



EARLY & LATE SIDE EFFECTS OF RADIATION THERAPY FOR HEAD & NECK CANCERS

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Radiation therapy plays an important role in the treatment of head & neck cancers. It may be used as the sole treatment modality, or combined with surgery and/ or chemotherapy. Radiation may be delivered as external beam irradiation using high energy x rays, or as brachytherapy with radioactive sources. Radiation has long been used to treat and cure a variety of head and neck cancers; in fact its use in cancer treatment began over 100 years ago. It is particularly valuable for preserving organ function. With the new imaging modalities and sophisticated treatment planning and delivery systems, it is possible today to deliver radiation more precisely, but still not without some side-effects to the normal tissues in the vicinity of the tumor bearing area. This article briefly discusses the early and late side-effects of curative irradiation for head and neck cancers.

Early Side Effects Of Radiation Therapy

Generally, the early effects of irradiation are considered to be those occurring during treatment or up to 3 months afterwards.

Fatigue is a non-specific symptom that some patients complain of during radiation treatment and may be multifactorial in origin. Some plausible factors include damage to cells from radiation, low hemoglobin, loss of appetite, anxiety, and depression. Balanced and adequate nutrition, adequate rest, medications or blood transfusions, if appropriate, a positive outlook, and support from

family and friends may go a long way in ameliorating fatigue.

Radiation dermatitis is skin changes in the area under treatment, rather like sunburn. Its intensity depends on the radiation dose and volume of treatment. It may appear within a few weeks of the onset of treatment, and may present as redness, irritation, or dry desquamation (peeling of the superficial skin layer) and hyperpigmentation (darkening) of the skin. These mild changes are treated by avoiding friction and trauma, and using skin emollients like aquaphor. Moist desquamation is more serious and requires special measures. Darkening of skin may persist for months or even years after radiation, but usually disappears eventually.

Mucositis is the inflammation of the mucous membranes lining the mouth and the throat. This is caused by radiation that injures the normal epithelial cells, in addition to killing the tumor cells. Mucositis is usually most pronounced after 3-5 weeks of radiation treatment and may range from redness to ulcers in the mucous lining. Patients may experience considerable discomfort and pain during swallowing.

Symptomatic therapy for mucositis includes a "mucositis cocktail" of soothing medications; daily spraying of the mouth and throat with saline solution; and pain medications. In severe cases treatment may be interrupted for a few days to facilitate healing. Food intake may be severely affected by mucositis and patients may lose weight. However, it is imperative that nutrition and weight be maintained with a soft or liquid diet and if necessary, by the placement of a feeding tube into the stomach. Mucositis usually subsides in the latter part of radiation treatment. It is very important not to become disheartened due to mucositis.

Loss of taste and smell may occur as a result of mucositis and the effects of radiation on the taste buds (papillae). After a few months, as the papillae regenerate, the sense of taste returns in most cases. The sense of smell may be partly related to the loss of taste, and usually returns with the sense of taste.

Impaired hearing may result from radiation induced swelling and obstruction of the Eustachian tubes (tiny tubes connecting the middle ear and the throat), causing collection of fluid in the middle ear, and/or by the swelling of the external ear canal. The hearing impairment is usually temporary and is relieved when the Eustachian tube swelling subsides, or sometimes after the placement of a ventilation tube through the tympanic membrane (ear drum) to remove the fluid from the middle ear.

SIDE-EFFECTS continued on next page



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IN THIS ISSUE

Nutritional Growth for Head and Neck Cancer Survivors.....4
Head and Neck Cancer Teleconference.....5
A Time for Sharing.....6

COMING IN FEBRUARY, 2001
The Importance of Proper Dental Care
For Head And Neck Cancer Patients
Alan B. Sheiner, D.D.S.

SIDE EFFECTS continued from previous page.

Late Side Effects Of Radiation Therapy

Side effects are considered late effects when they occur or persist more than 3 months after radiation therapy.

