

Assessment of Breakthrough Cancer Pain:

Research-based literature Review

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Abstract

Title: Assessment of Breakthrough Cancer Pain.

Background: Breakthrough cancer pain (BtCP) is one of the clinical challenges for both health care providers and patients. Health care providers usually deal with BtCP required to utilize a set of strategies to assess BtCP in order to get better management of BtCP.

Purpose: Was to analyze current research literatures to provide evidence-based guidelines for assessment of BtCP in clinical practice.

Method: The electronic databases of CINAHL and PubMed were searched for studies published from 2008 to October 2014. Combinations of keywords were used in the searching, a total of 25, 22 articles were found respectively, then after applying the inclusions criteria, a list of 12, 14 were considered respectively. After skimming the titles and abstracts, the duplicated and irrelevant articles were excluded. A total of 8 articles were included in this review.

Findings: For providing effective BtCP management, health care providers required to utilize the following strategic sets: using the latest validated tool to assess BtCP in clinical settings which was Breakthrough Pain Assessment Tool (BAT) in addition to assessment of BtCP based on the characteristics, pain history, and physical examination.

Conclusion: BtCP is quietly prevalent and highly challenging for both health care providers and patients. Nurses are playing a vital role in assessment and management of BtCP. Proper assessment is the key for effective BtCP management. Health care providers required to utilize systematic strategic steps in order to provide effective BtCP management.

Keywords: *cancer, breakthrough pain, pain assessment, cancer pain.*

Assessment of Breakthrough Cancer Pain

Introduction

Breakthrough cancer pain (BtCP) is one of the clinical challenges for both of health care providers and patients with cancer. BtCP is quietly prevalent among patients with cancer and ranges from 19 % to 95% (Davies et al., 2011). The severity average of BTCP is 7.4 on scale of 0 to 10. Poorly managed BtCP is negatively impact patient's physical health, emotional health, and interpersonal relationships (American Pain Foundation, 2012). BtCP result as a consequence of a disease process in 70%-80% of all cases and as a consequence of treatment in 10%–20% (Breuer, Fleishman, Cruciani, & Portenoy, 2011).

Despite the widespread of BtCP among patients with cancer, it is not assessed or treated effectively yet, in fact, about 21.3% of patients untreated for BtCP (Mercadante, Villari, & Casuccio, 2011). Effective management of BtCP can be achieved by utilizing a separate set of assessment strategies from health care providers whom dealing with patients (Hagen, Biondo, & Stiles, 2008).

Appropriate assessment can be achieved by demonstrating adequate knowledge and competence about BtCP such as; the nature, pathophysiology, assessment tools and characteristics of BtCP which include the onset, duration, and severity of BtCP. Therefore, the purpose of this review is to analyze the current research literatures to provide evidence-based guidelines for assessment of BtCP in clinical practice.

Breakthrough Cancer Pain Overview

There is no widely accepted definition to describe BtCP in practice, and there are different views in how BtCP occur (Zeppetella, 2009). The recent definition of BtCP is “A transient exacerbation of pain that occurs either spontaneously, or in relation to a specific

predictable or unpredictable trigger, despite relatively stable and adequately controlled background pain” (Davies et al., 2009).

The cause of BtCP differs according to the origin that arises from which includes visceral due to involvement of underlying solid or hollow viscus, somatic due to involvement of somatic structures like bone or muscle and most common with bone metastasis, and neuropathic due to involvement of peripheral or central afferent neural pathways (Payne, 2007). Visceral pain described as gnawing, crampy, or squeezing in type while somatic pain is throbbing or aching in type. Neuropathic pain is lancinating or burning in type (Mishra et al., 2009).

BtCP is classified in three main categories including; idiopathic pain which is spontaneous and unexpected, incident pain which is movement-related pain and related to specific event, and end of dose failure during dose titration for pain management (Davies et al., 2009). The episodes of BtCP start with a fast onset of severe pain with 30 to 60 minutes of duration and occur 3 to 4 times per day (Daviesl et al., 2011).

