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James Logan Essay Prize

The Challenges of Cancer Pain Assessment

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INTRODUCTION

Aristotle wrote, "The aim of the wise is not to secure pleasure, but to avoid pain". Despite significant medical, pharmacological and technological advances in the area of cancer pain assessment and management, up to 90% of patients with advanced cancer experience pain significant enough to require further intervention[1].

Hospices are considered as leaders in cancer pain management. One of their key goals is to provide patients with a pain-free death[2]. Despite better pain outcomes often being achieved in this setting, even high quality care caregivers fail to eliminate pain in up to 75% of cases. It is suggested that the main barrier to optimal effective management of pain relief is inadequate assessment of pain[3].

This essay will consider how cancer pain is classified; how it is currently assessed; the problems with the current methods of cancer pain assessment; and possible future assessment approaches.

CANCER PAIN CLASSIFICATION

Cancer pain is not a single entity. It incorporates a range of aetiological, pathophysiological and anatomical subtypes, all requiring unique descriptive terminology, assessment techniques and treatment modalities[4]. The tumour itself can press on bones, nerves and other organs. Chemotherapy drugs can cause pain at the site of administration or limb paraesthesia. Radiotherapy can cause skin erythema and organ irritation.

Prior to constructing a procedure for assessment, a system for classification of cancer pain is required, the components of which can be identified and measured through pain assessment. Currently there is little consensus on how pain should be classified[5].

Some classification systems already exist, including;

- The International Association for the Study of Pain (IASP) pain list, which codes chronic pain by region of the body[6].
- The Edmonton Classification System for Cancer Pain (ECS-CP), which was produced as a standardised assessment guide for cancer pain[7]; and
- The Cancer Pain Prognostic Scale (CPPS)] which was developed as a prognostic tool for prediction of pain relief in cancer patients[8].

Unfortunately these classification systems are currently not widely used. A standardised classification method would improve pain management by providing an end-point for assessment techniques, through creation of patient subgroups likely to respond to certain treatment modalities.

CANCER PAIN ASSESSMENT

Assessment is defined as "the process of documenting, usually in measurable terms, knowledge, skills, attitudes and beliefs in various disciplines; that is education economy and health"[4]. In the health care setting, this usually involves clinical history taking, examination, blood tests and imaging.

Current recommendations advise that pain severity should be assessed on an 11-point numerical rating scale (NRS) (0-10), with more comprehensive tools including the Brief Pain Inventory (BPI)[9] and McGill Short Form Questionnaire[10] reserved for occasions when more detailed assessment is required.

Newer tools including the Alberta Breakthrough Pain Assessment Tool[11], specifically designed for breakthrough pain in the clinical trial setting, could, following validation, be used in the clinical setting.

CHALLENGES OF CANCER PAIN ASSESSMENT

The current tools, although useful, have yet to overcome a number of significant challenges associated with the precise assessment of a cancer patient's pain;

1) Multiple cancer pain mechanisms

Patients often have multiple co-exiting pain disorders caused by multiple mechanisms[12]. It is often very difficult to differentiate pain arising from lesions or disorders of the nervous system (neuropathic pain) from pain caused by activation of normal physiological pain pathways of the nervous system by noxious stimuli (nociceptive pain). Often, these subtypes can co-exist.

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Taking the example of breast cancer, pain can be caused by surgical outcome, tumour spread, chemotherapy and bony metastases to the spine[13]. Bony metastases not only cause local nociceptive pain, but also distant neuropathic pain due to nerve compression. The best treatment for the pain is determined by knowing its cause.

Pain is also influenced by patient related factors including pain interpretation and background psychological factors. The narrow, focused nature of current cancer pain assessment methods do not adequately reflect the multidimensional nature of pain.

2) Lack of a universal cancer pain classification system

The lack of a universally defined classification system for cancer related pain makes it very difficult for physicians to fully assess a patient's specific pain.

Patient populations with specific types of pain need to be better defined. Only then can we accurately diagnose patients, test the efficacy of specific drugs for cancer pain subtypes in clinical trials and provide patients with the best treatments for their specific pain.

