Received: 24 September 2011 / Accepted: 10 May 2012
© The Japanese Breast Cancer Society 2012

Abstract

Background Post-mastectomy pain syndrome (PMPS) is chronic pain after breast cancer surgery and is reported to influence quality of life (QOL). Although the results of a survey in Japan showed high incidence, at 21–65 %, many of the patients had never been treated for PMPS. One reason for this low treatment rate may be poor understanding of PMPS by medical personnel. In this study, we conducted the survey by using questionnaire to assess current treatment and the recognitions of the medical personnel.

Methods We mailed a questionnaire to 647 specialist members of the Breast Cancer Society.

Results Of those, 34.7 % responded. While PMPS was recognized by as much as 70.5 % of responding physicians, it was treated by as little as 47.7 % of the responders. In addition, while non-steroidal anti-inflammatory drugs (NSAIDs), which were ineffective in relieving PMPS, were used by 78.4 % of the responders, effective drugs were rarely used; therefore, treatment was considered ineffective by 69.5 %. This indicates that appropriate therapies are not

widely used, and none of the current therapies are very effective.

Conclusions The results showed high recognition of PMPS pathology among physicians, but the treatment rate was as low as 47.7 %. NSAIDs were the main treatment, and the treatment effects were not satisfactory. It was revealed that currently appropriate treatment modalities have not been widely used. Education of physicians, distribution of treatment information and further studies are considered necessary for the spread of appropriate treatment modality.

Keywords Breast Cancer ·
Post-mastectomy pain syndrome ·
Recognition by physicians · Quality of life · Treatment

Introduction

Post-mastectomy pain syndrome (PMPS) is chronic pain after breast cancer surgery that remains for a long time. PMPS is reported to have influence on postoperative quality of life (QOL) [1–11]. Although recent studies indicate that the PMPS incidence is as high as 30–70 % [8, 12–15], the number of patients treated has been limited and treatment effects have been poor, which is considered to be a problem in Europe and the US [4, 5, 8, 9, 14, 16, 17]. The pain appears to be caused by peripheral neuropathy primarily in the intercostobrachial nerve [6, 7]. Recent reports have shown that this pain occurs not only after mastectomy, but also after other procedures for treating breast cancer, breast conserving surgery, tumor enucleation, and breast reconstructing surgery [8, 13, 18]. It has also been reported that the pain occurs after sentinel lymph node biopsy and in patients in whom the intercostobrachial nerve

was preserved [5, 15, 18]. Breast cancer is the most common cancer among women in Japan, affecting 1 in 20 women, and the incidence is increasing every year. Younger women in their 40s and 50s, who are busy with child care and work, are most affected by the disease. Survival rates of breast cancer in Japan are high, with 10-year survival rates of approximately 90 % at stage I and 80 % at stage II [19]. Postoperative QOL has large influence on the family and society, as well as on the patient herself. Recently, the problem of chronic pain has risen with the improvement of cancer survival rates [11, 15, 20]. Although the results of a survey in Japan showed high incidence, at 21–65 % (2–9 years post-surgery), many PMPS patients who have sought outpatient consultation have never been treated for the pain. Not knowing that there are treatment methods available, many gave up the idea that their pain could be alleviated [5, 8, 17]. One reason for this could be a poor understanding of PMPS by medical personnel. In addition, surveys of present status of PMPS treatment in Japan have rarely been conducted. We planned this study to better understand awareness of and current treatment of PMPS in patients undergoing breast cancer surgery by physicians in Japan to identify the problems faced and thus facilitate development of more appropriate treatments to improve the quality of life of patients.

Patients and methods

As no similar survey on the recognition of chronic post-operative pain in patients with cancer has been conducted, a questionnaire was initially prepared based on other studies of chronic pain and surveys of physicians [5, 9, 10, 15, 20–25], as shown in Table 1. Before conducting the survey, we explained the purpose of the survey to the Board of Directors of the Japanese Breast Cancer Society and received approval for the survey. We then requested the Head Office of the Society to disclose information on members of the Society, but were not given permission in light of protection of personal information. Only labels with the postal address and name of specialists required for the postal survey were provided. A request for cooperation, explaining the purpose of the research, and a questionnaire were posted to all 647 specialists of the Japanese Breast Cancer Society in March 2007. The responses were collected by fax. The responding period was 3 weeks. Each specialist signed the questionnaire. The questionnaire consisted of questions regarding recognition of postoperative chronic pain, recognition and experience of PMPS, and current treatment of PMPS and its efficacy. After tallying the results, their opinions on the remaining pain, and relationship between their recognition of PMPS and their

experience and policy of treatment of PMPS were evaluated. Statistical analysis was performed using the Mann-Whitney *U*-test, and $p < 0.05$ was considered statistically significant.

Results

The recovery rate of the questionnaire was 34.7 % (647 distributed; 224 responded; 2 returned as undeliverable).

Background of respondents

The backgrounds of respondents are shown in Table 2.

Questions regarding recognition of postoperative chronic pain

A total of 223 respondents answered the question about prolonged pain associated with surgery, and 1 respondent did not answer the question. The results are shown in Table 3.

Questions regarding recognition and experience of PMPS

Table 4 shows the recognition and duration of PMPS. The incidence of PMPS was 0 % for 4.5 % of the responders, 20 % for 49.5 %, 40 % for 16.2 %, 60 % for 3.2 %, 80 % for 5.0 %, 100 % for 0.9 %, and unknown for 20.7 %. The current number of patients who were diagnosed with PMPS was 0 for 16.4 % of the responders, 5 or fewer for 40 %, 10 or fewer for 10.9 %, less than 20 for 8.2 %, 20 or more for 7.3 %, and unknown for 17.3 %. Regarding the treatment of PMPS, 51.8 % experienced difficulty, while 48.2 % did not experience difficulty.

Questions regarding the current treatment modality and its effects

A total of 222 respondents answered the question about current management of patients with pain, and 2 respondents did not answer the question. The results are shown in Table 5. In addition to 106 physicians who answered the previous question with a reply that “treatment is administered by myself,” 10 answered the question regarding current treatment modality. The results are shown in Table 6. Treatment effects are shown in Table 7. The anticonvulsants gabapentin and pregabalin were not included among the test drugs, because the former had only recently entered the market and the latter was not yet on the market in Japan at the time of the survey.