Methodology

Selection of the Studies

In order to provide an evidence-based guideline for assessment of BtCP in clinical practice, the electronic databases of CINAHL and PubMed -because of the easy access from the university and the availability of full text articles-, were searched for studies published from January 2008 to October 2014 to include the latest updated researches in this review. The combinations of the following keywords were used in the searching: *cancer*, *Breakthrough pain*, *pain assessment*, *cancer pain*. By applying the described strategy, a total of 25, 22 articles were found respectively, then after applying the inclusions criteria which

were 1) consider human only; 2) written in English; 3) investigated the assessment of BtCP; 4) full text article. A list of 12, 14 articles were considered respectively. After skimming the titles and abstracts of the considered articles and after exclude the duplicated articles, and irrelevant articles (which discussed assessment of breakthrough pain but not cancer, assessment of pain but not breakthrough, assessment of breakthrough in research settings not in clinical settings), a total of 8 articles included in this review. The 8 articles that build this review were research-based articles, review studies and guideline. Every article was reviewed, summarized, and evaluated by the authors of this review.

Sample Characteristics

Eight articles were included in this review; one article was systematic review, two articles were integrative review, four articles were research-based studies, and one was a guideline (developed by the European Oncology Nursing Society based on a survey of oncology nurses and extensive review of the literature). In the 8 articles a wide variety of designs, tools, and sample size were used.

In the review articles, the number of studies that were reviewed ranged from 18-51 by using computerized database. On the other hand, the four research-based articles were conducted with a sample size ranged from 50 – 1241 oncology nurses, while the participant age were more than 18 years old. The settings for research article varied and include acute care settings, and oncology wards.

Finding

Breakthrough Cancer Pain Assessment Tools

From Twelve European countries, a total of 1241 nurses who had experience in oncology nursing surveyed to examine the assessment tools that were used and the ability to

distinguish between different types of pain. The results were that one-third of the sample had no pain assessment tool to distinguish between the types of pain, 60% of the sample used assessment tools and one-third of the sample that used assessment tools had problems in distinguishing background pain from BtCP and the ability varied with the experience in years in oncology wards, the more experience the nurses are the more they are able to distinguish between background pain and BtCP. Also, the majority of nurses who used a tool found it was useful; and they reported Visual Analogue Scale as the most commonly used assessment tool, followed by the numerical rating scale, Edmonton Symptom Assessment System, the body map, and the Echelle Visual Analogue Scale; respectively. On the other hand, sixty nurses who used a tool used a scale and they did not specify the type of scale. Finally, the majority of nurses felt it would be a validated, comprehensive, and clear assessment tool to assess BtCP (Rustøen et al., 2013).

A study conducted in Oncology Ward of Chungbuk National University Hospital with a sample size of 50 inpatients and aimed to evaluate the effectiveness of bedside self-assessment of pain intensity using a self-reporting pain board. The board had movable indicators which allow the patients to rate the intensity of pain on a numeric rating scale from 0-10, and the board had a movable indicator for the frequency of BtCP. The nurses performed BtCP assessment for 3 days, in addition to teaching their patients how to rate their pain on the board using the movable indicators for an additional 3 days. The results showed that there was a decrease in the gap (mean and standard deviation) between pain intensity (from 3.16 – 2.08 to 1.00 – 1.02) that reported from patients and the recorded pain intensity by nurses using the numeric rating scale. In addition, patients' reliability over nurses' assessment of BtCP increased from 74% - 96% after the use of a self-reporting pain board by patients.

Finally, and as a result of proper pain assessment lead to effective pain management, the level of pain management satisfaction among cancer patients under the study increased from 54% to 82%. The author recommended to use the self-reporting bedside pain board as it is an effective tool to assess pain and BtCP among patients with cancer (Kim et al., 2012).

Haugen, Hjermsstad, Hagen, Caraceni, and Kaasa, (2010) conducted a systematic literature review to validate the tools that used in assessment of BtCP, the domains of BtCP that the tools covered, and the definition and characteristics of BtCP. A total of 51 articles reviewed, the results were a range of unique definitions of BtCP used to describe BtCP, between the 10 tools (nine self reports and one documentation sheet to be filled in by the health care provider) that used in the assessment of BtCP. Furthermore, there was no well validated assessment tool, and none of the 10 assessment tools covered the needed domains for assessment of BtCP which were: 1) relation to background pain; 2) factors that enhance the treatment; 3) temporal factors which include onset, duration, and frequency. Finally, the authors showed as a result of a lack of a validated BtCP assessment tool, Alberta assessment tool developed and it was partially validated and recommended to be used in the assessment of BtCP in clinical.

