Guideline: Malignant Spinal Cord Compression

Background

Malignant spinal cord compression is a common complication of cancer. It is defined as the compression of the dural sac and its contents (spinal cord and cauda equina) by direct pressure and/or induction of vertebral collapse or instability by metastatic spread or direct extension of malignancy that threatens or causes neurological disability. It is an oncological emergency which can have a substantial negative effect on quality of life – causing pain, paralysis, sensory losses and sphincter disturbances.

Evidence suggests that about 3-5% of all cancer patients and 10-20% of those with known spinal metastases will develop cord compression during the course of their disease. Spinal cord compression has been reported with every major systemic cancer – the commonest being breast, lung and prostate cancers.

Cord compression can be epidural (more commonly) or intradural (e.g. leptomeningeal carcinomatosis). Epidural metastases can extend from lesions in the vertebrae (either by posterior extension of a vertebral body mass or anterior extension from the dorsal elements) or by growth of a mass invading the vertebral foramen. The thoracic spine is most commonly affected followed by the lumbar and then the cervical spine.

Diagnosis

Studies have consistently demonstrated that cord compression is diagnosed late in the evolution of a compressive lesion and that ability to walk after treatment is directly associated with the ability to walk at the time of diagnosis. Patients with spinal cord compression’s prognosis and quality of life also relate directly to pre-treatment ambulatory status as well as the cancer type (e.g. breast/prostate/haematological = better prognosis. Lung/colon/stomach = worse). The earliest symptom is often increasingly severe back pain which may be described as being “sharp” or “shooting” and may radiate in a girdle distribution or down the legs. It is often precipitated by coughing or bending. This pain can predate any neurological dysfunction by several weeks. Leg weakness, sensory level and sphincter disturbance are later features of the syndrome. Studies have found that by the time a sensory level has developed the patient is unable to walk in the majority of cases.

Therefore a normal neurological examination does not exclude the diagnosis of cord compression.

- Patients with diagnosed bone metastases (or at high risk of developing bone metastases) should be given an information leaflet which explains the early symptoms of Malignant Spinal Cord Compression (MSCC) and advises them what to do should they develop these symptoms. (Appendix 1)
- Patients with suspected spinal cord compression should be managed according to the flow chart in appendix 2.
Patients with cancer and any of the following symptoms should be considered at high risk of MSCC. **They should be discussed with the oncology centre urgently and have urgent MRI spine requested (within 7 days).**

- Pain situated in the middle or upper spine
- Progressive lower spinal pain
- Severe unremitting lower spinal pain
- Spinal pain aggravated by straining
- Localised spinal tenderness on examination
- Nocturnal pain preventing sleep
- Radicular pain

Patients with cancer and any of the following symptoms and signs should be considered as an oncological emergency. **They should be discussed with the oncology centre immediately and have emergency MRI organised (within 24 hours).**

- Neurological symptoms including difficulty in walking, motor symptoms, sensory loss or bladder or bowel dysfunction
- Neurological signs of spinal cord compression

Patients without a previous cancer diagnosis with symptoms and signs suggestive of MSCC should be referred for urgent investigation.

Patients with cancer who develop lower spinal pain that is clinically thought to be degenerative in origin should be frequently reviewed for progression of symptoms or signs.

**Investigations**

Clinically suspected cord compression must be confirmed by imaging to confirm the diagnosis and in order to make informed decisions about treatments. MRI is the gold standard investigation and should be of the entire spine as it has been shown that there is often no correlation between the site of the pain or the sensory level and the level of the compression. About a fifth of cases can have more than one level of compression. Plain films have been shown to be an insensitive method of detecting bone metastases particularly in tumours not causing cortical destruction. Radionuclide bone scanning is insensitive to the presence of cord compression.

Requests for MRI scans should be discussed with the on-call radiologist for prioritisation.

Patients who cannot have standard MRI scans (e.g. because of pacemaker) should be discussed with the MRI department and/or a consultant radiologist to determine the most appropriate alternative imaging modality.