K. Y. Kojima (✉) · M. Kitahara · S. Uezono
Department of Anesthesiology, The Jikei University Hospital,
3-19-18 Nishi-Shimbashi, Minato-ku, Tokyo 105-8471, Japan
e-mail: keiy@jikei.ac.jp

M. Matoba
Department of Palliative Care and Psycho-Oncology,
National Cancer Center Hospital, 5-1-1 Tsukiji, Chuo-ku,
Tokyo 104-0045, Japan

N. Shimoyama
Department of Palliative Medicine, Tokyo Medical University
Ibaraki Medical Center, 3-20-1 Chuo, Inashiki-gun, Ami-machi,
Ibaraki 300-0395, Japan

Table 1 Questionnaire

Affiliation _____	Name _____
Specialty _____	Experience _____ yrs
Gender male • female	
A. Basic information	
1) How many cases of breast cancer operation did you have in your hospital last year? (excluding biopsy only) _____/year	
2) What is your opinion about prolonged postoperative pain? (Multiple choice)	
① Nothing can be done. ② Pain rarely occurred. ③ There is no need for treatment.	
④ Pain will resolve with time course. ⑤ I should focus on the cancer treatment because pain is a secondary symptom. ⑥ It is difficult to explain to the patients.	
⑦ I want to do something for my patients. ⑧ Pain needs to be treated. ⑨ I want to know how pain can be treated. ⑩ I should consult a pain specialist.	
⑪ Other (_____)	
B. Regarding Postmastectomy Pain Syndrome (PMPS)	
1) Do you know what PMPS is?	
① Yes ② No	
2) How often do you think the PMPS occurred after surgery?	
① 0% ② 20% ③ 40% ④ 60% ⑤ 80% ⑥ 100% ⑦ I don't know.	
3) How long do you think PMPS will last after the operation?	
① 1 year ② 3 years ③ 5 years ④ 7 years ⑤ More than 10 years ⑥ I don't know.	
4) How many patients with PMPS do you have now?	
① 0 ② 1~5 ③ 5~10 ④ 11~20 ⑤ 21~ ⑥ I don't know.	
5) Have you ever experienced any difficulty in treating PMPS?	
① Yes ② No	
6) How do you treat patients with PMPS now? (Multiple choice)	
① No treatment, with observation ② Treat by myself ③ Alternative medicine	
④ Let patients treat themselves in their own way ⑤ Consult pain specialist	
⑥ Other (_____)	
7) Questions for those who chose ② in question 6).	
a) What do you use for treatment now? (Multiple choice)	
① NSAIDs ② Opioids ③ Tranquilizers ④ Antidepressants	
⑤ Herbal medicines ⑥ Topical preparations ⑦ Nerve blocks ⑧ Local injections	
⑨ Rehabilitation ⑩ Acupuncture ⑪ Other (_____)	
b) How effective do you think the treatments are?	
① Not effective ② Slightly effective ③ Moderately effective ④ Very effective ⑤ I don't know.	
8) Do you think we should disclose treatment information regarding PMPS to patients?	
① Yes ② No ③ I don't know.	

Question regarding the recognition of patient education by physicians Other

Disclosure of therapeutic information to patients was considered to be necessary by 77.4 % of the responders, unnecessary by 3.0 %, and unknown by 19.6 %.

Furthermore, we investigated the recognition of PMPS and presence/absence of treatment. Current treatment was investigated in the recognizing group ($n = 158$) and the unrecognizing group ($n = 66$). The number of physicians

Table 2 Responder's characteristics

	No. (%)
Responders	224
Sex	
Male	197 (87.9)
Female	27 (12.1)
Experience (years)	
Median	20
Range	6–52
Specialty	
Surgery	189 (84.4)
Medical oncology	30 (13.4)
Obstetrics and gynecology	1 (0.4)
No answer	4 (1.8)
Surgeries performed at the attending institution (2006)	
Median	80
Range	0–960

Table 3 Opinions on prolongation of postoperative pain (responses based on multiple choices)

Opinion	No.	%
Nothing can be done	33	14.8
Pain rarely occurred	19	8.5
There is no need for treatment	65	29.1
Pain will resolve with time course	109	48.9
I should focus on the cancer treatment because pain is a secondary symptom	14	6.3
It is difficult to explain to the patients	23	10.3
I want to do something for my patients	92	41.3
Pain needs to be treated	63	28.3
I want to know how it can be treated	112	50.2
I should consult a pain specialist	30	13.5
Other	12	5.4

Table 4 Recognition and duration of PMPS

	No.	%
Recognition of PMPS		
Known	158	70.5
Unknown	66	29.5
Duration of PMPS (years)		
1	11	5.0
3	52	23.4
5	27	12.2
7	5	2.3
More than 10	61	27.5
Unknown	66	29.7

Table 5 Current measures taken for PMPS patients (responses based on multiple choices)

Measures to be taken	No.	%
No treatment, with observation	145	65.3
Treat by myself	106	47.7
Alternative medicine	3	1.4
Let patients treat themselves in their own way	27	12.2
Consult pain specialist	69	31.1
Other	13	5.9

Table 6 Therapies currently used for PMPS patients (responses based on multiple choices)

Treatment	No.	%
NSAIDs	91	78.4
Opioids	10	8.6
Tranquilizers	38	32.8
Antidepressants	40	34.5
Herbal medicines	14	12.1
Topical preparations	31	26.7
Nerve blocks	10	8.6
Local injections	7	6.0
Rehabilitation	29	25.0
Acupuncture	0	0
Other	9	7.8

Table 7 Current treatment effects

	No.	%
Not effective	25	21.6
Slightly effective	56	48.3
Moderately effective	25	21.6
Very effective	2	1.7
Unknown	8	6.9

who responded "treatment is administered by myself" in the recognition group and unrecognizing group was 83 and 22, respectively, a significantly greater response by members of the recognition group than by the unrecognizing group ($p < 0.01$).

Patients were classified into an effective group (very effective or moderately effective) and an ineffective group (not effective or slightly effective) according to the therapeutic effect to compare the current treatment modality and its effects. For the NSAIDs, antidepressants, tranquilizers, and opioids that were frequently used in the treatment, the therapeutic efficacy is shown in Table 8. For all drug classes indicated for the treatment of PMPS, more

Table 8 Comparison of treatment effects by preparation

Treatment drug	Ineffective group ^{a, c}	Effective group ^{b, c}	I do not know ^c	Significance
NSAIDs N = 91	69 (75.8 %)	17 (18.7 %)	5 (5.5 %)	<0.01
Tranquilizers N = 38	33	2	3	
Antidepressants N = 40	31	6	3	
Opioids N = 10	7	3	0	

^a Ineffective group (not effective or slightly effective)

^b Effective group (very effective or moderately effective)

^c Multiple choices

responders considered them to be ineffective than effective. Furthermore, the treatment with NSAIDs was significantly insufficient ($p < 0.01$).

