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Malignant spinal cord compression (MSCC) presentation before and during Covid-19

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Original Article

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Abstract

Introduction: Malignant spinal cord compression (MSCC) is a serious condition requiring urgent palliative radiotherapy to alleviate symptoms and avoid permanent paralysis. This audit compares the number of patients treated for MSCC before and during Covid-19, their treatment regimes and 30-day mortality rates to assess if the pandemic affected the treatment and the number of patients referred for palliative radiotherapy.

Methods: A retrospective audit was performed (July–December 2019) and 101 patients were treated for MSCC, an average of 17 patients per month. A further audit was undertaken during Covid-19 (March–May 2020) and 36 patients were treated for MSCC, an average of 12 patients per month in this shorter cohort.

Results: The results have demonstrated fewer patients presenting during the pandemic and this may be due to patients not wishing to utilise the National Health Service (NHS) during this time. It also highlighted the need to reduce the treatment duration to minimise hospital attendance and lessen the potential for exposure to Covid-19.

Conclusion: Educating patients at risk of MSCC is essential and all cancer patients should be counselled on symptoms and what to do if they occur. Ensuring clinicians know the warning signs and the referral pathway for MSCC is also key to ensure early presentation and early referral for treatment.

Introduction

The current Covid-19 outbreak thought to begin in December 2019, presents a significant challenge for people with cancer and those with symptoms awaiting diagnosis and treatment. In March 2020, the Scottish Government imposed further measures to slow the rate of transmission of the virus, which resulted in pausing routine cancer screening programmes including breast, bowel and cervix. Alongside reduced access to general practitioners (GPs) there has also been limited access to routine diagnostic examinations. As a result, it is widely accepted that there will be a large number of delayed cancer diagnoses and a backlog of cases requiring urgent treatment which, if not addressed may cost more lives than the virus itself.[1] Cancer Research UK (CRUK) has demonstrated the scale of the issue by showing the reduction of people on the current urgent referral pathway for suspected cancer in the UK during Covid-19 (Figure 1).[2]

Malignant spinal cord compression (MSCC) is a serious condition classed as an oncological emergency and approximately 5–10% of patients with cancer will go on to develop MSCC[3] and in some instances this is the first presenting symptom in patients with no previous cancer diagnosis. In MSCC the cancer has spread to the vertebral bones and is impinging the nerves of the spinal cord causing pain, neurological symptoms potentially leading to mobility issues and incontinence. If left untreated, this can cause irreparable damage to the spinal cord causing hemi/quadriplegia and permanent incontinence. By irradiating the involved area this can alleviate pain, improve mobility, reduce neurological symptoms and avoid paralysis. However, time is of the essence as if left too late permanent paralysis will occur.

Magnetic resonance imaging (MRI) should be performed within 24 hours of presentation of neurological symptoms suggestive of MSCC and radiotherapy commenced within 24–48 hours of MRI.[4] A high-dose oral steroid (Dexamethasone) is also commenced to reduce inflammation and prevent worsening of symptoms.

Patients presenting with MSCC are referred for radiotherapy via several referral pathways including from GP to oncology departments but may also present to A & E as a result of the loss of mobility or altered bladder/bowel function. MSCC patients have a poor prognosis with a median survival of 2–3 months and only 17% are still alive at 1 year.[4] The incidence of MSCC is approximately 100 cases per cancer network each year, assuming an average population of 1.2 million per cancer network.[4]

It is recommended that less than 20% of patients receiving palliative radiotherapy (RT) should die within 30 days of treatment[5] and that appropriate patient selection based on performance status and life expectancy is considered prior to delivery of radiotherapy. Fewer

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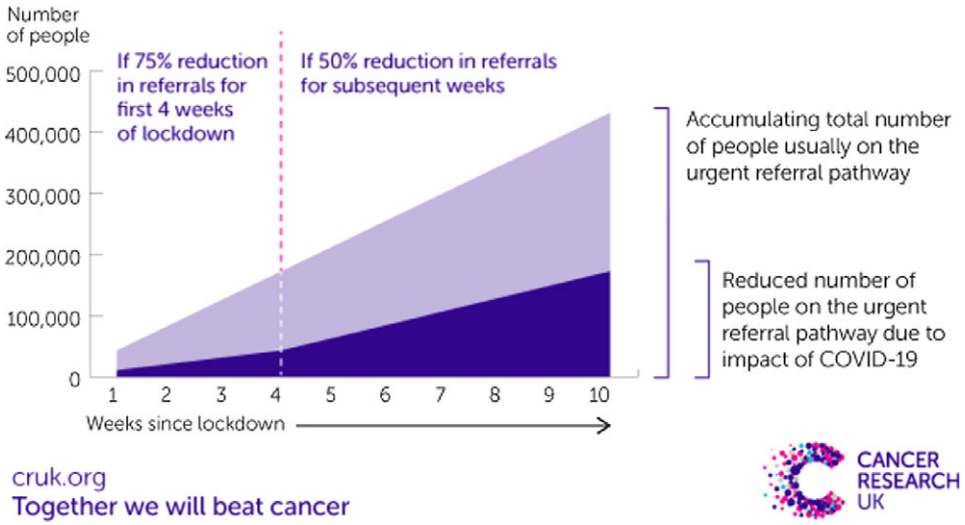