**Treatment**

Treatment of malignant cord compression can include high dose steroids, radiotherapy and neurosurgery. Manage symptoms with conventional analgesia according to WHO pain ladder. Consider thromboprophylaxis and TED stockings for patients on bed rest whose performance status and mobility are likely to improve with treatment.
Ideally patients suspected of having established spinal cord compression should be admitted to hospital for investigation and treatment. Their admission should be discussed in the first instance with their oncology team (Consultant or StR). If admission to an oncology centre cannot be organised or the patient does not have an oncologist then admission to the local DGH should be organised following discussion with the on call medical team. For the majority of HitW patients, admission to Tunbridge Wells Hospital would be the most appropriate option. Hospice admission may be a viable alternative – this can be established through MDT discussion at HitW.

Admission to hospital can be organised by the CNS following discussion with a hospice doctor or the patient’s GP.

It may also be helpful to discuss the patient directly with a consultant radiologist whilst organising hospital admission so that an MRI scan can be booked as soon as possible to minimise any delays.

Patients suspected of having impending cord compression can be managed at home with analgesia and steroids whilst awaiting MRI. Liaison with the oncology team can still occur and radiotherapy can be organised on an outpatient basis if practicable. If there are concerns about a patient managing their symptoms at home then hospice admission is an appropriate alternative option.

**Multidisciplinary Care**

Patients with severe mechanical pain suggestive of vertebral bony instability or neurological impairment suggestive of spinal cord functional instability should be nursed flat with neutral spine alignment (including use of log rolling and slipper pan for toilet) until bony and neurological stability is confirmed and cautious mobilisation can begin. There is currently limited guidance for assessing spinal stability but mechanical pain, neurological changes and radiological findings all play an important role. The Spinal Instability Neoplastic Score (SINS) can be helpful. There is no clear evidence regarding bracing or mobilisation for MSCC patients either but cautious mobilisation would initially involve moving the patient from supine to sitting at angle of 60 degrees over 3-4 hours. If pain or neurological symptoms recur during this movement, they should be returned to a symptom-free position and reassessed for spinal stability. Those patients assessed as being inappropriate for definitive treatment should be assisted to find a comfortable position / mobilise as symptoms allow using orthoses or specialist seating as appropriate. Patients should be risk assessed for pressure sores and managed appropriately.

Patients’ continence should be assessed and monitored – both as an indication of neurological damage and also to prevent further issues such as pressure sores.

Patients will benefit from early and appropriate physiotherapy, occupational therapy and psychosocial care input.

**Steroids**

Spinal cord compression is a medical emergency and if there is any suspicion of it then the patient should receive 16mg of dexamethasone. On the first day of treatment this dose should be given regardless of the time of day. Thereafter, the dose can be given as 8mg at 8am and 8mg at 1pm.

Once definitive treatment (radiotherapy or surgery) has occurred, or if it is decided treatment is not appropriate then this dose should be gradually reduced and stopped as neurological function allows.
• Blood glucose monitoring should take place when patients are on steroids.

• Patients need to be observed for development of steroid myopathy which would add to their symptoms and reduce their quality of life.

**Radiotherapy**

Radiotherapy can ameliorate the pain of cord compression as well as preventing further tumour growth and neurological damage thus maintaining ambulation in almost all ambulant patients. In those patients with minor weaknesses affecting their mobility prior to treatment, radiotherapy has been shown to improve neurological dysfunction in about a third; but in those who are already paraplegic, only about 10% regain the ability to walk\(^{11}\). Radiotherapy should not be given to those patients who are being considered for surgical intervention – it can be used in the adjuvant setting in these patients once the surgical wound has healed\(^4\).

**Surgery**

Surgery remains the only method that leads to immediate relief of spinal compression and direct mechanical stabilisation of a diseased and weakened vertebral column\(^6\). Recent literature reviews conclude that surgical excision of tumour and instrumented stabilisation of the spine may improve clinical outcomes compared with radiotherapy alone\(^1\)\(^{10}\). Vertebrectomy is now preferred to laminectomy.