Discussion

Postoperative chronic pain after mastectomy, PMPS, has been underestimated because physicians have considered that breast cancer surgery is superficial and minimally invasive, and therefore postoperative pain will resolve with time course. According to the present survey conducted in Japan, the incidence of chronic pain after breast cancer surgery was as high as 21–65 % (2–9 years after the surgery), and the pain remained for a long time. In spite of this, many patients are reported to have never been treated for the pain, and had given-up the idea of treating the pain, believing that their pain could not be alleviated. The report revealed that there are many patients suffering from pain who are left untreated [4, 5, 8, 17]. The current status may have been caused partly because the majority of breast cancer patients are women, because surgeons have little interest in pain, or because the treatment information is insufficient [5, 17, 21, 26]. As the WHO has proposed early stage palliative care for these patients, the status should be improved as soon as possible also in Japan because such chronic pain may have a big impact on the postoperative QOL of the patients. Furthermore, there are tendencies for both increase in incidence rate and improvement in the survival rate with regard to breast cancer in Japan.

In Japan, many of the physicians involved in breast cancer treatment belong to the Japanese Breast Cancer Society, and the society has established a system to certify specialists. Physicians who take care of postoperative breast cancer patients are among these specialists. Therefore, we made a request to the Japanese Breast Cancer

Society specialists to survey recognition of PMPS and the present status of treatments.

Survey results on the recognition of physicians regarding PMPS have not yet been reported globally. Also, probably due to the limited number of studies, there have been no Cochrane Reviews regarding PMPS.

The response rate of the questionnaire was 34.7 %. This result could not be compared with other results, because no similar survey on recognition by physicians about chronic pain after cancer surgery had been conducted. In Japan, many of the physicians engaged in breast cancer treatment are surgeons, who perform not only surgery but also postoperative chemotherapy and hormone therapy in most cases. There were strong opinions concerning prolonged pain associated with surgery, such as: “I want to do something for my patients” (41.3 %); “I want to know how pain can be treated” (50.2 %); “pain needs to be treated” (28.3 %). On the other hand, there were also many moderate opinions, such as: “Pain will resolve with time course” (48.9 %); “there is no need for treatment” (29.1 %); “nothing can be done” (14.8 %). These opinions may be among the reasons treatments for postoperative chronic pain have not been actively performed in Japan despite the fact that many physicians were aware of the existence of prolonged postoperative pain.

The disease state of PMPS was known to as many as 70.5 % of the physicians. However, considering that most patients afflicted with breast cancer undergo surgery, this number may be low for physicians attending to the treatment of breast cancer. The most frequent incidence rate of PMPS considered by the physicians was 20 %, and the second was 40 %, showing lower incidence rates in Europe and the US (30–70 %) [8–11]. Although limited, some physicians responded that the incidence rate of PMPS was either 0 % or 80–100 %, revealing that some physicians believe that chronic pain does not occur, while others believe the great majority of the patients suffer from pain after surgery.

It seems to be well known that the duration of PMPS is long. Most physicians were attending 1–5 PMPS patients, the second most attending 6–10 patients, and the third most attending 11–20 patients. Estimating that 20–40 % of the patients who had undergone surgery were attended by physicians, we have an impression that the reported numbers were relatively small. Approximately 20–30 % of the physicians responded that they did not know the incidence or duration of PMPS, nor the number of PMPS patients, suggesting that physicians have paid little attention to PMPS. Approximately half of the physicians responded that they had difficulty with treating PMPS. The most frequently taken measure was follow-up observation alone (65.3 %). Although many physicians are aware of prolongation of chronic pain after breast cancer surgery, the rate

of follow-up observation alone was high. This may reflect the fact that a high percentage of physicians consider the pain will resolve with time course or that there is no need to treat the pain. This study revealed that the rate of treatment for PMPS was low in Japan and that this was caused by low recognition of PMPS by physicians. Accordingly, the outreach to physicians who may be likely to begin therapy for such patients is very important, as this will be of benefit for the patients. According to the International Association of Study for the Pain (IASP), PMPS is a neuropathic pain caused mainly by a disorder of the intercostobrachial nerve [6, 7]. The first-line drugs recommended for treatment are tricyclic antidepressants, pregabalin, or gabapentin, followed by local anesthetics, selective serotonin-noradrenaline reuptake inhibitors, and opioids [27–30]. In Japan, it is reported that antidepressants show high efficacy in retrospective study [17] but not in randomized study. Moreover, in the “2011 Clinical Practice Guideline of Breast Cancer” of The Japanese Breast Cancer Society, the item for PMPS has been set, and it recommends careful treatment against PMPS according to the guideline for the treatment of neuropathic pain, though the number of the randomized trials of the PMPS treatment is small across the world [31]. This suggests that, although it is well known among pain specialists that NSAIDs are not effective for neuropathic pain such as PMPS, some general physicians have not recognized it. According to the survey, antidepressants and therapeutic drugs for PMPS were used by 34.5 % of the physicians who treated the patients by themselves. As a whole, however, the survey revealed the current situation that NSAIDs, the least effective type of drug for PMPS, tranquilizers, nerve blocks, and local injections were often used. Furthermore, only 1.7 % of the physicians responded that the treatment was “very effective.” Even when “moderately effective” was included, the response that the treatment was effective was only 22.9 %, revealing that the current treatment modality is not appropriate and an adequate response is not achieved. Furthermore, the result of treatment effects by drug category showed that significantly more physicians ($p < 0.01$) felt that NSAIDs are not effective or slightly effective, revealing that NSAIDs were administered to patients although the inefficacy of the treatment effect was recognized. This suggests that information on the treatment modality of PMPS is not widespread, and as pointed out in previous reports regarding other postoperative chronic pain, there are only a few reports regarding PMPS in surgery and treatment of breast cancer, and there is little information regarding the treatment in Japan, which also may cause this situation [32].

In addition, comparison of results of treatment effects by drug category showed that a high percentage of physicians also felt that the treatment effect was not sufficient even

with antidepressants and opioids, which are therapeutic drugs for PMPS. This result suggests that it is likely that appropriate treatment with optimal dosage and administration is not performed even with these PMPS drugs. The fact is pointed out that many clinicians in Japan are also not familiar with the treatment of PMPS, which is the same as in Western countries [5, 8, 22].

