Spinal instability refers to the ongoing or potential for neurological damage as a result of movements of the diseased spine. It is a major concern in management of traumatic spinal injury. Spinal column infiltrated by metastatic tumour is likely to be weakened and therefore potentially less stable. However, in metastatic spine disease, whether the spine is stable or not can be difficult to decide. Clinical studies in this subject are too few to support the formation of evidence-based guidelines. Even patients judged to have a stable spine may develop instability following minor trauma or further tumour growth along the spinal column.

A frequently reported dilemma is when and how to mobilise a patient with MSCC. The aim of this document is to provide guidance to assist with making those decisions based on NICE Guidance and the best available other evidence. Results of the only study assessing timing of mobilisation (Pease, et al 2004), shows that early mobilisation (after first fraction of radiotherapy) of appropriate patients leads to a decreased complication rate and a significant increase in patient survival at 60 weeks. Neurological function was not compromised by implementation of early mobilisation by appropriately skilled professionals.

Spinal stability in patients with metastatic disease of the spine is dependent on several factors:

1. **Site of disease (cervical, thoracic or lumbar):** For example, in the thoracic spine the presence of ribs and chest wall provide added support to the spinal column affected by metastatic disease. This is lacking in the cervical spine.

2. **Extent of tumour infiltration:** In general, the greater the tumour involvement of the vertebrae, the more likely it is that stability is compromised. Collapsed vertebrae are also less likely to be stable.

3. **Co-morbidity:** For example, pre-existing osteoporosis of the vertebrae (related to old age, chronic steroid use etc) will lead to weakened bones, which when infiltrated by tumour is likely to be less stable.
4. Effect of open surgery or disease progression: Decompressive surgery alone may alter the stability status of the spine fixation. Spinal stability may also be compromised in some patients managed non-surgically, due to tumour progression.

5. Radiological evidence: Imaging and particularly MR and CT scans are a helpful adjunct in determining spinal stability. Criteria which aid the decision include the following:
   - location of lesion (more mobile areas of the spine, e.g. junctional lesion in the Cervico-Thoracic spine at higher risk of instability)
   - bone quality (lytic lesions at higher risk)
   - structural deformity (vertebral body collapse, kyphosis, subluxation)
   - radiographic alignment and posterolateral involvement.

6. In the absence of clear radiological evidence of instability: A combination of factors help with the decision making, i.e. radiology and clinic symptoms. Where there is no clear radiological evidence, be guided by the clinical symptoms, i.e. severe pain at the site of the lesion, increasing on movement or worsening neurology when commencing mobilisation may indicate instability. The mobility assessment will usually be undertaken by the physiotherapy and occupational therapy teams. If the above signs and symptoms indicate instability, resume flat bed rest and discuss with the medical team.

7. Instability of the spine is rare in the cancer setting: The evidence suggests that instability occurs in a small number of patients only – 10%. The remaining 90% of patients will benefit from resuming mobility ASAP once stability has been assessed.

Principles of assessing spinal stability:
(Refer to ‘Stability and mobilisation pathway’ below)

Key points

1. Assume the patient has spinal cord compression until investigations (MR scan) prove otherwise.

Referral should be made to the Physiotherapist and Occupational Therapist within 24 hours of admission or first suspicion of MSCC.

2. The spine should be assumed to be ‘unstable’ until Multi-Disciplinary Team (MDT) decision agrees otherwise.
   N.B. This decision should be made in the patient’s local hospital.

Initial assessment must include presentation of symptoms - pain and full baseline neurological assessment whilst still on flat bed rest. Joint discussion by radiologist, therapy and medical team, will contribute to the decision regarding spinal stability. If in doubt, the spinal team may be able to offer advice. See ‘Surgical protocol’

- Patients with severe mechanical pain suggestive of spinal instability, or any neurological symptoms or signs suggestive of MSCC, should be nursed flat with
neutral spine alignment (NICE 2008). This is to preserve bony and neurological function and to prevent further neurological deterioration. They must be nursed supine and log-rolled for all nursing procedures.

