

## A TYPE OF CHEMOTHERAPY - TAXOL

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New chemotherapies are always exciting. They breathe new life into the field of oncology, always eager to provide superior treatment for thousands of patients with cancer.

Taxol, chemically known as paclitaxel, is a drug from a family known as Taxane. This has been used early on in cancers resistant to standard treatment and is now being used upfront as a primary therapy for cancers with a goal of improved results or lesser toxicities.

The drug was developed in a program dating back to the 1960's sponsored by the National Cancer Institute. The goal was to evaluate extracts of natural products such as those of plants. As early as 1963, an extract from the bark of the Northwest yew tree called *Taxus Brevefolia* was found and in subsequent years showed a novel anti-cancer effect. Taxol works by disrupting reproduction of cells.

In a recent article by Rowinsky and Donehower in the *New England Journal of Medicine*, it was noted that Taxol "enhances the cytotoxic effects of ionizing radiation in vitro, possibly by inducing arrest in the premitotic G2 and mitotic phase of the cell cycle which are the most radiosensitive phases [G2 and mitotic phases describe reproduction of an individual cell within the body]. The feasibility of using paclitaxel in combination with radiation and treat patients with locally advanced lung, head and neck and esophageal cancers which are responsive to both kinds of treatment, is currently being evaluated." Tumor cells unfortunately can develop resistance to Taxol.

There are side effects to Taxol as well as great promise. Lowering of the blood count is a side effect that is shared with many types of chemotherapy.

A more unusual problem is that of hypersensitivity which occurs in about one-quarter of unprepared patients. What are the symptoms of this reaction? They include difficulty breathing, itchiness of the skin and low blood pressure. It was later determined that the oil in which Taxol is prepared was responsible for this effect. Subsequent evaluations have shown that premedication with steroids is dramatically effective in preventing such reactions. Using prophylactic treatment, reactions occur in only about 2% of patients treated. Lowering of blood count occurs about a week after treatment and resolves by the second to the third week. It is felt that Taxol does not irreversibly affect the bone marrow unlike some other types of chemotherapy.

Taxol can cause damage to peripheral nerves or those nerves in the arms and legs - around the hands and feet - with diminished sensation in those areas. This usually occurs after multiple larger-dose treatments but can occur early on. Neurologic effects can occur including effects on vision, muscle pain and motor skills. Taxol can also cause an effect on the heart but this is felt to be modest in result. Nausea and diarrhea, the authors report, are only infrequently seen as is mucositis.

This drug is metabolized mainly through the liver. Anti-tumor effects have been most importantly chartered for ovarian cancer, breast cancer, lung cancer and head and neck cancer, as the authors note. Other tumors with beneficial effects include those of testicular, bladder and esophageal cancer.

New data shows potential important interaction with the use of pinpoint stereotactic radiosurgery for treatment of refractory brain tumors administered with concurrent Taxol.

As the authors concluded, "The results of ongoing investigations will undoubtedly reveal the magnitude of the potential role of the Taxanes in oncologic therapeutics."

We have established a hot line at 212-CHOICES and e-mail address: [gil.lederman@rsny.org](mailto:gil.lederman@rsny.org). There are also monthly seminars on brain, body and prostate cancer treatment. We invite your participation. We also will ask that you send in copies of films, reports, pathology for review by our panel of experts.