While this survey had an advantage in that valuable comments were received from 224 experienced specialists, it has some drawbacks. First, the responses may be biased because most of the respondents are surgeons. Second, no information on non-respondents was available, as described above, and they could not be compared with respondents. Third, the possibility cannot be ruled out that more surgeons who are interested in pain answered questions than those who are not interested in pain. This may have resulted in a higher PMPS recognition rate or the number of answers indicating proactive attitude towards pain treatment. Finally, the response rate was 34.7 %, which accounts for only one-third of all recipients of the questionnaire. Survey methods by which views can be obtained from more surgeons and physicians need to be devised, and further surveys are necessary.

The present survey results indicated that currently in Japan, many PMPS patients might exist who are not provided sufficient treatment. If the satisfaction with treatment effect by physicians is as low as the current state, it is estimated that the patients' satisfaction would be even lower. The majority of physicians believe that information disclosure to patients is essential, which is a subject for future study. At the same time, this study revealed that physicians have received little information about the treatment of PMPS. Therefore, appropriate first steps are to provide correct information regarding appropriate diagnosis and treatment of PMPS, and to promote more studies on the treatment of PMPS in Japan. The results of this survey will be of use to improve the recognition and treatment of PMPS [18].

Conclusions

With the cooperation of the Japanese Breast Cancer Society, a survey on the current status of recognition and treatment of PMPS was conducted among the specialists of the society. According to the survey results, many physicians engaged in breast cancer practice recognized the incidence and duration of PMPS. However, sufficient treatment has not been provided to the patients, and currently treatment is performed using mainly NSAIDs, and the treatment effects are insufficient. It was revealed that currently appropriate treatment modalities have not been widely used. What is currently needed is to provide

appropriate information regarding PMPS to physicians, and then to provide the information to the patients and perform further studies on the treatments.

Acknowledgments This survey was conducted with the cooperation of the Japanese Breast Cancer Society as a part of research for "Standardization of Treatment of Chronic Pain after Breast Cancer Surgery" as a part of a 2007 Grant-in-Aid for Cancer Research from the Ministry of Health, Labour and Welfare "Research on Technical Improvement of Supportive Treatment and Palliative Treatment for Cancer Patients." All authors declared no conflicts of interest. We would like to express our appreciation to the many specialists of the Japanese Breast Cancer Society for their cooperation.

References

- Maunsell E, Brisson J, Deschenes L. Arm problems and psychological distress after surgery for breast cancer. *Can J Surg.* 1993;36(4):315–20.
- Kwekkeboom K. Postmastectomy pain syndromes. *Cancer Nurs.* 1996;19(1):37–43.
- Wallace MS, Wallace AM, Lee J, Dobke MK. Pain after breast surgery: a survey of 282 women. *Pain.* 1996;66(2–3):195–205.
- Smith WC, Bourne D, Squair J, Phillips DO, Chambers WA. A retrospective cohort study of post mastectomy pain syndrome. *Pain.* 1999;83(1):91–5.
- Stevens PE, Dibble SL, Miaskowski C. Prevalence, characteristics, and impact of postmastectomy pain syndrome: an investigation of women's experiences. *Pain.* 1995;61(1):61–8.
- Harold Merskey NB. Classification of chronic pain. In: Harold Merskey NB, editor. *Postmastectomy pain syndrome*. 2 ed. Seattle: IASP Press; 1994. p. 142.
- Vecht CJ, Van de Brand HJ, Wajer OJ. Post-axillary dissection pain in breast cancer due to a lesion of the intercostobrachial nerve. *Pain.* 1989;38(2):171–6.
- Carpenter JS, Andrykowski MA, Sloan P, Cunningham L, Cordova MJ, Studts JL, et al. Postmastectomy/postlumpectomy pain in breast cancer survivors. *J Clin Epidemiol.* 1998;51(12):1285–92.
- Montazeri A. Health-related quality of life in breast cancer patients: a bibliographic review of the literature from 1974 to 2007. *J Exp Clin Cancer Res.* 2008;27:32.
- Poleshuck EL, Katz J, Andrus CH, Hogan LA, Jung BF, Kulick DI, et al. Risk factors for chronic pain following breast cancer surgery: a prospective study. *J Pain.* 2006;7(9):626–34.
- Peuckmann V, Ekholm O, Rasmussen NK, Groenvold M, Christiansen P, Moller S, et al. Chronic pain and other sequelae in long-term breast cancer survivors: nationwide survey in Denmark. *Eur J Pain.* 2009;13(5):478–85.
- McMahon SB, Koltzenburg M. The assessment of cancer pain. In: McMahon SB, Koltzenburg M, editors. *Textbook of pain*. 5th ed. London: Churchill Livingstone; 2006. p. p1118.
- Macdonald L, Bruce J, Scott NW, Smith WC, Chambers WA. Long-term follow-up of breast cancer survivors with post-mastectomy pain syndrome. *Br J Cancer.* 2005;92(2):225–30.
- Saxena AK, Kumar S. Management strategies for pain in breast carcinoma patients: current opinions and future perspectives. *Pain Pract.* 2007;7(2):163–77.
- Gartner R, Jensen MB, Nielsen J, Ewertz M, Kroman N, Kehlet H. Prevalence of and factors associated with persistent pain following breast cancer surgery. *JAMA.* 2009;302(18):1985–92.
- Polinsky ML. Functional status of long-term breast cancer survivors: demonstrating chronicity. *Health Soc Work.* 1994;19(3):165–73.
- Kojima KY. Postmastectomy pain syndrome. *Nihon Rinsho.* 2007;65(Suppl 6):582–6.
- Carpenter JS, Sloan P, Andrykowski MA, McGrath P, Sloan D, Rexford T, et al. Risk factors for pain after mastectomy/lumpectomy. *Cancer Pract.* 1999;7(2):66–70.
- The Japanese Breast Cancer Society. *Investigative Report on Registration of Breast Cancer Patients in Japan*. Tokyo: The Japanese Breast Cancer Society, 2002. p. 11.
- Andersen KG, Kehlet H. Persistent pain after breast cancer treatment: a critical review of risk factors and strategies for prevention. *J Pain.* 2011;12(7):725–46.
- Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and prevention. *Lancet.* 2006;367(9522):1618–25.
- Reuben SS. Chronic pain after surgery: what can we do to prevent it. *Curr Pain Headache Rep.* 2007;11(1):5–13.
- Ravenscroft AJ. Chronic pain after spinal cord injury: a survey of practice in spinal injury units in the USA. *Spinal Cord.* 2000;38(11):658–60.
- van Gijn J, Bierman WF, Zuketto C, Rooijmans HG. Chronic, unexplained pain: from complaint to action. *Ned Tijdschr Geneeskd.* 2000;144(14):641–4.
- Green CR, Wheeler JR, Marchant B, LaPorte F, Guerrero E. Analysis of the physician variable in pain management. *Pain Med.* 2001;2(4):317–27.
- Ure BM, Troldt H, Neugebauer E, Edelmann M. Acute pain in surgery: the significance of a neglected problem. *Langenbecks Arch Chir.* 1992;377(6):352–9.
- Dworkin RH, O'Connor AB, Backonja M, Farrar JT, Finnerup NB, Jensen TS, et al. Pharmacologic management of neuropathic pain: evidence-based recommendations. *Pain.* 2007;132(3):237–51.
- Haanpaa ML, Gourlay GK, Kent JL, Miaskowski C, Raja SN, Schmader KE, et al. Treatment considerations for patients with neuropathic pain and other medical comorbidities. *Mayo Clin Proc.* 2010;85(3 Suppl):S15–25.
- Kalso E, Tasmuth T, Neuvonen PJ. Amitriptyline effectively relieves neuropathic pain following treatment of breast cancer. *Pain.* 1996;64(2):293–302.
- Tasmuth T, Hartel B, Kalso E. Venlafaxine in neuropathic pain following treatment of breast cancer. *Eur J Pain.* 2002;6(1):17–24.
- The Japanese Breast Cancer Society. CQ34: Is medication against Postmastectomy pain syndrome (PMPS) effective? In: The Japanese Breast Cancer Society, editor. *Clinical Practice Guideline of Breast Cancer, treatment*. Tokyo: The Japanese Breast Cancer Society; 2011. p. 254–55.
- Macrae WA. Chronic pain after surgery. *Br J Anaesth.* 2001;87(1):88–98.