Owing to the absence of validated tools for the clinical assessment of BtCP, Webber, Davies, Zeppetella, and Cowie (2014) developed and validated the clinical BtCP assessment tool (BAT). The authors used triangulation methodology of reviewing the literature by experts in breakthrough pain assessment and semi-structured interviews with patients suffered from BtCP. BAT consisting of 14 questions. The BAT Psychometric testing proved that it was valid (content validity, construct validity), reliable (internal consistency, test-retest reliability), and responsive to change, which may be used in the clinical assessment of BtCP.

Assessment of Breakthrough Cancer Pain

To determine of how register nurse assess BtCP, a mixed methodology study conducted in two stages, a qualitative descriptive for stage one to identify issues associated with how nurses deal with patients with BtCP, while descriptive self-administered questionnaire for stage two to explore the details of specific areas. Among the total of 104 nurse respondents worked in inpatients settings; the authors found that 82% of nurses wanted more training on how to assess BtCP; in addition, there were contradiction in the using of terminology of BtCP (Soden et al., 2013).

A review article conducted to determine the characteristics and the assessment of BtCP, the authors summarize that the types of BtCP were Idiopathic, Incidental, and end of dose, and the characteristics of BtCP were persistent pain, sudden onset, from 15 to 30 minutes duration, and with the average of 4-6 episodes per day. The causes of BtCP originated from the disease itself, treatment, or unknown cause. The assessment of BtCP is made up through the use of pain questionnaires and appropriate patient related tool assessment, the pain questionnaire is a structured questions about BtCP and includes intensity, duration, number of episodes, type of pain, precipitating factors, and temporal features. The instruments that used were including visual analogue scales, Brief Pain Inventory, Back Depression Inventory, and Karnofsky Performance Status (Mishra et al., 2009).

Hagen, Biondo, & Stiles (2008) discussed the type, prevalence, assessment and management of BtCP. The authors summarized that the BtCP had a salient clinical features

and should covered during the assessment which include the background pain, onset, duration, and number of episodes. The effective BtCP assessment include the use of validated pain tool, assessment of pain at rest and with movement, general physical examination, and regional pain examination to examine any pathologies in the area of pain.

The European Oncology Nursing Society (EONS) developed guidelines through a working group and a multidisciplinary advisory board to help the oncology nurses to assess and manage BtCP by best practice based on the published literature. The EONS started the project in 2010 by a survey of 12 European country nurses to investigate the unmet needs of nurses working with patients suffered from BtCP and the result of the survey build the outline of the project, then a comprehensive search through the literature was conducted to complete the project. The EONS guidelines include an updated version of the Association of Palliative Medicine of Great Britain and Ireland original algorithm about the assessment of BtCP (Figure 1) and adapted from Davies (2010). The project presented an overview and guideline with recommendation about the assessment and management of BtCP. The EONS guideline was published in 2014 and allowed the nurses to assess and manage BtCP based on the latest knowledge and clinical best practice (Wengström, Geerling, & Rustøen, 2014).

In summary, the previous studies discussed the assessment tools that were used to assess BtCP with the latest validated instrument which was Breakthrough Pain Assessment Tool (BAT), and the proper assessment of BtCP is based on the characteristics, pain history, physical examination, and the EONS guidelines which was build based on the latest knowledge and best clinical practice.

Recommendation

Nurses should utilize the latest researches and evidence based practices in assessing BtCP using the assessment algorithm (figure 1) to differentiate between background pain and BtCP. Also nurses should feel confident in assessing BtCP using the assessment skills and the validated assessment tool (BtCP assessment tool (BAT)) to assess the characteristics and to effectively manage BtCP later on.

Conclusion

The review provides the latest studies for the assessment of the characteristics of BtCP and the latest validated patient related assessment tool to assess BtCP. Breakthrough cancer pain is prevalent and affects the quality of life negatively, nurses playing a major role in assessing BtCP among hospitalized patients with cancer, because nurses spend more time with patients than do any other health care providers, and patient outcomes are affected by nursing care quality

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