Xerostomia or dry mouth is one of the more debilitating side effects of radiation therapy. Humans have three paired major salivary glands. Parotid glands are located just in front of and below the ear, and secrete thin saliva (serous), mainly upon stimulation such as when thinking of or looking at food. Submandibular glands are located below the lower jaw, and secrete thick (mucous) saliva. Sublingual glands lie under the tongue and produce mixed serous and mucous saliva, in smaller quantities than the other two major salivary glands. The radiation treatment fields for many patients must include both the paired parotid and submandibular glands. High doses required to eradicate the cancer may result in a permanently dry mouth. The irradiation of one gland is not nearly as debilitating as the irradiation both sides, and most patients do not suffer from dry mouth.

Scientists are conducting laboratory research to find ways to prevent/counter xerostomia, and have developed some agents that ameliorate dry mouth, but a lot of work still needs to be done to achieve a breakthrough in the fight against xerostomia. Currently available agents include saliva substitutes, and drugs such as pilocarpine or Salagen (it stimulates the surviving salivary cells to secrete more) and amifostine (Ethyol). Other strategies include 3-dimensional treatment planning to protect as much of the salivary glands from radiation as safely possible. New experimental strategies include submandibular gland transplantation, and gene therapy. The latter requires a better understanding of xerostomia at a fundamental molecular and genetic level, which has been aided by the human genome project.

Normal saliva protects dental health, therefore another result of xerostomia is tooth decay and gum disease, that can even lead to necrosis of the mandible (death of a part of the jawbone). Therefore, a thorough dental evaluation is mandatory before radiation therapy to the head and neck to restore teeth that are salvageable and to remove teeth that are unsalvageable. The use of fluoride during and after radiation therapy is of utmost importance. Good oral and dental hygiene goes a long way in lessening the complications of irradiation for head and neck cancer.

Osteoradionecrosis is the necrosis of the jawbone, which fortunately is rare especially with good dental hygiene and proper treatment planning. Poor dental care or careless extraction of teeth can contribute to the development of this serious complication. Proper technique and the use of antibiotics can minimize the risk. Some experts believe that hyperbaric oxygen treatments (oxygen under high pressure) may be helpful in preventing osteoradionecrosis and/or promoting healing.

Dry eyes (xerophthalmia) can result from irradiation of the lacrimal (tears producing) glands, which are located in the upper outer part of the eye sockets. They may be affected during treatment for cancers close to or involving the eyes or sinuses, which are

SIDE EFFECTS continued on page 3

SIDE EFFECTS continued from page 2

much less common than mouth or throat cancers. Proper 3-dimensional treatment planning and tear substitutes must be used to prevent dry eyes, because the complications may include corneal ulcers and even blindness.

Hair loss occurs in the area of radiation treatment. Sometimes that part of the skin may never grow hair again.

Laryngeal edema (swelling of the voice box) is not uncommon when the larynx is irradiated. Fortunately, necrosis is uncommon. Edema is of particular concern when surgery has removed part of the larynx, or when the larynx is heavily damaged by the cancer. In the worst case, the larynx may need to be removed.

Hypothyroidism is a decrease in the functioning of the thyroid gland. The thyroid gland is located in the lower part of the neck, just above the collar bones, and secretes the thyroid hormone. Lack of thyroid hormone can lead to a slowing down of the metabolism, manifested as listless-

ness, fatigue, feeling excessively cold, etc. It is usually seen 6-12 months after radiation to the lower part of the neck. Hypothyroidism is particularly a problem if part of the thyroid gland is removed during surgery, as in surgery for cancer of the larynx; but it can also develop without any surgery, at all. It is advisable to have the thyroid checked every year after radiation to the lower neck because untreated hypothyroidism can impair the quality of life. The treatment is usually very straightforward and basically consists of taking one pill a day.

Delayed wound healing may result after radiation. However, this is now rare with improvements in surgical techniques ensuring adequate blood supply to flaps, etc. after surgery. It is of particular concern in people with poor blood supply as a result of smoking, diabetes and other vascular diseases.