Prevalence of Analgesic Prescriptions among Patients with Cancer in Japan: An Analysis of Health Insurance Claims Data

Takahiro Higashi¹, Tetsusuke Yoshimoto² & Motohiro Matoba³

¹ Department of Public Health/Health Policy, University of Tokyo, Tokyo, Japan

² Department of Palliative and Supportive Care, Social Insurance Chukyo Hospital, Nagoya, Japan

³ Department of Palliative Medicine, National Cancer Center Hospital of Japan, Tokyo, Japan

Correspondence: Takahiro Higashi, University of Tokyo, Department of Public Health/Health Policy, Tokyo, Japan. Tel: 81-3-5841-3491. E-mail: higashi@m.u-tokyo.ac.jp

Received: September 11, 2012 Accepted: September 25, 2012 Online Published: October 12, 2012

doi:10.5539/gjhs.v4n6p197 URL: <http://dx.doi.org/10.5539/gjhs.v4n6p197>

Abstract

Objectives: To promote effective management of cancer pain as a nationwide health policy, it is necessary to monitor the performance of health care providers in managing pain in their patients. To plan a system that monitors the performance of pain management, the exact methods of measurement, including the range of target patients, and estimate the resources must be defined. Performance in pain management can be evaluated either in all patients with cancer or restricted to patients with cancer who are already taking analgesics. Restricting the target patient group to patients on analgesics may be more efficient but the extent of that efficiency remains uncertain.

Methods: Using insurance claims from eight employer-sponsored insurance companies, we analyzed data from patients (N = 2858) who had received anti-cancer treatment (ie, surgery, chemotherapy, and radiation therapy) for the five major cancers in Japan (ie, breast, colorectal, liver, lung, and stomach cancers).

Results: Overall, 22.9% of patients received some kind of analgesic prescription in the course of a month. Lung cancer patients were more likely to be prescribed analgesic prescriptions (any analgesics 34.8%; opioids 18.2%) than patients with the other four cancers. The observed percentage of patients who received analgesic prescriptions over the study period (ie, January 2005 to November 2009) decreased.

Conclusion: If we limit the target patient group to patients with cancer already on analgesics, we can reduce the number of persons to be contacted by about three-fourths, compared to assessing pain in all patients with cancer. Although we do not wish to ignore the problem of undetected pain among patients with cancer, beginning our systematic evaluation with patients with cancer already on analgesics may be a realistic option.

Keywords: analgesic prescription, pain management, performance measurement, cancer, opioid

1. Introduction

While pain is the most focused-on part of palliative care in cancer patients (Portenoy, 2011), management of pain is reportedly inadequate in many settings (Cleeland et al., 1994; Deandrea, Montanari, Moja, & Apolone, 2008; Okuyama et al., 2004; Uki, Mendoza, Cleeland, Nakamura, & Takeda, 1998). Few studies have examined the adequacy of pain management in cancer care in Japan (Okuyama et al., 2004; Uki, Mendoza, Cleeland, Nakamura, & Takeda, 1998). Even though cancer is the leading cause of death (Ministry of Health, 2010) in Japan, opioid consumption is relatively small compared to opioid consumption in other industrialized countries. According to a report by the International Narcotics Control Board, opioid consumption in Japan is the lowest among the G7 countries (The International Narcotics Control Board, 2010).

Concern over low opioid consumption in Japan has led policy makers to pay extra attention to pain control. The Cancer Control Act of 2007, which delegated comprehensive responsibility for cancer control to the Japanese government, specifically states that both national and local governments should "take measures to enable palliative care, such as pain control, from the early stages of cancer care processes" (Japan Law Data Archives, 2006). And The Basic Plan to Promote Cancer Control Programs established adequate pain control as a central agenda (Ministry of Health, 2007).

One way to foster adequate pain management in hospitals throughout Japan would be to establish a system to monitor their pain management programs. Measurement and feedback of hospital performance of pain management, preferably in comparison to other medical facilities, would motivate hospitals to improve their pain management (Hibbard, Stockard, & Tusler, 2003). Establishment of a pain management monitoring system would require that consistent methods be clearly defined to measure pain management in target patients and in the success/failure of treatment.

There are several ways to define the target patients who need pain management. The ideal way, which would be to include all patients with cancer who suffer from any kind of pain, would require a process of asking all patients with cancer (perhaps before definitive diagnoses are made) about their pain, since some patients may not have discussed their pain with their health providers. An alternative way may be to target only patients under some type of pain management or patients taking analgesic drugs. This way overlooks patients with pain not recognized by health providers, and thus fails to consider providers' ability or efforts to thoroughly detect patients' suffering. On the other hand, because this way does not rely on obtaining patients' reports, it provides a more defined range of target patients and saves the time and effort of interviewing individual patients about pain.