- Stabilisation with a hard collar (e.g. Miami-J, Philadelphia or Aspen) should be considered for patients with suspected cervical spinal cord compression and / or instability of the cervical spine.
- MR scan of the whole spine should be done and reported within 24 hours.
- Once diagnosis is made, the patient should either be referred for spinal surgery or start radiotherapy usually within 24 hours. The MSCC Co-ordinator Service at The Christie should be contacted on 0161 446 3658 for advice, triaging and decision regarding urgent surgical opinion from the Spinal Team at SRFT. Patients waiting for spinal surgery must continue to be nursed on supine bed rest (unless the spinal surgeon advises differently). For patients receiving radiotherapy, careful and controlled mobilisation may start after the first fraction and should be led by the Physiotherapy team. A small number of patients will receive no treatment, i.e. best supportive care, in which case careful mobilisation can start following agreement by the MDT.
- Spinal instability should be considered if there are new neurological signs and symptoms on initial attempts at mobilisation of the patient. Patients with cord compression, who have received radiotherapy, may subsequently develop instability due to tumour progression. All patients with metastatic spine disease considered initially stable, need to be educated with respect to the warning signs of progression to instability and cord compression and should be given the patient information leaflet.
- In the situation where the spine is considered to be unstable in association with severe pain, and surgery is not indicated, referral to Orthotics for a spinal brace should be considered. If the patient continues to show signs of spinal instability mobilisation should be discontinued until the brace is fitted. During rehabilitation it is necessary to continue to monitor for signs of spinal instability and potentially return to bed rest and / or request a brace if indicated. These decisions will usually be made jointly by the therapy, medical and radiology team with advice from the orthopaedic / spinal team if necessary.
- Prior to physical assessment and mobilisation, explanation and adequate analgesia should be given. Pain in patients with spinal disease can often be difficult to manage, even when the spine is considered to be stable. In these cases, urgent referral to the Palliative Care Team should be done and careful rehabilitation should continue within the comfort limits of the patient.

References:


• GAIN (Guidelines and Audit Implementation Network) - Northern Ireland Cancer Network (NICA) MSCC Allied Health Professional (AHP) sub group (2013) ‘Draft’ Guidelines for the Rehabilitation of Patients with Metastatic Spinal Cord Compression (MSCC), Assessment and Care Provision by Occupational Therapists and Physiotherapists. Publication date delayed.

*For more information and protocols on management of MSCC see: http://www.christie.nhs.uk/MSCC

CONSULTATION, APPROVAL & RATIFICATION PROCESS
All documents must be involved in a consultation process either locally within a department or division or throughout the trust at relevant board/committee meetings before being submitted for approval.

VERSION CONTROL SHEET

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Spinal stability and mobilisation pathway – Manchester Cancer

START

Patient admitted with suspicion of MSSE

Refer to Physio & OT on admission

Best Supportive Care: Resume careful mobilisation within patient’s comfort levels. Consider orthotic device if pain limits mobility

Radiotherapy: Resume careful mobilisation within comfort levels after first treatment

If increase in pain / neurology, return patient to comfortable position or flat bed rest and re-assess

Ensure referral to Palliative Care Team and continue Rehabilitation within pain tolerance

END

6 mg Oxymorphone or equivalent
Urgent whole spine MR scan within 24 hours

Patient nursed flat / log roll and monitor neurology

Refer to MDT (Radiology, Therapy and Medical team) to undertake spinal stability assessment locally and document in medical notes

If confirmed or impending cord compression, exclude spinal instability

Patient has severe pain when moving? Is Orthotic device appropriate?

No

MDT discussion to include patient and family regarding suitable for orthotic device

Refer to Orthotics. Whilst awaiting brace, continue with flat bed rest, log roll and monitor neurology

MDT (Radiology, Therapy and Medical team) undertake spinal stability assessment locally and document in medical notes

Spine unstable (approx 10% of patients)

Is patient suitable for spinal surgery?

Yes

Spine surgery at Salford Royal FT

Orthotic device fitted and regularly re-assessed

Rehabilitation and mobilise as per spinal protocol

Rehabilitation continues until maximum potential and quality of life has been achieved (see Christie Rehab protocol and GAIN guidelines):

www.christie.nhs.uk/MSCC

Physio / OT led – gradual increase from supine by sitting to 15, 30, 45, 60 degrees (over 2 – 4 hours) if no increase in pain or neurology

Maintain flat bed rest / log roll (unless spinal team indicate otherwise)

Spine stable (approx 90% of patients)

No

June 2014, Lena Richards