3) Lack of objective testing modalities

Unlike many other areas of medicine, objective testing modalities such as biomarkers are not available for pain. Methods are currently not available to predict response to certain cancer pain therapies. Therefore pain is often treated in a 'trial and error' manner, which can leave patients in discomfort for a significant period of time.

4) Time constraints of staff

The rapidly changing nature of cancer pain means continuous reassessment is vital for it to be fully controlled. However, staff time constraints often lead to poor compliance with pain assessment methods. Cancer pain assessment methods must strike a balance between being complex enough to allow accurate diagnosis, without being so complex and time-consuming that they are incompatible with a modern busy healthcare system, which requires its resources to be cost effective.

5) Individual differences in cancer pain sensitivity

Pain sensitivity varies dramatically between individuals. Currently, the subjective nature of pain and individual differences in pain sensitivity make physician experience one of the most important tools for its assessment[14].

POSSIBLE FUTURE DEVELOPMENTS IN CANCER PAIN ASSESSMENT

Although precise cancer pain assessment faces a number of significant challenges, recent research has produced developments in a number of areas, which may dramatically improve cancer pain assessment practice;

1) Standardisation of assessment approaches

The National Cancer Institute (NIH, USA) has funded a Patient Reported Outcome Measurement System (PROMIS). This aims to develop a widely available set of standardized instruments to measure subjective outcomes in illnesses, including cancer[15,16].

A number of groups are attempting to develop a systematic, unbiased approach for measuring pain that reflects distinct pain mechanisms. Scholz et al. (2009) developed a standardised interview and physical examination to collect information about a patient's pain phenotype[17].

2) Pain genetics

Pain genetics could be used to categorise pain and predict responses to treatment[18]. Genome wide association studies and other discovery science approaches are being used to identify novel pain targets. Increasingly sophisticated tools are being developed to measure and categorise neuropathic pain phenotypes[12]. Heritability studies suggest genetic factors contribute significantly to individual differences in reported pain and pain tolerability.

In future, it may be possible to incorporate pain genetics into pain assessment, individualizing pain treatment. Patients could be identified who require lower doses of analgesia, avoiding side effects of analgesic drugs. Also, higher doses to patients with a higher pain sensitivity. Importantly this would help prevent unnecessary patient suffering[14].

3) Computer based assessment tools

Computer based assessment tools could make assessment more precise by tailoring assessment for the patient and providing rapid calculation of pain scale scores[19]. Furthermore, the system could be linked automatically to data in the medical charts.

4) Quantitative electro-physiological techniques

Quantitative electro-physiological techniques to assess neurologic dysfunction can be used to infer that a patient has neuropathic pain[13]. Methods include quantitative sensory testing; skin biopsy for nerve end staining; selective nerve root blocks; provocative nerve testing; and functional brain imaging. These techniques are not currently used routinely due to lack of physician expertise and the expense involved. To date, none have been fully validated in clinical trials routine use. However, if fully validated and found to be cost effective these tools, and others like them, could dramatically improve the assessment and therefore management of patients with cancer related neuropathic pain

CONCLUSION

Cancer related pain is complex and influenced by a number of factors. Research shows current pain treatment in oncology is unsatisfactory. One of the key barriers to improvement is poor pain assessment. A precise, accurate and universal

classification system for cancer pain is required. This would create subgoups of patients with specific types of cancer pain to enable researchers to create more targeted therapies.

We must work towards a pain assessment approach that can both accurately diagnose and monitor a patient's specific pain, while still being simple enough to be used in routine clinical practice. Recent research suggests cutting edge science, in combination with good clinical care from all members of multidisplinary team, may help make this a reality.

For patients with cancer, pain can have a devastating impact on their quality of life. Better pain assessment and management will benefit all cancer patients, regardless of cancer subtype, making their entire cancer journey more tolerable. International collaboration to produce standardised methods of cancer pain assessment would be a significant step towards this goal.