While the theoretical limitation associated with focusing on patients already being treated for pain is clear, an important unanswered question is: How much labor can we expect to save by limiting the number of target patients? We have found no studies in the literature that report the percentage of patients with cancer being treated for pain in Japan. Although surveys from other countries have reported their prevalence of pain (Breivik et al., 2009; van den Beuken-van Everdingen et al., 2007) and proportion of treatment for moderate to severe pain (Breivik et al., 2009), they have not focused on the frequency of prescribing pain medications associated with resource allocation for monitoring of pain management in hospitals. The purpose of this study was to gain insight into the current status and recent time trend of the use of pain medications in Japan. We analyzed a large database of insurance claims from multiple employer-sponsored insurance companies.

2. Methods

2.1 Dataset

2.1.1 The Health Insurance System in Japan

We analyzed insurance claims data sets from 8 employer-sponsored insurance companies. In Japan, all residents have health insurance from either their employment or their place of residence. Many large companies work with associated insurance companies (1435 insurance companies as of April 2012 (National Federation of Health Insurance Societies (Kenporen), 2012)). Relatively small companies who do not work with associated insurance company provide coverage through the Japan Health Insurance Association. Unemployed or retired persons and persons aged 75 years or older have coverage based on their place of residence from city or region-based insurance entities, respectively.

Health services are reimbursed on a fee-for-service basis according to a nationally defined fee schedule. The healthcare facilities submit claims every month for each patient. The claims list all the services and medications provided to patients in the facility as well as the diagnoses corresponding to those services and medications. For patients who receive drug prescriptions, claims for the medications are submitted by the pharmacy that has dispensed the prescription. These pharmacy claims also contain the names of the prescribing facilities, thus providing links to the prescribing claims.

2.1.2 Study Sample

For our study, eight insurance companies provided data from a total of 750 000 members consisting of the employees of affiliated companies and their dependents. Among them, three insurance companies provided claims from January 2005 to December 2009 and five provided claims from January 2008 to December 2009. The claims from these eight insurance companies included a total of 84652 patients with any type of cancer diagnosis, including tentative diagnoses. To avoid ambiguity of diagnosis on the insurance claims, we analyzed data on patients who had received anti-cancer treatment for the five major cancers in Japan, namely, breast, colorectal, stomach, lung, and liver cancers. Anti-cancer treatment included surgery, chemotherapy, hormone therapy, and radiation therapy. We excluded patients who had undergone only endoscopic treatment, because we suspected that cancer pain may not have been an issue for them.

2.2 Statistical Analyses

Analgesic drugs were classified according to the World Health Organization Pain Control Ladder (World Health Organization, 1996); non-steroidal anti-inflammatory drugs (NSAIDs) including acetaminophen, weak opioids (ie, codeine, dihydrocodeine, tramadol, and pentazocine), and strong opioids (ie, morphine, oxycodone, fentanyl,

pethidine, and buprenorphine). Low-dose aspirin (100mg/tablet) and the codeine contained in cold medicines were not regarded as painkillers. For each month during the study period, the proportion of patients with cancer who received each type of drugs was recorded.

The proportion of analgesic prescriptions were compared between patients' treatment phases (ie, after surgery, after chemotherapy, and after radiation) and primary cancer site. Definition of the treatment phase was based on the last anti-cancer therapy. For example, patients who received surgery followed by chemotherapy (at a later time) were considered to be "after surgery" for the period between surgery and chemotherapy, and "after chemotherapy" after the chemotherapy had been received. Primary cancer sites were determined on the basis of both the cancer treatment and diagnosis recorded on insurance claims. For those patients who had undergone surgery, including site-specific intervention (eg, radio frequency ablation therapy to the liver), the primary site of cancer was considered to be the target organ. For those patients who had received only systemic chemotherapy, where the target cancer had not been clearly established, or radiation therapy where the insurance reimbursement code was the same across different target sites, the diagnoses in the insurance claims were accepted as they had been recorded. The differences in the proportions were statistically tested using the chi-square tests.

The trend of prescribing analgesic drugs for cancer patients was described as the proportion of patient-prescribed analgesic drugs among the cancer patients who had used any health services during a given month. The person-month was the unit of analysis. The change in the trends was analyzed graphically. Also the beta coefficients to represent the trend was calculated using linear regression analyses where the percentage of analgesic prescriptions and the time variable were the dependent and independent variables, respectively, assuming the linearity of the relationship. Because the assumption of homoscedastic errors did not hold for some regression models, the robust standard errors were calculated with the White correction. No correlation between error terms and the independent variable was confirmed. All analyses were performed using Stata 11.2 (StataCorp LP, College Station, Texas).

3. Results

A total of 6656 patients had one of the five major cancers on the health insurance claims, among whom 2585 patients received treatment with surgery, chemotherapy, and/or radiotherapy during the study period, and thus were entered into the analyses. Patient characteristics are presented in Table 1. Average patient age was 53.4 years (Standard deviation: 10.6); 57.7% of patients were female. The most common cancer was breast cancer (n =923 [35.7%]), followed by colorectal cancer (n =615 [23.8%]) and stomach cancer (n =465 [18.0%]). The average duration of the observation period (ie, from first cancer treatment to last visit) was 33.8 months.

Table 1. Patient characteristics

Age		
<20	21	(0.8%)
20-39	243	(9.4%)
40-59	1619	(62.6%)
60-69	548	(21.2%)
>70	154	(6.0%)
Gender		
Female	1491	(57.7%)
Cancer site		
Breast	923	(35.7%)
Colorectal	615	(23.8%)
Liver	179	(6.6%)
Lung	412	(15.9%)
Stomach	465	(18.0%)
Treatment received		
Surgical Intervention	1586	(61.4%)
Chemotherapy	1629	(63.0%)
Radiation	594	(23.0%)

Tables 2 and 3 show the percentages of patients receiving analgesic prescriptions every month by treatment phase and by site of cancer, respectively. Overall, 22.9% of patients who used healthcare each month received analgesic prescriptions (Table 2). Analyses for each drug class revealed that NSAIDs or acetaminophen and opioids were prescribed in 19.8% and 9.1% of the patients, respectively. Strong and weak opioids were prescribed 6.2% and 4.0% of visits, respectively. When we separated patients by treatment received, patients after chemotherapy were most frequently prescribed analgesics (23.7%), while opioids were most frequently prescribed for patients after radiation therapy (9.8%). The analysis by site of cancer revealed that patients with lung cancer were more likely to receive analgesics (overall, 33.3%) than patients with other types of cancer (Table 3).