Stiffness in the muscles that open and close the mouth can sometimes make it difficult to eat normally. This is known as trismus. Various exercises and/or a Therabite appa-

ratus can be very useful in preventing this condition. Another possible side effect is stiffening or narrowing of the food pipe making it difficult to swallow. Treatment may require stretching the food pipe under anesthesia or, if that doesn't work, the placement of a tube directly into the stomach (gastrostomy) for feeding.

Risk of secondary cancers caused by radiation is small but real, especially for children and young adults. Such cancers may appear years or decades after irradiation. With proper monitoring they may be detected early and cured by appropriate treatment. A much, bigger risk is new cancers caused by the same agent (e.g. tobacco) that caused the first cancer.

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FIRST HEAD AND NECK CANCER TELECONFERENCE

On October 12, 2000, Cancer Care, Inc and SPOHNC presented "Medical Update on Head and Neck Cancer: The State of the Art," a free Teleconference Workshop made possible by an educational grant from ALZA Pharmaceuticals.

Michael Lydiatt, MD, Associate Professor, Head and Neck Surgical Oncology, Dept. of Otolaryngology, Head and Neck Surgery, University of Nebraska Medical Center and the Nebraska Methodist Hospital, began the teleconference with a broad overview of head and neck cancer from risk factors to diagnosis to treatment. He stated that cancers of the head and neck are potentially very curable, especially those found at early stages. He stressed the importance of recognizing signs and symptoms associated with head and neck cancer such as persistent and/or worsening hoarseness; increased noisy breathing or progressive difficulty in breathing; chronic sore throat; persistent or worsening mouth sore; change in quality of

speech; difficulty swallowing; decreased tongue mobility; persistent nose bleeds, especially if on one side only; hearing loss in one ear, coupled with a feeling of fullness or ear pain; change in vision; asymmetry of the face; numbness or tingling especially if progressive; or a lump found anywhere in the mouth, throat, neck or cheek, whether painful or not. If any of these symptoms is present, a complete medical evaluation is important.

This medical evaluation may include a fine needle biopsy, a CT scan, MRI, ultrasound or dental X-rays (panorex). If a cancerous lesion is found, it is then staged using the TNM classification, (T=primary tumor, N= lymph node metastasis, M=metastases elsewhere in the body). For the majority of people, at the time of diagnosis, the cancer is localized and has not spread elsewhere. Cancers are then categorized as stage I, II, III or IV.

Treatment includes surgical therapy and/or radiation therapy. They are used

alone or in combination with chemotherapy depending on the stage of the cancer.

Dr. Lydiatt then spoke about the surgery involved in the removal of cancerous tissue as well as reconstruction, and how all options of treatment are discussed prior to surgery, with decisions based on the benefits and side effects of each. He also stressed the importance of addressing the emotional aspects of diagnosis and developing coping strategies. Treatment of pain was also discussed. Dr. Lydiatt recently published his book, *Cancers of the Mouth and Throat: A Patient's Guide to Treatment* which is available in bookstores.

Dr. Oscar Streeter, Jr., Division Chief in the Department of Radiation at the University of Southern California, Kenneth Norris Hospital, Los Angeles, discussed radiation therapy and its important role as part of the multidisciplinary approach in the treatment of head and neck cancer. He stated that treatment involves careful planning to optimize dose distribution for

See TELECONFERENCE on page 7

Nutritional Growth for the Head and Neck Cancer Survivors

by Jayne Wiprovnick, MS, RD, CDN

According to the American Cancer Society (ACS) and the American Institute for Cancer Research (AICR), 30 to 40% of all cancers can be prevented by diet and lifestyle changes.^{1,2} By reducing fat intake (to 20 % of calories), increasing fiber intake (to 25 grams per day), decreasing alcohol intake, maintaining a healthy body weight, and increasing consumption of fruits and vegetables a person can significantly reduce his/her risk of many cancers.

