21.

Metastatic spinal cord compression (MSCC)

Background

Patients with symptoms suggestive of spinal cord compression, particularly severe back or root pain, should be investigated urgently with whole spine magnetic resonance imaging (MRI) to define sites and levels of compression accurately.[1] Multiple levels of compression are seen in up to one-third of patients.[2–4]

On clinical suspicion of MSCC or once a diagnosis has been established, all patients should be started on steroids; the UK convention is to give dexamethasone in 16 miligrams (mg) daily. There is evidence from one randomised trial that higher initial doses of 96 mg are superior to no steroids (Level 2b).[5,6] No dose comparison between 16 mg and higher doses has been undertaken.

Systemic anti-cancer treatment may be more appropriate than radiotherapy for some malignancies, for example, lymphomas, plasma-cell tumours, germ cell tumours or untreated small cell cancers.

Long-term outcome from MSCC depends on the degree of paralysis and overall prognosis for the cancer; with poorer outcomes associated with non-ambulatory status, poor performance status, ≥3 involved vertebrae, presence of other bone metastases, presence of visceral metastases and shorter time to developing motor deficits. Non-breast/prostate/haematological primaries also confer a worse prognosis (Level 2c).[7,8]

Ideally, the prognosis of patients should be objectively assessed using validated scores such as the Tokuhashi Score (Level 2b).[6,8,9]

Patients with a good expected prognosis, especially those who are ambulatory, should be discussed with a spinal- or neurosurgeon to consider spinal decompression and stabilisation surgery followed by radiotherapy. This intervention has been shown to improve neurological status and overall survival in patients with MSCC (Level 1b) compared to radiotherapy alone.[6,10]

For good prognosis or ambulatory patients who are not suitable for surgery, urgent radiotherapy should be given before further neurological deterioration.[3,4,8]

For poor prognosis or non-ambulatory patients, radiotherapy should be considered either to preserve neurological function (in ambulatory patients) or for pain relief only if paraplegia has been established for >24 hours.[3,4,8]

Current evidence on dose and fractionation for MSCC largely consists of retrospective series, prospective non-randomised studies looking at several different treatment schedules or prospective randomised control trials (RCTs) using schedules not commonly used in UK, including split course schedules (Level 2b).[6,8,11–13]

The current evidence suggests no benefit for doses higher than 30 Gray (Gy) in ten daily fractions. More hypofractionated regimes (8 Gy in a single exposure, 20 Gy in five daily fractions) are most commonly used in the UK and are as effective as longer schedules in terms of pain relief, neurological benefit and survival. There may be fewer in-field recurrences with longer schedules and fewer patients treated with longer courses are treated with further radiotherapy to the same area for recurrent MSCC (Level 2b), however, a recent randomised trial found that 20 Gy in five fractions was not inferior to 30 Gy in ten fractions for motor function or ambulatory status.[14–16]

Ambulant patients with an expected better prognosis may, therefore, benefit from longer courses of treatment to prevent recurrence and need for retreatment.

The SCORAD III prospective RCT is currently recruiting and randomising patients with an expected prognosis of >12 weeks to either a single exposure of 8 Gy or 20 Gy in five daily fractions. The results of this trial will inform decisions regarding the optimal schedule in the future [UKCRN ID 7952].[16]

Recommendations

Metastatic spinal cord compression: non-ambulant patients or ambulant patients with a poor prognosis:

8 Gy single dose (Grade B)
or
20 Gy in 5 daily fractions over 1 week (Grade B)

Metastatic spinal cord compression: ambulant patients with a good prognosis or post-spinal surgery:

20 Gy in 5 daily fractions over 1 week (Grade B)
or
30 Gy in 10 daily fractions over 2 weeks (Grade B)

The types of evidence and the grading of recommendations used within this review are based on those proposed by the Oxford Centre for Evidence-based Medicine.[6]

There is response to retreatment after initial benefit from radiotherapy for recurrent MSCC. The absolute maximum retreatment dose has not been established, but a cumulative biologically equivalent dose (BED) (initial + reirradiation) of 120 Gy_2 appears to be safe and effective. Evidence indicates that the effect of previous radiation, time to develop motor deficit, presence of visceral metastases and performance status have an impact on effectiveness of repeat treatment but schedule of treatment does not (Level 2c).[6,17]

Recommendation

Metastatic spinal cord compression: re-irradiation:

8 Gy single dose or 20 Gy in 5 daily fractions prescribed at depth.

Maximum cumulative BED <120 Gy2 (Grade C)

The types of evidence and the grading of recommendations used within this review are based on those proposed by the Oxford Centre for Evidence-based Medicine.[6]

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