

Paraneoplastic Syndromes Related to Lung Cancer

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Paraneoplastic syndromes (PNSs) are defined as signs or symptoms that occur as a result of organ or tissue damage at locations that are remote from the primary tumor site or metastases. Many cancers are associated with PNSs; however, small cell lung cancer (SCLC) is the most prevalent. In SCLC, the systems primarily affected by PNSs include the endocrine system, the neurologic system, and the integumental system. This article provides an overview of primary disorders and classical syndromes, as well as symptom management associated with each system. PNSs are rare, and the best approach is to treat the underlying tumor. Therefore, oncology nurses and other healthcare practitioners should be familiar with PNSs so that they can take prompt and proper courses of action, potentially leading to positive outcomes for patients.

Lung cancer is the leading cause of cancer-related deaths in the United States (Collins, Haines, Perkel, & Enck, 2007). Lung cancer is classified as either non-small cell lung cancer (NSCLC) or small cell lung cancer (SCLC) (Knop, 2005). SCLC, also known as oat cell lung cancer, is known to be a more aggressive lung cancer; it metastasizes rapidly to distant sites and is more often associated with paraneoplastic syndromes (PNSs) (Maghfoor & Perry, 2005).

Paraneoplastic Syndromes

PNSs are defined as signs or symptoms that occur as a result of organ or tissue damage at locations remote from the primary tumor site or metastases (Darnell & Posner, 2006). Although PNSs may be associated with many common malignancies, they are associated most commonly with lung cancer, specifically SCLC, although they also are seen in NSCLC (Rugo, 2007). Identified by categories rather than by specific systems, PNSs are classified as follows: nonspecific, rheumatologic, renal, gastrointestinal, hematologic, cutaneous, endocrine, or neurologic (Santacroce & Gagliardi, 2005). Thus, symptoms may occur based on the type of PNS that develops. Severity of symptoms is unrelated to the size of the primary tumor, and the symptoms often precede the diagnosis of lung cancer (Spiro, Gould, & Colice, 2007). The three PNS categories often associated with SCLC are endocrine, neurologic, and cutaneous (Rugo, 2007).

Endocrinologic Paraneoplastic Syndromes

Endocrinologic PNS results from an overproduction of specific hormones, which are strongly associated with specific types of tumors (Jameson & Johnson, 2008). Tumor cells may

At a Glance

- ◆ Small cell lung cancer is more often associated with paraneoplastic syndromes than non-small cell lung cancer.
- ◆ Symptoms of paraneoplastic syndromes often precede the diagnosis of a neoplasm.
- ◆ Early detection and treatment of the underlying tumor are the best therapies for paraneoplastic syndromes.

secrete a hormone or prohormone of a higher or lower molecular weight than hormones secreted by normal endocrine cells (Rugo, 2007). The most common endocrine disorders related to PNS are hypercalcemia, syndrome of inappropriate antidiuretic hormone (SIADH), and Cushing's syndrome (Spiro et al., 2007) (see Table 1).

Hypercalcemia

Humoral hypercalcemia of malignancy most commonly is caused by overproduction of the parathyroid hormone-related protein (PTHrP) (Jameson & Johnson, 2008). PTHrP is structurally similar to the parathyroid hormone (PTH) and binds to PTH receptors (Jameson & Johnson, 2008). In addition, the PTHrP plays a role in skeletal development and also regulates cellular proliferation and differentiation in other tissues (Jameson &

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