Indications for surgery include: good performance status and ability to tolerate an operation, prognosis of at least 3 months, unstable spine as shown on MRI or suspected clinically by escalating pain or neurological dysfunction, need for histological diagnosis in a patient not previously known to have cancer, single site of disease, radio or chemo resistant tumours or the presence of compression due to protruding bony fragments from a vertebral collapse. The speed of onset of symptoms is also important as well as duration of neurological compromise\(^{11}\).

Patients with metastatic spinal cord compression confirmed on imaging should be referred to the Network Spinal Cord Compression Team at Kings College Hospital. (See SELCN MSCC SOP appendix 3).

• For those patients who are appropriate for a surgical opinion, the patient’s images should be image-linked to the radiology department at King’s and the patient will be discussed at the MDT. The MSCC co-ordinator is available on 0203 299 5468 during working hours (9-5 Mon-Fri) – outside of these hours the neurosurgical StR should be contacted on 0203 299 4207. A paper referral should be made using the network referral form (appendix 4).

For those patients who are clearly not appropriate for surgery, a network referral form still needs to be completed and faxed to King’s but clearly marked as “FYI only – not for discussion”.

• The network referral form should be completed by the patient’s oncology team but HitW staff should make this referral if an oncology review is inappropriate or delayed because of the patient’s deterioration or diagnostic or management uncertainty.

There is no evidence that a patient with a stable spine needs to be kept on bed rest until the completion of their radiotherapy treatment. Early mobilisation of these patients, as their pain and neurology allow, could be beneficial\(^4\).
Prognosis

Median survival after radiotherapy for MSCC varies between 3-6 months. Survival is higher in patients who are ambulatory before treatment, who have a radio-sensitive tumour and only a single spinal metastasis. 50% of 2 year survivors and nearly all 3 year survivors develop recurrence of MSCC.

References:

Hospice in the Weald provides choice and compassion to people with a terminal illness and their families and carers in West Kent and North East Sussex. Our Hospice care, in people’s home or at the Hospice itself, provides comfort from emotional and physical pain and emphasises quality of life as well as dignity in death.

Our services are free to patients, their families and carers. The services are provided on the basis of need rather than ability to pay.

We are not part of the NHS. We rely on the generous people from our community who give their money and time to help raise the £6 million we need every year.

Contact details
Hospice in the Weald
Maidstone Road
Pembury
Tunbridge Wells
Kent TN2 4TA
Tel 01892 820500
Fax 01892 820520
enquiries@hospiceintheweald.org.uk
www.hospiceintheweald.org.uk

Meet us on: http://www.facebook.com/
Follow us on: http://twitter.com/

This leaflet has been produced following the Guidelines for Metastatic Spinal Cord Compression developed for NICE by the National Collaborating Centre for Cancer in November 2008.
Sometimes when people have cancer it can spread to the spinal column and cause the spinal nerves to be squeezed.

This leaflet is not intended to alarm you but to help you recognise important symptoms to report early, so that tests and treatment may be carried out as soon as possible.

When the spinal nerves are squeezed, it can cause damage to the spinal cord to the point of complete paralysis from the neck, chest or waist down. This is quite rare, and unlikely to affect you, but it is very important to pick it up quickly. The earlier the treatment is started the better the result is likely to be.

