Commentary (Moulin): Diagnosis and Management of Brachial Plexus Lesions in Cancer Patients

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The signs and symptoms of brachial plexopathy are commonly seen in patients with cancer and pose a formidable management challenge. Tumor infiltration and radiation injury to the brachial plexus are the most common causes, and the distinction between the two has obvious prognostic and therapeutic implications. Dr. Kori reviews the clinical features and treatment options for each of these clinical entities and attempts to define the criteria that differentiate them.

Differential Clinical Criteria

Several studies indicate that certain clinical features are highly predictive of the underlying disease process in patients with brachial plexopathy [1-4]. Presentation with pain, presence of Horner's syndrome, and rapid progression of symptoms and signs are all strongly linked to tumor infiltration of the brachial plexus. The finding of a discrete mass on CT or MRI of the brachial plexus is also highly predictive of metastatic brachial plexopathy. Presentation with numbness and tingling rather than pain, gradual deterioration, and presence of myokymic discharges on electromyography are strongly suggestive of radiation-induced injury.

In contrast, the symptom-free interval between the time of diagnosis and treatment of cancer and the onset of brachial plexopathy does not have good predictive value. One study suggested that this interval might be shorter for radiation-induced than for metastatic brachial plexopathy [5]. Two other studies showed no difference [1,2], however, and one further study indicated that this interval was shorter for metastatic brachial plexopathy [4].

The assertion by Kori that the distribution of upper extremity weakness and sensory loss differentiates neoplastic from radiation-induced brachial plexopathy is inconsistent with other studies that have directly compared these two clinical entities [2-4,6]. Given the proximity of the lateral group of axillary lymph nodes to the lower trunk of the brachial plexus, it is not surprising that the majority of patients with metastatic brachial plexopathy present with lower trunk or diffuse involvement of the brachial plexus [1]. Subsequent studies have found that the majority of patients with radiation injury to the brachial plexus present with the same distribution of weakness and sensory loss, and therefore have concluded that this is not a differentiating feature [2-4].

Kori suggests that the patients in his series with radiation-induced brachial plexopathy manifested predominantly upper trunk involvement because they were seen at an earlier stage of disease. However, all of these studies were retrospective in nature and involved patients who were being investigated for brachial plexopathy in the setting of cancer. It is not at all clear that other studies involved patients with more advanced disease.

The observation that Horner's syndrome is common in metastatic brachial plexopathy and rare in radiation-induced injury to the brachial plexus has stood the test of time, even though lower trunk or diffuse brachial plexus involvement likely predominates in both conditions. Horner's syndrome is a valuable sign of tumor infiltration of the proximal nerve roots and warns of impending epidural spinal cord compression.

Pain Management of Malignant Brachial Plexopathy

Pain secondary to metastatic brachial plexopathy remains a very challenging clinical problem. As Kori points out, many patients have diffuse plexus involvement and respond poorly to nerve blocks
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and neuroablative procedures. Contralateral percutaneous cordotomy at C1-C2 may be unsuccessful because of the difficulty in maintaining a sensory level above C5-C6 with this procedure [7]. Opioid analgesics and various adjuvant analgesics should be used early and in adequate doses to help control the pain. Malignant neuropathic pain does respond to opioid analgesics, although the rightward shift in the dose-response curve often requires dose escalation, which can result in side effects such as nausea and drowsiness [8]. Some of these patients benefit from continuous subcutaneous opioid infusions; in most cases, higher doses can be used relative to oral administration with an acceptable side effects profile [9]. Dexamethasone at a dosage of 4 mg every 6 hours is a particularly useful adjuvant for patients with intractable pain and advanced disease. Kori and colleagues have made several key observations that crystallize the clinical features of metastatic and radiation-induced brachial plexopathy. Their recognition of significant pain as a cardinal feature of metastatic brachial plexopathy has encouraged us to address this symptom early and aggressively in cancer patients. The clinical criteria defined by Kori et al and subsequent authors allow us to differentiate between metastatic and radiation-induced brachial plexopathy in most cases without having to resort to surgical exploration.

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