Saturated fat intake can be decreased by eating less meat, using nonfat or low-fat milk and dairy products and low-fat cooking methods. Eating fish high in omega-3 fatty acids such as salmon, mackerel and halibut, may enhance your immune system, reduce the risk of heart disease and other chronic conditions such as arthritis. Fiber intake can be increased by eating whole grains such as barley, brown rice, oats, bulgur, buckwheat, amaranth, quinoa and millet.

The ACS guidelines on diet, nutrition, and cancer prevention, recommends that head and neck cancer patients consume at least five servings of fruits and vegetables a day (a minimum of two fruits and three vegetables). The AICR's report on food and nutrition, and cancer prevention, reports that by eating the recommended amounts of fruits and vegetables each day (5 to 9 servings), cancer rates could drop by 20%.^{1,2} The AICR recommends fruits and vegetables as follows:

- * Carotenoid-rich vegetables and fruits (bright yellow, orange fruits and vegetables, leafy greens)
- * Flavonoid-rich fruits and vegetables (bright red and purple colored fruits and vegetables).
- * Cruciferous vegetables (broccoli, cabbage, cauliflower).
- * Citrus fruits (oranges, pineapples, tangerines).
- * Allium vegetables (garlic and onion).
- * Leafy green vegetables (spinach, kale, greens).

Survivors should also avoid tobacco in any form and avoid or decrease alcohol to one to two servings per day (one serving per day for women and two servings per day for men).² Memorial Sloan Kettering Cancer Center recommends avoiding alcohol completely or decreasing consumption to one to four servings of alcoholic beverages per week.

Evidence from a study done by Grupta et al in 1999,⁷ has pointed to some specific nutrients which seem to be protective. These include beta-carotene, Vitamin C, iron, copper and zinc. But we must not rely on vitamin and mineral supplements to replace fruits and vegetables, since any single nutrient in large amounts may produce adverse effects. Other plant foods are also known to be protective against cancer (nuts, seeds, whole grains, legumes, and soy. Consult your Dietitian/Nutritionist about the consumption of soy if you have a history of breast or prostate cancer.

Why do people who consume more fruits and vegetables have lower cancer rates? What is the power of plant foods? Fruits and vegetables are complex foods that contain hundreds of thousands of beneficial compounds and nutrients. These substances include vitamins, minerals, fiber, phytochemicals and antioxidants. It is

the *combination* of these substances together that reduces cancer risk.

Phytochemicals are non-nutrient compounds found in plant foods that have anticancer properties. In plants, phytochemicals protect against insects. Our bodies use them as disease-fighting arsenals. Phytochemicals also act as antioxidants; they have hormone-like properties, and activate enzymes that protect against cell damage and help the body get rid of carcinogens in our environment.

Phytochemicals are found in fruits, vegetables, whole grains, soy, legumes, nuts, seeds, and herbs and spices. Consuming a variety of colorful fruits and vegetables daily can have a protective affect against cancer.

Dietary antioxidants, found in plant foods such as fruits and vegetables may help protect the cells in our bodies from damage and hence from becoming cancerous. They work by stopping the production of free radicals (substances formed by air pollution, smoke, pesticides, drugs and foods that may form cancer-producing chemicals called carcinogens).

Examples of dietary antioxidants include Vitamin C, Vitamin E, selenium, and the carotenoids. It is important to note that excessive intakes of the fat-soluble vitamins such as Vitamins A and E, as well as the mineral selenium are toxic in excessive amounts. Also water-soluble vitamins such as Vitamin C may cause problems such as kidney stones if taken in large doses. But as mentioned earlier, we must eat the whole food (fruits and vegetables) in order to obtain the full benefits of these dietary antioxidants that act synergistically with other compounds as cancer-fighters.

Because of treatment side effects and a decreased sense of taste and smell, head and neck cancer patients are often faced with the challenge of eating healthy within the restrictions of a modified consistency diet.