Symptoms to watch out for:

- Back pain in one part of your spine that is severe, distressing or different from any usual pain (especially if it affects the upper spine or neck)
- Severe increasing pain in the spine that changes with lying down or standing up, when lifting or straining, wakes you at night or prevents sleep
- Pain which is worse on coughing or sneezing
- Pain which starts in the spine and goes around the chest or abdomen
- Pain down a leg or an arm
- A new feeling of weakness of the arms or legs or being unsteady on your feet, having difficulty walking, or your legs giving way
- Numbness or “pins and needles” in the arms or legs
- Difficulty in controlling your bladder or bowel function

If you have any of these symptoms

- Speak with a doctor or nurse as soon as is practically possible (certainly within 24 hours)
- Tell them that you have cancer, you are worried about your spine and would like to see a doctor
- Try to bend your back as little as possible

Further information

Please see the Macmillan cancer support website www.macmillan.org.uk

or call free: 0800 808 0000
APPENDIX 2

HOSPICE IN THE WEALD GUIDELINE FOR MANAGEMENT OF MALIGNANT CORD COMPRESSION:

**SUSPECTED ESTABLISHED CORD COMPRESSION:**

CANCER OR SUSPECTED CANCER ⇒ COMMENCE DEXAMETHASONE 8MG BD + ADMIT TO HOSPITAL FOR EMERGENCY MRI AND TREATMENT PLANNING + INFORM PATIENT’S ONCOLOGIST

MYELOPATHY + / - SUSPICIOUS PAIN

**SUSPECTED IMPENDING CORD COMPRESSION:**

CANCER + SUSPICIOUS PAIN ⇒ CONSIDER COMMENCING DEXAMETHASONE + ORGANISE URGENT MRI + INFORM PATIENT’S ONCOLOGIST

MYELOPATHY = weakness, sensory loss, sphincter disturbance eg urinary retention

SUSPICIOUS PAIN = nerve root pain (eg burning or shooting pain in band-like distribution or down legs)

localised back pain
severe progressive pain
worse on coughing, bending or sneezing

EMERGENCY = within 24 hours if possible

URGENT = within 5 – 7 days and can be brought forwards if patient’s condition deteriorates
APPENDIX 3

Suspected MSCC
Patient with prior diagnosis of cancer or unknown primary with symptoms suggestive of spinal metastases/MSCC:
- Severe intractable progressive pain especially in thoracic region
- New spinal nerve root pain (burning, shooting, causing numbness)
- Altered sensation and/or reduced power in limbs
- Bladder and/or bowel disturbance (i.e. new onset of incontinence)

Pathway 1
Symptoms suggestive of spinal metastasis or MSCC WITH Neurological symptoms
Contact MSCC coordinator immediately.
Urgent MRI within 24 hours.
Transfer MRI/CT images to MSCC centre for urgent review
Fax referral form to MSCC Centre

Pathway 2
Symptoms suggestive of spinal metastasis or MSCC WITHOUT new neurological symptoms
MRI within 7 days
Contact MSCC coordinator immediately within 24 hrs of MRI scan.
Transfer MRI/CT images to MSCC centre for review and decision making.
Fax referral form to MSCC Centre

Pathway 3
Non specific lower back pain
Locally managed standard backcare (outside remit of MSCC Guidelines)
Continue frequent observation to monitor symptom progression. If symptoms persist or progress refer via Pathway 1 or 2

Contact Network Metastatic Spinal Cord Compression Team at Kings College Hospital
Telephone: 020 3299 5468
Fax Referrals: 020 3299 4197
Out of hours ask for Neurosurgical SpR on call

Patient discussed with the on-call Clinical Advisor (Consultant neuro or orthopaedic surgeon/Clinical Oncologist/Radiologist).
Network MSCC coordinator feeds back to referrer and initiates treatment plan

Diagnose MSCC
Surgery
Radiotherapy
Retrospective discussion at the Neuro-oncology MDT

Specialist Oncology
Treatment planning by local Oncology team
Presumptive or proven histology (inc biopsy if required)
Tumour staging
Patient assessment and preferences
Pain relief and preventing MSCC
Definitive treatment for MSCC prior to deterioration (within 24hrs)

Bone metastasis without pending MSCC
Prospective discussion at Neuro-oncology MDT
Radiotherapy surgery

Rehabilitation and supportive care/Palliative care
**King’s College Hospital – Neuro-MSCC MDT Proforma**