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REFERENCES

1. Van den Beuken-van Everdingen MH, de Rijke JM, Kessels AG, Schouten HC, van Kleef M, Patijn J. Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Ann Oncol.* 2007;**18(9)**:1437-49.
2. Payne S, Hillier R, Langley-Evans A, Roberts T. Impact of witnessing death on hospice patients. *Soc Sci Med.* 1996;**43(12)**:1785-94.
3. Herr K, Titler MG, Schilling ML, Marsh JL, Xie X, Ardery G, *et al*. Evidence-based assessment of acute pain in older adults: current nursing pratices and percieved barriers. *Clin J Pain*. 2004;**20(5)**:331-40.
4. Hjermstad M, Fainsinger R, Kaasa S. European Palliative Care Research Collaborative (EPCRC). Assessment and classification of cancer pain. *Curr Opin Support Palliat Care*. 2009;**3(1)**:24--30.
5. Kaasa S, Loge JH, Fayers P, Caraceni A, Strasser F, Hjermstad MJ, *et al.* Symptom assessment in palliative care: a need for international collaboration. *J Clin Oncol.* 2008;**26(23)**:3867-73.
6. Merskey H, Bogduk N, editors. International Association for the Study of Pain [IASP]. Classification of chronic pain: descriptions of chronic pain syndromes and definitions of pain terms.2nd ed. Seattle: IASP Press; 1994.
7. Bruera E, MacMillan K, Hanson J, MacDonald RN. The Edmonton staging system for cancer pain: preliminary report. *Pain.*1989;**37(2)**:203-09.
8. Hwang SS, Chang VT, Fairclough DL, Kasimis B. Development of a Cancer Pain Prognostic Scale. *J Pain Symptom Manage*. 2002;**24(4)**:366-78.
9. Daut RL, Cleeland CS, Flanery RC. Development of the Wisconsin Brief Pain Questionnaire to assess pain in cancer and other diseases. *Pain.* 1983;**17(2)**:197-210.
10. Melzack R. The short-form McGill Pain Questionnaire. *Pain.* 1987 8;**30(2)**:191-197.
11. Hagen NA, Stiles C, Nekolaichuk C, Biondo P, Carlson LE, Fisher K, et al. The Alberta Breakthrough Pain Assessment Tool for cancer patients: a validation study using a delphi process and patient think-aloud interviews. *J Pain Symptom Manage*. 2008;**35(2)**:136-52.
12. Backonja M, Woolf CJ. Future directions in neuropathic pain therapy: closing the translational loop. *Oncologist.* 2010;**15 Suppl 2**:24-29.
13. Cleeland CS, Farrar JT, Hausheer FH. Assessment of cancer-related neuropathy and neuropathic pain. *Oncologist.* 2010;**15 Suppl** 2:13-8.
14. Nielsen CS, Staud R, Price DD. Individual differences in pain sensitivity: measurement, causation, and consequences. *J Pain.* 2009;**10(3)**:231-7.
15. Clauser SB, Ganz PA, Lipscomb J, Reeve BB. Patient-reported outcomes assessment in cancer trials: evaluating and enhancing the payoff to decision making. *J Clin Oncol.* 2007;**25(32)**:5049-50.
16. Garcia SF, Cella D, Clauser SB, Flynn KE, Lad T, Lai J, *et al*. Standardizing patient-reported outcomes assessment in cancer clinical trials: a patient-reported outcomes measurement information system initiative. *J Clinl Oncol*. 2007;**25(32)**:5106-12.
17. Scholz J, Mannion RJ, Hord DE, Griffin RS, Rawal B, Zheng H, *et al.* A novel tool for the assessment of pain: validation in low back pain. *PLoS Medicine*. 2009;**6(4)**:e1000047.
18. Mogil JS. Pain genetics: past, present and future. *Trends Genet.* 2012 6;**28(6)**:258-66.
19. Velikova G, Brown JM, Smith AB, Selby PJ. Computer-based quality of life questionnaires may contribute to doctor patient interactions in oncology. *Br J Cancer*. 2002;**86(1)**:51-9.

