Prostate Cancer and Spinal Cord Compression

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Metastatic spinal disease is common in patients with prostate cancer. Spinal metastases may be asymptomatic (identified during staging) or cause pain and other neurologic signs and symptoms. In approximately 30% of prostate cancer patients, metastatic epidural spinal cord compression is the initial manifestation of the disease.[1] Unfortunately, a secondary spinal neoplasm usually represents incurable disease and may herald terminal progression. As such, surgical management of spinal disease must be consistent with the overall care of the cancer patient. An integrated palliative care model generally applies—ie, one that combines both life-prolonging and symptom-control interventions.[2]

Dr. Chen has presented a comprehensive review of the current understanding of the pathophysiology of bony spinal metastasis. He discusses surgical considerations that reflect his experience and proposes simple algorithms to assist in clinical decision-making.

Patient Evaluation

A thorough assessment of the patient is essential before making treatment recommendations. The treating clinician should be familiar with the patient's personal values, preferences, and goals, as well as the family's goals and the resources available for professional care.

Clinical evaluation is often prompted by a complaint of pain. Pain without other neurologic symptoms provides a window of opportunity in which to act to preserve neurologic function. In some circumstances, however, surgical intervention may be obviated by widespread disease and poor clinical condition.

Tumor growth contributes to mechanical pressure, vascular compromise, and biochemical changes. Bony destruction may lead to vertebral collapse, propulsion of fragments into the spinal canal, and narrowing of disc space. Neural degeneration and secondary central nervous system changes will progress without treatment.

An organized history should be taken that includes a description of the temporal course of the pain and progression of other symptoms. Note that patients may have bladder, bowel, and sexual dysfunction resulting from prior treatment.

The character of pain associated with spinal neoplasm varies. Pain may be somatic nociceptive, neuropathic, or related to secondary soft-tissue spasms. It can be reported in any part of the column and may be referred to the trunk or extremities. It may be continuous when the patient is at rest and markedly aggravated by body movements (incident pain). Pain made worse by a supine position is typical of epidural compression. Radicular pain may be paroxysmal, spontaneous, or provoked by movement or sensory stimulation. Lesions confined to the vertebral body may produce nonradicular referred pain in characteristic patterns. Valsalva maneuvers may induce or aggravate both local and radicular pain; Lhermitte's sign as well as positive tests of dural traction may be present. As Dr. Chen points out, patients must undergo a complete neurologic and mechanical examination.

Pain relief should be provided immediately (see "Treatment and Algorithms" section) and further evaluation considered. In each case, the "neurologic urgency" of further diagnostic testing is modified by the potential for treatment, the general condition of the patient, and the overall prognosis (see Figure 1).
Once the complete history, examination, and diagnostic tests have been concluded, the treating clinician should correlate the presenting symptoms with clinicoradiographic evidence. Treatment planning depends on proper characterization of anatomic involvement (see Table 1).

**Treatment and Algorithms**

Surgical intervention in spinal disease may relieve pain and prevent or reverse neurologic dysfunction. The author states clearly that pain management does not simply involve the provision of anesthetic interventions. Studies have shown that a comprehensive neurology-based evaluation of cancer patients with pain will lead to a new diagnosis in the majority of cases.[3] If the pain specialist does not have neurologic training, the primary physician will often need the assistance of a qualified neurologic specialist in evaluating the patient and making treatment decisions.

Skillful use of opioids is mandatory in oncology. The author notes that caution should be exercised when administering medications via spinal routes (epidural and intrathecal) to patients with spinal disease. In the setting of escalating pain, many patients will require rapid titration of an opioid agonist concurrent with a high-dose bolus of a corticosteroid. Regardless of the means used, the practitioner should be prepared to titrate opioid to effect, and this may briefly require high doses, especially in patients with neurologic involvement.[4] Again, consultation with a neuro-oncologist to discuss the risks and benefits associated with these approaches is encouraged before initiating an intervention.

**Conclusions**

Surgical intervention for metastatic prostate cancer is considered in the context of the patient’s overall disease status. The median survival of prostate cancer patients after being diagnosed with epidural compression by tumor is 6 months, and only 34% survive at least 1 year.[5] Other antineoplastic and supportive treatments may, at times, precede or entirely supplant surgical interventions for spinal disease.

Treatment algorithms ought to be evidence based and revised as new evidence becomes available. Although few studies of quality-of-life issues have been conducted in this population, pain control should remain a high priority. The complication rate for spinal surgery can be as high as 30% in patients who have undergone prior irradiation.[6] It would be helpful for surgeons to continue to publish their experiences with complications and complication rates so that we may refine our interdisciplinary decision-making.

A better understanding of the pathophysiology of spinal metastasis will lead to interventions designed to prevent its complications. More clinical research is also needed. The spinal radiosurgery approach discussed by Dr. Chen is an exciting example of the new therapeutic strategies being developed.

In summary, a professional team led by the primary physician has several responsibilities. They include (1) presenting the "big picture" to the patient and family, (2) interpreting diagnostic test results and specialist opinions, (3) organizing decision-making with specialists, (4) recommending a coherent, practical plan to the patient and family that respects their values and preferences, and (5) coordinating ongoing professional care. Although this may require more time than can easily be devoted, we must always strive to give patients and their families the best compassionate, conscientious care.

**References:**


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