Table 2. Average proportion of analgesic prescriptions every month by treatment phase

	Overall	After surgery	After chemotherapy	After radiation	P value
Any analgesics	22.9%	21.4%	23.7%	22.8%	<0.001
ACA	1.9%	1.9%	2.2%	2.6%	<0.001
ACA/NSAIDs	19.8%	18.8%	20.7%	20.8%	<0.001
Opioid	9.1%	6.7%	9.4%	9.8%	<0.001
Weak opioid	4.0%	4.2%	3.8%	4.3%	0.16
Strong opioid	6.2%	3.6%	6.7%	6.5%	<0.001

Abbreviations: ACA acetaminophen; NSAID non-steroidal anti-inflammatory drug.

Table 3. Average proportion of analgesic prescriptions every month by site of cancer

	Breast	Colorectal	Liver	Lung	Stomach	P value
Any analgesics	20.0%	20.8%	23.8%	33.3%	17.1%	<0.001
ACA	1.9%	1.9%	2.5%	2.5%	1.9%	0.01
ACA/NSAIDs	18.4%	17.7%	19.9%	28.7%	14.4%	<0.001
Opioid	4.2%	8.9%	9.6%	17.6%	7.0%	<0.001
Weak opioid	2.1%	3.5%	7.0%	6.1%	2.8%	<0.001
Strong opioid	2.4%	6.6%	3.1%	13.2%	5.3%	<0.001

Abbreviations: ACA acetaminophen; NSAID non-steroidal anti-inflammatory drug.

Figure 1 shows a decrease in the percentage of patients who received analgesic prescriptions over the observation period (ie, January 2005 to November 2009). Table 4 shows that analgesic prescriptions decreased by 0.13% per month as calculated via regression analysis.

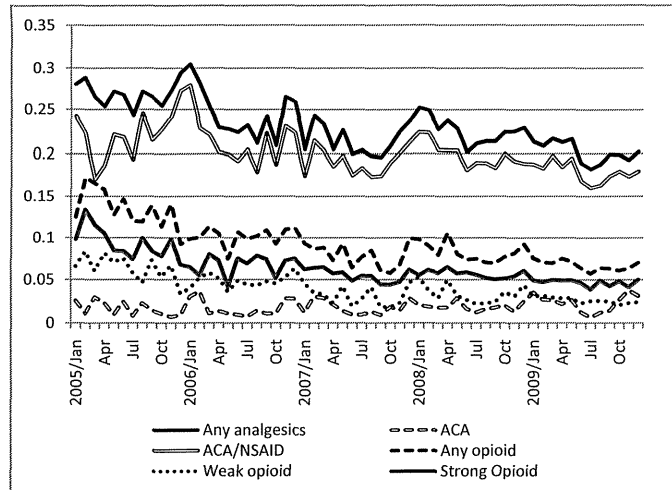


Figure 1. Trend of analgesic prescriptions over observation period

Table 4. Monthly decrease of proportion of analgesic prescriptions (linear regression analyses)

	Beta	(95% CI)		P value
Any analgesics	-0.13%	-0.15%	-0.11%	<0.001
ACA	0.01%	0.00%	0.02%	0.13
ACA/NSAIDs	-0.08%	-0.11%	-0.05%	<0.001
Opioid	-0.13%	-0.15%	-0.10%	<0.001
Weak opioid	-0.07%	-0.09%	-0.06%	<0.001
Strong opioid	-0.09%	-0.11%	-0.07%	<0.001

Abbreviations: ACA acetaminophen; NSAID non-steroidal anti-inflammatory drug.

4. Discussion

Our study, using health insurance claims data from employee-sponsored insurance companies, showed that about one fourth of the patients treated for the five major cancers in Japan received analgesic prescriptions. Since the patients counted in our study were in treatment, the true prevalence of pain that include patients with pain but not in treatment among these patients will be higher. Restricting our target group of patients to patients taking analgesic medications will facilitate selection of patients for evaluating the performance measurement of pain management. By selecting patients in treatment for this evaluation, we will be getting by with only one-fourth to one-fifth of the all the patients. In addition, restricting our target group to patients taking analgesic medication is likely to be more efficient for systematic evaluation purposes than identifying and assessing patients with pain from all patients with cancer.

It must be noted that our study neither implies that identifying patients with untreated pain is of little value nor does it advocate limiting target patients for the monitoring of pain management. Although the prevalence of pain among Japanese patients with cancer is unknown, the prevalence of analgesic prescriptions is much lower than prevalence of pain itself reported in other countries. One systematic review showed that about half of all disease stages and a third of patients after curative treatment reported pain (van den Beuken-van Everdingen et al., 2007). A population-based survey from Europe and Israel showed that 74% of patients with cancer reported pain

(Breivik et al., 2009). Although the patients with cancer in our study were younger and in better condition than the average patient with cancer (Center for Cancer Control and Information Services, National Cancer Center, 2011), the gap between the prevalence of pain among patients with cancer and our finding that 22.9% of patients received analgesics may be an indication of the undertreatment of pain in Japan. This gap underscores the importance of detecting pain among cancer patients.

We need to implement better pain management for cancer pain nationwide. While we are not satisfied with a limited target patient group for assessment in planning a nationwide system, we understand that starting with a limited group is a realistic option. Uniform application of the assessment with clear definition is essential to encourage improvement. Even if we start small, we will eventually assess all patients with cancer who are experiencing pain and ensure that they have access to pain management and appropriate treatment.

In order to work toward a nationwide pain management system for cancer pain, we need to be cautiously aware of the nature of the data to be used and the findings on opioid consumption in Japan. The decreasing trend of patients receiving analgesic drugs in the observed data may be associated with the composition of patients in treatment phases shifted from acute-phase dominant to chronic follow-up phase dominant over time. Because we enrolled patients from the month in which they began cancer therapy and followed up later, patients under observation in the early years of the study period were usually enrolled right after the treatment, making them more likely to receive analgesic medications for pain that arose from the anti-cancer treatment (eg, wound pain after surgery, dermatitis after radiation therapy). In the later years of the study we observed patients both in regular follow-up and patients receiving acute treatment. Thus, a larger proportion of more stable patients in regular follow-up may have caused the overall proportion of analgesic prescriptions to decrease. Nonetheless, the decrease was not steep and therefore did not greatly influence our findings.

