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Editorial

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Paraneoplastic Syndrome: What should Pulmonologists know?

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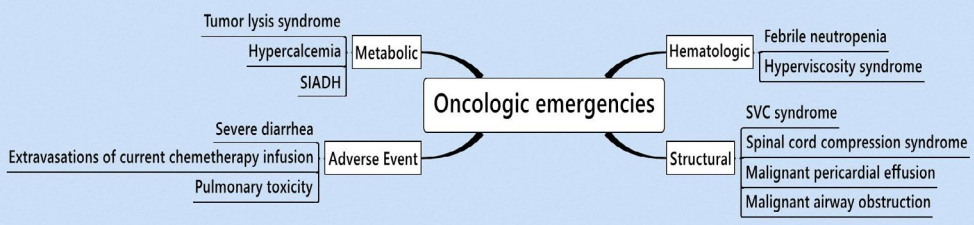
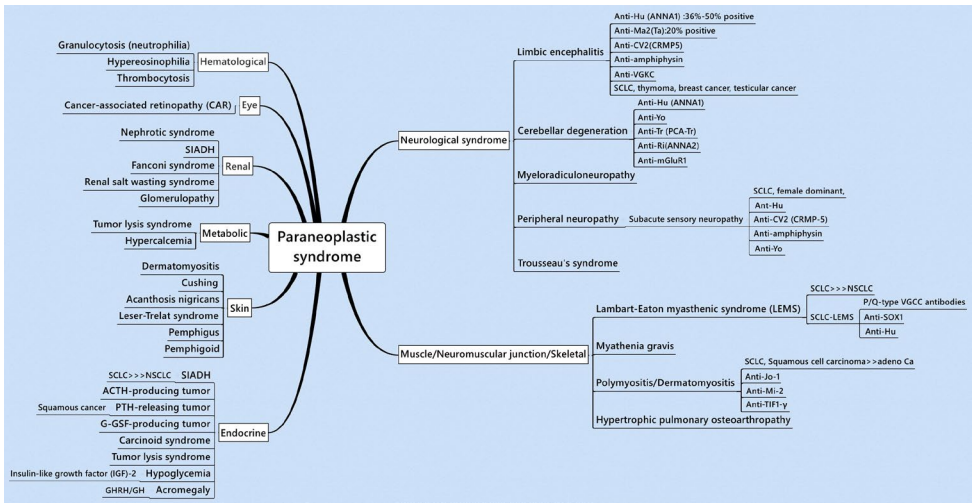
Pulmonologists often encounter patients with oncologic emergencies (Figure 1) such as metabolic syndrome (tumor lysis syndrome),[1] hypercalcemia, syndrome of inappropriate secretion of antidiuretic hormone (SIADH), hematologic (febrile neutropenia and hyperviscosity syndrome) and structural disorders (superior vena cava syndrome,[2] spinal cord compression syndrome, malignant pericardial effusion,[3] and malignant airway obstruction[4]), alongwith drug-related adverse eventsin already-known malignancies including liver[5] or pulmonary toxicity[6,7] and renal disease.[8,9] Additionally, pulmonologists occasionally encounter paraneoplastic syndrome (PNS), which partially overlaps with oncologic emergencies (Figure 1). In this regard, pulmonologists should be aware of PNS, involving organ-based classification (Figure 2).

Figure 1: Schema of the Common Oncologic Emergencies.



SIADH: Syndrome of Inappropriate Secretion of Antidiuretic Hormone; SVC: Superior Vena Cava Syndrome.

Figure 2: Organ-based Classification of Paraneoplastic Syndrome.



ACTH: Adrenocorticotropic Hormone; ANNA1: Type I Anti-Neuronal Nuclear Antibody; Anti-SOX1: Anti-Sry-related HMG; Anti-TIF1: Anti-transcriptional intermediary factor 1-gamma; Anti-VGCC: Anti-Voltage-Gated Calcium Channel; Anti-VGKC: Anti-VoltAge-Gated Potassium Channel, G-CSF: Granulocyte-Colony Stimulating Factor, GHRH/GH: Growth Hormone Releasing Hormone/Glucose Hormone, PTH: Parathyroid Hormone, SCLC: Small Cell Lung Cancer.

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PNS has diverse symptoms and signs in neurologic,[10,11] muscle/neuromuscular junction/skeletal,[10] hematological,[12] eye,[13] renal,[14] metabolic,[1] skin,[15,16] and endocrine systems,[17] which often present as antecedent problems of lung cancer or other malignancies. In some cases, physicians might have difficulty in discriminating PNS from malignant independent conditions due to clinical similarity but they are pathologically different.[18] PNS occurs in approximately 10% of patients with lung cancer,[19] and the histology of lung cancer influences the type of associated PNS. The most common forms of PNS are hypercalcemia fromsquamous carcinoma and SIADH in small cell lung cancer.

Nowadays, various onconeural antibodies have been detected, and well-characterized autoantibodies such as anti-Hu (ANNA1), anti-Yo (PCA1), anti-CV2 (CRMP5), anti-Ri, anti-Ma2 (Ta), and anti-amphiphysin have been described. Other partially characterized onconeural antibodies and other antibodies were also identified.[17] These antibodies seem to be directly involved in cell surface or synaptic proteins or disrupt function of receptors by cross-linking and internalization, which leads to PNS.[20]

Of note, a high frequency of anti-Hu antibody has been reported in PNS such as limbic encephalitis, cerebellar degeneration, and peripheral neuropathy (Figure 2), which resulted in "anti-Hu syndrome" being considered an independent entity.[21] Moreover, although identification of onconeural antibodies can be a useful marker for early diagnosis of PNS and/or malignancies, multidisciplinary assessment for PNS is needed along with long-term observation.

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