Chemotherapy Drug Side Effects

The term chemotherapy can be used to describe any drug used in treatment of disease, but is most often used to describe drugs used in the treatment of cancer. In general, cancer-fighting drugs are effective because they target rapidly-dividing cells. However, cancer cells are not the only rapidly-dividing cells in the body. Normal, healthy cells in the bone marrow, lining of the gastrointestinal tract, and (in some animals) hair follicles also divide rapidly and can be affected by chemotherapy drugs. These are the most common areas that side effects are seen. Some chemotherapy agents have other specific potential side effects. All are listed under each drug. Most animal patients tolerate chemotherapy extremely well. We DO NOT accept severe, debilitating side effects as are often seen in human patients undergoing chemotherapy. Our goal is for your pet to feel as good as or better than before treatment. Any side effects should be discussed with a health care professional so that its severity can be assessed and appropriate changes in the protocol can be made.

Adriamycin (Doxorubricin)

- Adriamycin is one of the most widely used and most effective anticancer drugs available.
- Adriamycin is given as a slow intravenous injection, and can cause severe tissue reaction if any of the drug escapes from the vein into surrounding tissue.
- Allergic reactions are sometimes seen, which can range from hives to severe anaphylactic reactions. These reactions occur within minutes to a few hours of exposure to the drug (while the patient is still in the clinic). In order to try and prevent these reactions, Benadryl is usually given immediately before administering Adriamycin.
- Gastrointestinal upset (loss of appetite, vomiting or diarrhea) may be seen 12-24 hours after administration of the drug. This is usually mild and resolves without treatment. Rarely, diarrhea (sometimes bloody) may be seen 3-5 days after treatment. This may require treatment, depending on severity.
- The bone marrow can be affected by Adriamycin administration, usually resulting in a temporary decrease in production of white blood cells and/or platelets. A complete blood count is periodically evaluated in order to monitor cell levels.
- Loss of hair and/or darkening of the skin are possible. Complete hair loss is possible in dogs with continuous hair growth (e.g. Poodles, Old English Sheepdogs, other "haircut" breeds).
- Adriamycin can also cause toxicity of the myocardium (heart muscle). This is usually a dose-dependent, cumulative effect. Heart function is evaluated before instituting Adriamycin treatment, and total lifetime dose is carefully watched.
- Adriamycin is primarily eliminated from the body in feces; gloves should be worn when handling stool for 2 to 3 days after treatment.

Elspar (Asparaginase)

- Elspar is derived from a bacterial enzyme. It is usually only used one or (maybe) two times during the course of chemotherapy treatments, as cancer cells rapidly develop resistance to the drug.
- The primary side effect seen is hypersensitivity, or allergic, reactions. Benadryl is usually administered before treating with Elspar to reduce the possibility or lessen the severity of an allergic reaction.

Cytoxan (Cyclophosphamide)

- Cytoxan can be administered as an oral tablet or by injection. Disposable gloves should be worn when handling tablets. The tablets should NEVER be crushed or cut, because the drug is not evenly dispersed in the tablet, and because cutting will expose YOU to more of the drug.
- Cytoxan can cause suppression of bone marrow, gastrointestinal upset, and hair loss (more common in breeds with continuous hair growth).
- Cytoxan can also cause sterile hemmhorragic cystitis (inflammation of the urinary bladder). This is more common with repeated use of the drug, or if the patient is not properly hydrated. Encouraging adequate water intake and allowing your pet to urinate frequently are helpful in trying to prevent cystitis from developing.
- Cytoxan is eliminated from the body in urine, and gloves should be worn if you must have contact with your pet's urine for 3-4 days after treatment.

Leukeran (Chlorambucil)

- Leukeran is an oral tablet and is usually administered at home. It can cause suppression of bone marrow, nausea or vomiting, or wobbliness/weakness of the limbs. Most of these side effects are uncommon, and a complete blood count is performed periodically to assess bone marrow function.
- Leukeran is completely metabolized in the body, with almost no drug excreted, so no special care needs to be taken in handling the patient or body fluids.

Vincristine (Oncovin)

- Vincristine is given as an intravenous injection, and can cause severe tissue reaction if any of the drug escapes from the vein into surrounding tissue. Otherwise, Vincristine is remarkably well tolerated. Suppression of the bone marrow is rare and minor if it occurs. After prolonged usage, constipation or weakness of the limbs can occur.
- Vincristine is eliminated in the feces in a non-active form; no special care needs to be taken when handling fecal material.

Prednisone/Prednisolone

- Prednisone is a cortisone-like drug that is used in numerous chemotherapy protocols. Prednisone has weak anti-tumor effects, and is usually used in combination with other drugs.
- Prednisone causes the kidneys to retain more salt, so it is common to see a subsequent increase in water intake and urine output.
- Occasionally, prednisone can cause gastrointestinal upset (nausea, vomiting or diarrhea), but more often will stimulate the appetite. Stomach upset is more common on the starting doses (which are higher), and a stomach protectant is often given along with the prednisone in order to decrease this possibility