The impact of the insurance claims on our findings also warrants mention. First, the insurance companies that provided the data were employer-sponsored. As such, they exclusively enroll employees and employees' dependents. We suspect therefore that our target patient group tended to be younger than the average cancer patient. In fact, while the national statistics on the hospital-based cancer registries showed that most cancer patients to be in their 60s and 70s (Center for Cancer Control and Information Services & National Cancer Center, 2011), most of the patients with cancer in our studies were their 50s and 40s. Second, the accuracy of the diagnosis may be questionable. Since insurance claims place more emphasis on consistency between diagnoses and services provided than clinical accuracy, determining whether a diagnosis is tentative or final is difficult. Third, claims data do not describe the symptoms for which the drugs were prescribed. Therefore, we cannot determine whether NSAIDs were prescribed for pain, fever, or some other anti-inflammatory malady. Fourth, claims submitted to insurance companies lack information on services out of the fee-for-service reimbursement. In 2003 the Japanese health insurance system started paying per-diem based on predefined information from diagnosis-procedure groups in 82 participating hospitals. The number of participating hospitals gradually increased, and in 2011, a total of 1447 hospitals (19% of total) in Japan were participating (Bureau of Health Insurance, Ministry of Health, Labor, & Welfare, 2012). Most services and medications provided during hospitalization to these hospitals were not captured in regular insurance claims, increasing the likelihood of underestimating analgesic use during hospitalization. Fifth, we limited our analyses to the patients who received therapy for the five major cancers in Japan. By limiting the cancer type to the five major cancers, we could match the match the claim diagnoses with the treatment. This enabled us to exclude patients with a tentative diagnosis who turned out not to have cancer later or inactive diagnosis that was treated could remain on the claims even after treatments were over. However, in real clinical practice, the target for pain management should include all cancer types. We need to bear in mind that the results may have been different if we included all cancer types. Finally, since our data are derived from health insurance companies, the number of patients per hospital was small for many hospitals. Given that taking analgesic prescriptions in small denominators is not likely to produce stable results, we did not perform analyses at the level of individual providers.

5. Conclusion

Our study showed the prevalence of analgesic prescriptions among five major cancers in Japan. When planning for a system that monitors the performance of pain management, it is important to balance the resources used with the range of the target for the measurement. The frequency of analgesic prescription provided information for an evidence-based discussion on how to restrict or broaden the target population for monitoring using available resources. Even if we decide to begin systematic evaluation with a smaller target patient group (ie, patients already taking analgesics), we will do so keeping in mind that our ultimate goal is to provide pain relief to all patients with cancer in our country.

Acknowledgment

We thank the Japan Medical Data Center Co., Ltd. for providing the database of insurance claims. This study was funded by the Research Grant for Clinical Cancer Research from the Ministry of Health, Labor, and Welfare of Japan.

References

- Breivik, H., Cherny, N., Collett, B., de Conno, F., Filbet, M., Foubert, A. J., ... Dow, L. (2009). Cancer-related pain: a pan-European survey of prevalence, treatment, and patient attitudes. *Ann Oncol*, *20*, 1420-33. <http://dx.doi.org/10.1093/annonc/mdp001>
- Bureau of Health Insurance, Ministry of Health, Labor, and Welfare, Japan. (2012). Overview of revision of fee-schedule 2012. Retrieved August 27, 2012, from http://www.mhlw.go.jp/bunya/iryuhoken/iryuhoken15/dl/h24_01-05.pdf
- Center for Cancer Control and Information Services, National Cancer Center. (2011). Statistics of 2008 Cancer Cases from Hospital-based Cancer Registries in Japan. Retrieved August 18, 2012, from http://ganjoho.jp/professional/statistics/hosp_c_registry.html
- Cleeland, C. S., Gonin, R., Hatfield, A. K., Edmonson, J. H., Blum, R. H., Stewart, J. A., & Pandya, K. J. (1994). Pain and its treatment in outpatients with metastatic cancer. *N Engl J Med*, *330*, 592-6. <http://dx.doi.org/10.1056/NEJM199403033300902>
- Deandrea, S., Montanari, M., Moja, L., & Apolone, G. (2008). Prevalence of undertreatment in cancer pain. A review of published literature. *Ann Oncol*, *19*, 1985-91. <http://dx.doi.org/10.1093/annonc/mdn419>
- Hibbard, J. H., Stockard, J., & Tusler, M. (2003). Does publicizing hospital performance stimulate quality improvement efforts? *Health Aff (Millwood)*, *22*, 84-94. <http://dx.doi.org/10.1377/hlthaff.22.2.84>
- Japan Law Data Archives. (2006). Cancer Control Act. Retrieved August 8, 2012, from <http://law.e-gov.go.jp/announce/H18HO098.html>
- Ministry of Health, Labor, and Welfare, Japan. (2007). Basic Plans to Promote Cancer Control Programs.
- Ministry of Health, Labor, and Welfare, Japan. (2010). Vital statistics of Japan. Retrieved August 8, 2012, from <http://www.mhlw.go.jp/toukei/list/dl/81-1a2.pdf>
- National Federation of Health Insurance Societies (Kenporen). (2012). About Kenporen. Retrieved August 9, 2012, from <http://www.kenporen.com/outline/>
- Okuyama, T., Wang, X. S., Akechi, T., Mendoza, T. R., Hosaka, T., Cleeland, C. S., & Uchitomi, Y. (2004). Adequacy of cancer pain management in a Japanese Cancer Hospital. *Japan J Clin Oncol*, *34*, 37-42. <http://dx.doi.org/10.1093/jjco/hyh004>
- Portenoy, R. K. (2011). Treatment of cancer pain. *Lancet*, *377*, 2236-47. [http://dx.doi.org/10.1016/S0140-6736\(11\)60236-5](http://dx.doi.org/10.1016/S0140-6736(11)60236-5)
- The International Narcotics Control Board. (2010). Report of the International Narcotics Control Board on the Availability of Internationally Controlled Drugs: Ensuring Adequate Access for Medical and Scientific Purposes. Retrieved August 8, 2012, from http://www.incb.org/pdf/annual-report/2010/en/supp/AR10_Supp_E.pdf
- Uki, J., Mendoza, T., Cleeland, C. S., Nakamura, Y., & Takeda, F. (1998). A brief cancer pain assessment tool in Japanese: the utility of the Japanese Brief Pain Inventory--BPI-J. *J Pain Symptom Manage*, *16*, 364-73. [http://dx.doi.org/10.1016/S0885-3924\(98\)00098-0](http://dx.doi.org/10.1016/S0885-3924(98)00098-0)
- van den Beuken-van Everdingen, M. H., de Rijke, J. M., Kessels, A. G., Schouten, H. C., van Kleef, M., & Patijn, J. (2007). Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Ann Oncol*, *18*, 1437-49. <http://dx.doi.org/10.1093/annonc/mdm056>
- World Health Organization. (1996). Cancer Pain Relief. Geneva, Switzerland: World Health Organization.