Figure 1. Reduction of people on the urgent referral pathway for suspected cancer in the UK.

treatments can be recommended for poor prognosis patients in order to assist with symptomatic relief of disease.[6] There is existing evidence which shows that giving a single dose of 8 Gy in patients with MSCC is as effective as multiple fractions,[7] however, the number of treatments may be influenced by the size of the area to be treated. During Covid-19 guidance was released to encourage clinicians to use the most appropriate hypo-fractionated schedule for cancer patients to minimise hospital visits and reduce potential exposure to coronavirus.[8,9] The guidance went on to reiterate that radiotherapy should be avoided if evidence suggests there will be little or no benefit to the patient.[8]

It is also important to note that lower pain response rates are seen when irradiating patients near the end of life with 45% of patients surviving <12 weeks experiencing a response versus 85% in those surviving over a year.[10] The decision-making process should be assessed in patients who die within 14 days after a single fraction and 30 days after a fractionated regime to learn from these situations and reduce avoidable harm.[5] Patient education for early detection of MSCC is key to improving outcomes.[4] Good practice should be to offer all patients with bone metastases and patients at high risk of developing MSCC to be given written advice on early symptoms of MSCC and advice on contacting health professionals promptly if symptoms appear.[3]

Data analysis

A retrospective audit was performed pre-Covid-19 to investigate the number of patients presenting with MSCC July–December 2019 and 30-day mortality-post-palliative radiotherapy was also assessed. The number of patients presenting with MSCC was 101, of which 32 were female and 69 were male. The ages ranged between 26 and 92 years with a mean age of 68 years. The number of patients who died within 30 days of RT was 17, of whom there were 5 female patients and 11 male patients (1 patient was treated twice in 1 month). The 30-day mortality rate was 16.8%. The number of patients who died within 14 days of radiotherapy was 7, 3 had a single fraction of RT and 4 had 5 fractions of RT.

A further study was undertaken during Covid-19 (March–May 2020), to analyse if there would be a decrease in the number of patients presenting with MSCC as a result of fewer patients presenting for cancer symptoms and to audit the 30-day mortality rate post-radiotherapy. The number of MSCC patients presenting during Covid-19 was 36, of whom 13 were female and 23 were male. Ages ranged between 37 and 86 years with a mean age of 68 years.

The number of patients who died within 30 days of RT was 6, 2 female patients and 4 male patients. The 30-day mortality rate was 16.7%. The number of patients who died within 14 days of RT was 3, 2 had a single fraction of RT and 1 patient had 5 fractions of RT.

Results

One limitation of this study was the shorter duration of 3 months during Covid-19 versus the previous 6 months study, as a longer study may have demonstrated less of a decline in patient numbers presenting with MSCC. A future audit assessing 6 months during Covid-19 could be done as a direct comparison; however, it was felt that the initial lockdown period would demonstrate the most meaningful data as services gradually resumed after 12 weeks. Fewer patients presented for RT with MSCC during Covid-19 as predicted and this may be due to patients not wishing to utilise the National Health Service (NHS) during the pandemic and may have resulted in very late presentation unsuitable for RT or early death.

Pre-Covid-19, on average 17 patients were diagnosed and treated each month for MSCC with 75% receiving 5 fractions of RT. During Covid-19, only 12 patients presented with MSCC per month, which is in line with CRUK evidence on reduced presentation[2] and half of these patients received 5 fractions of RT. The 30-day mortality rate was 16.8% pre-Covid and 16.7% during Covid, which is in line with other reported treatment centres and below the guideline of 20%.

However, the dose fractionation regime advised during Covid-19 changed with more patients recommended to receive a single fraction of RT instead of five fractions. This is in line with the guidance released to reduce treatment duration to minimise attendance and reduce the potential for exposure to Covid-19.[8,9]

From all the audit data 23 patients received palliative RT for MSCC but died within 30 days of RT and 10 patients died within 14 days of RT and were therefore unlikely to gain much, if any benefit and this highlights poor patient selection and assumed life expectancy.

South East Scotland Cancer Network (SCAN) has a population of 1.4 million and would expect to treat around 100 cases per year based on 2008 data.[4] However, the actual figure is much higher

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with 101 MSCC patients treated in just 6 months, double the estimated figure. It is unclear why SCAN has such a high rate of MSCC presentation compared to other networks of a similar size.

Conclusions

Educating patients at risk of MSCC is essential and all patients should be counselled on symptoms and what to do if they occur. Ensuring clinicians know the warning signs and the referral pathway for MSCC is also key to ensure early presentation and early referral for treatment.

Considering treatment duration and recognising patients expected prognosis is highlighted by this study. The omission of RT in patients who will not survive long enough to gain benefit and utilising fewer treatments is also recommended as standard practice in line with National Institute for Health and Care Excellence (NICE) guidance.[8]

A values-based approach to utilising palliative radiotherapy for MSCC is recommended as an opportunity for improved decision-making and to improve cost-effectiveness of care.

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