CoRIPS Research Award 089

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Can the early signs and symptoms suggestive of spinal cord compression be identified by radiographers during bone scans by gathering clinical information about back pain from patients?

Awarded £3569

Lay summary
The study aims to find out if radiographers who perform bone scans can gather information from patients about back pain which may identify early signs and symptoms suggestive of Metastatic Spinal Cord Compression (MSCC). This is not currently routine practice and there is no evidence that radiographers will be able to successfully collect this sort of clinical information. If data can successfully be obtained it may be possible to use it in conjunction with other clinical information to identify patients at high risk of developing MSCC. These patients may benefit from prompt referral for medical assessment or Magnetic Resonance Imaging (MRI) scanning.

The project will assess back pain using two questionnaires in 200 patients or over four months, whichever is reached first. An existing, validated pain questionnaire, the Brief Pain Inventory (BPI) will be used as well as a new questionnaire which has been developed for use in this study. The new questionnaire is based on the early signs and symptoms of spinal pain and neurological symptoms as defined by the National Institute for Health and Clinical Excellence (NICE). The data from the questionnaires and other clinical information acquired during the bone scan visit will be compared with clinical follow up of the patients 5 months after their visit, to see if any have required treatment for malignant spinal disease. Each element of the collected data will be compared to see if any relationship exists. The project is the first stage in exploring the possibility of developing a risk assessment tool for use in an imaging setting.

Description of the project:
Principal aim of the study
The study aims to find out if radiographers involved in performing radioisotope bone scans can
gather clinical data from patients regarding back pain which may identify early signs and symptoms
suggesctive of Metastatic Spinal Cord Compression (MSCC). Currently this is not routine practice
and there is no evidence that radiographers will be able to successfully do this. If data can be
collected it may be possible to use it in conjunction with standard clinical data to identify those
patients at high risk of developing MSCC and those who may benefit from prompt referral for
medical assessment or Magnetic Resonance Imaging (MRI).

Primary research question
Is it feasible and acceptable for radiographers to gather clinical information from patients
regarding back pain during a bone scan procedure which may be indicative of metastatic spinal
disease using i) a new questionnaire which has been designed, based on NICE indications and ii)
a standardised pain questionnaire, the Brief Pain Inventory (BPI)?

Secondary research questions
1. Is there a relationship between data collected using the BPI and that collected using NICE signs
and symptoms questionnaire?
2. Is there any relationship between questionnaire data, standard clinical data acquired during a
routine bone scan procedure and clinical outcome in terms of requirement for treatment of
metastatic spinal disease?

Outcomes / Deliverables
The study will determine if data can be collected which may provide evidence of the early signs
and symptoms of MSCC in a group of patients who may all be at potential risk. Based on the
outcome of this project, a wider future study may provide scoping information regarding the
feasibility of developing and validating a risk assessment tool. This could potentially be used
routinely in clinical practice to identify high risk patients at an early and opportune time. By
putting risk tool scores it may be possible to signpost patients at an early stage to an appropriate
interventions thus potentially sparing them from developing disabling clinical complications. The
study fulfills the requirements of a feasibility study by evaluating acceptability and practicality
(Bowen et al 2009). A risk assessment tool could have particular value in settings where oncology
patients are infrequent and the knowledge of early signs of MSCC are less well established.

Review of the literature and identification of the current gap in knowledge

What is MSCC?
MSCC is an oncological emergency which occurs in some patients with cancer. NICE defines it as
pathological vertebral body collapse or direct tumour growth causing compression of the spinal
cord or cauda equina. Treatment includes radiotherapy and/or surgery.

Why is it important?
Without timely treatment MSCC can cause irreversible neurological damage, permanent disability
or premature death. Early diagnosis and treatment makes a significant difference to quality of life
but there is substantial evidence that late presentation is not uncommon (Husband 1998). The
neurological status at the time of diagnosis of MSCC is a significant predictor of outcome in terms
of survival (Husband 2001, Levack et al 2002). Evidence from several seminal observational
studies indicates that once MSCC is suspected, it is essential that investigation, planning and
treatment takes place before any further loss of neurological function (Helweg-Larsen et al 1996,
1993).

What is the size of the problem?
An estimated 3-5% of all patients with cancer will develop spinal metastases (NICE 2008), most
commonly in cases of breast, prostate or lung cancer, in whom the incidence may be as high as 19
%. These high risk cancers account for over 50% of cases of MSCC (Loblaw et al 2003, Levack et
al 2002). However, 23% of patients with MSCC have no prior cancer diagnosis (NICE 2008) and
the onset of neurological symptoms is often insidious (IAEA 2007). NICE issued guidance in Nov
2008 regarding the diagnosis and management of patients at risk of or with MSCC followed by

What are the key signs, symptoms and risk factors?
Back pain is the most frequent first symptom of MSCC, occurring in 95% of patients (Levack et al
2002) but it is also a common complaint in the general population. NICE have identified a specific
References:


