Dogs with lymphoma have better therapeutic responses and longer lifespans if they revealed lower white blood cell count after chemotherapy

Chemotherapy is effective against rapidly growing neoplasm. Chemotherapeutic drugs also damage other rapidly dividing cells, such as bone marrow stem cells. Because white blood cells have the shortest life spans in the hemocyte, bone marrow suppression commonly manifests as a decrease in the white blood cell count.

In the study conducted, we used multidrug chemotherapy to treat multicentric canine lymphoma patients. Thirteen dogs with lymphoma revealed bone marrow suppression and 37 dogs with lymphoma had no bone marrow suppression after chemotherapy. The median of the first remission times in the bone marrow suppression and no bone marrow suppression groups were 812 and 219 days, respectively. The median survival times of dogs that displayed the bone marrow suppression were 952 days and no bone marrow suppression groups, 282 days. Dogs affected with lymphoma and had bone marrow suppression after chemotherapy, exhibited significantly increased remission and survival times compared with dogs without bone marrow suppression.

Chemotherapeutic drug calculation is mainly based on body surface area, both in human and veterinary oncology. Dogs vary in their ability to metabolize and eliminate drugs; thus, the same dosage exerts varied pharmacokinetic profiles and presumably different effects among dogs. We determined that bone marrow suppression may be a helpful criterion for monitoring cytotoxic drug dosages and treatment response. After the body surface area-based dose is calculated on initial administration of chemotherapy, the dose may be gradually increased until neutropenia is achieved without unacceptable toxicity. This finding may enable optimizing dosages to increase the remission time and survival time.

Publication

Chemotherapy-induced neutropenia is associated with prolonged remission duration and survival time in canine lymphoma.
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