**PLEASE ANSWER ALL QUESTIONS ON ALL PAGES.**
Please complete electronically and email to kch-tr.neuro-mscc@nhs.net
For further Information please call Itziar Atucha – Neuro-MSCC Nurse on 020 3299 5468 or alternatively fax 020 3299 4197

<table>
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**Patient details**

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**Clinical Team**

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<th>Primary Oncologist (Speciality)</th>
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<th>Referrer Contacts</th>
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CLINICAL DETAILS

Primary site of malignancy (circle disease site):
Breast  Prostate  Renal  Thyroid  GI  Uterine  Melanoma  Bronchus  GU
Lymphoma  Myeloma  CUP  MUP
Other:

HISTORY OF PRESENTING CANCER COMPLAINT

Dominant back pain Y/N
Dominant radicular pain Y/N
Dominant weakness/numbness Y/N

Neurological symptoms: Y/N
Duration of symptoms:

Current Neurological Status:
GCS: (please circle)

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Reflex
Power of the leg  Left  Right
Sensation of the leg  Left  Right
(Further detail if required)

Neurology (please circle)
Walking status: Normal  Normal with aids  Abnormal (please explain)  Not ambulant

Does the patient have normal bladder control? Y/ N  Urine Catheter? Y/ N

Spinal Stability:
ASIA Impairment Scale *(please circle)*

A= Complete: No motor or sensory function is preserved in the sacral segments S4-S5  
B= Incomplete: Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5  
C= Incomplete: Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade less than 3  
D= Incomplete: Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade of 3 or more  
E= Normal: Motor and sensory function are normal  

CURRENT PERFORMANCE STATUS *(please circle)*

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<td>0</td>
<td>Asymptomatic (Fully active, able to carry on all pre-disease activities without restriction)</td>
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<td>Symptomatic but completely ambulatory (Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature. For example, light housework, office work)</td>
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<td>2</td>
<td>Symptomatic, &lt;50% in bed during the day (Ambulatory and capable of all self care but unable to carry out any work activities. Up and about more than 50% of waking hours)</td>
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<td>Symptomatic, &gt;50% in bed, but not bedbound (Capable of only limited self-care, confined to bed or chair 50% or more of waking hours)</td>
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<td>Bedbound (Completely disabled. Cannot carry on any self-care. Totally confined to bed or chair)</td>
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Date of admission or seen in clinic ______________________________

PAST MEDICAL HISTORY *(OTHER)*:

Surgical procedure (if any)

PREVIOUS CANCER TREATMENT GIVEN

PROGNOSIS: ________________

FUTURE ONCOLOGICAL TREATMENT PLAN: ________________________________

CURRENT MEDICATIONS: *(Including information on anti-coagulant medication, if stopped when?)*
**PLEASE LINK IMAGES TO KING’S COLLEGE HOSPITAL**

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<tr>
<th>MRI Head/ Spine</th>
<th>Yes □ No □</th>
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<td>Yes □ No □</td>
<td>Date requested: Date performed: (attach report – <em>please fax</em>)</td>
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**IF THE PATIENT IS FOR NEURO-SURGICAL**

**PATIENT FIT FOR GENERAL ANAESTHETIC?**

Attach test results for (*please fax*):
- Bloods - FBC, Clotting, DAX, Renal, Liver, Bone, Urea
- Radiology report
- Lung function (if the patient is a surgical candidate)

**FINAL DECISION MADE:**

**ANY ADDITIONAL INFORMATION:**

Has the patient been discussed with an oncologist? Y/N *(if yes who?)*

**Cognitive function:**
- Normal
- Impaired – please give details

**Infection present: Y/N?**
- If yes, please give details and current treatment

Is the patient neutropenic (i.e. neutrophils ≤ 1.0)  
- Yes  
- No

**MRSA Status**
- Positive and on irradiating regime
- Positive – date of last swab
- Negative
- Unknown

<table>
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<tr>
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<th>Print name</th>
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