Healthy Eating on a Pureed or Mechanical Soft Diet

Fruits

- Make fruit smoothies with freshly made fruit juices and an array of colorful fruits. Add them to commercial liquid supplements.
- Add nectars and pureed fruits such as strawberries to milkshakes and or mix with solid foods such as oatmeal, and chicken dishes.
- Eat ripe soft fresh peeled fruits such as cantaloupe, avocados and papaya.
- Luscious yogurt applesauce : Blend applesauce with cinnamon and vanilla yogurt.

Vegetables

- To retain nutrients start with fresh or frozen vegetables, cook in a steamer until soft and blend until smooth (add water as needed).

- Save nutrient dense liquid and reuse when pureeing vegetables or add to soups, and/or in the cooking of meat, poultry, or fish.
- Add pureed vegetables to casseroles and souffles.
- Gourmet vegetable au gratin: cook assorted fresh or frozen vegetables well; puree as desired; add breadcrumbs, parmesan cheese, drizzle with olive oil and bake.

Spices and herbs

- Buy fresh parsley, dill, and other bland herbs. Dilute, wash, and dry on paper towels and place in a large ziploc bag and freeze. Take out small amounts as needed (refreeze immediately) and add to any dish.
- Add cinnamon and honey to butternut squash to enhance flavor.
- Add basil or other herbs to low-fat cottage cheese and ricotta cheese and blend with a small amount of oil and enjoy.
- If mucositis not present, you may wish to experiment with adding tumeric, garlic, onion and nutmeg to different dishes since these compounds in particular have been well studied for their beneficial properties.
- Herbed cream spinach: blend frozen drained spinach with skim milk or low-fat milk, olive oil, basil and nutmeg.

Beans

- Start with fresh beans: soak overnight and cook until well-done. (leave some liquid). Add vegetables such as kale and squash, herbs and blend.
- Cook dried beans, peas, or lentils (or canned low sodium beans) until soft; add to soups, casseroles, vegetables, pastas and whole grains.
- Tangy hummus- blend soft chickpeas with olive or canola oil, garlic, and other spices and herbs as desired.

Nuts and Seeds

- Purchase nut butters such as cashew or pecan butter, or nut milks such as almond milk in health food stores.
- Try smooth peanut butter in milkshakes or spread on soft bread with honey (you can soak it in milk to make it even softer).
- Homemade seed and nut butters: Grind seeds and nuts with canola oil in a small food processor and add to your favorite dishes.

Tips to boost calorie intake of your foods

- Choose cream soup rather than broth.
- Add sauces or gravies to foods.
- Eat puddings, ice creams or custards instead of jello.
- Add nonfat dried milk powder to milk, commercial nutritional supplements, and soups to fortify with protein.
- Add extra healthy vegetable oils, such as canola or olive oils, to your foods to increase calories.

Starter Kit (essentials for pureed and mechanical soft diets)

- Small baby food grinder

- Food processor or blender
- Ice pack
- Insulated lunch pack
- Thermos
- Steamer
- Slow cooker

Eating Out

- Pack a thermos with homemade soups, milkshakes, pureed dinners or hot cereals.
- Bring canned commercial nutritional supplements and use as a “backup” in case.
- What to eat: soups such as egg drop, bisques (or ask them to blenderize and strain the house soup), soft fleshy fish, such as fillet of sole, flounder or salmon. Also poultry, souffles, macaroni and cheese, creamed spinach, mashed potatoes, frozen yogurt, custards, jello, fruit and vegetable juices. Order sides of broth, gravy or milk to moisten foods.
- Call ahead to restaurant or catering hall and speak to a manager or a chef. Explain that you require pureed foods and see if they can accommodate you.
- Bring a small baby food grinder or a small food processor (if going to a hotel or on vacation).
- Bring your own pre-portioned homemade frozen foods in microwave safe containers.
- Eat at a restaurant that offers a variety of foods and will cater to people on special diets (restaurants that are recommended by friends, or by trial and error).

Finding new and acceptable ways of eating healthy is essential to the well being of head and neck cancer patients and can lead to increased quality of life. An improved way of eating and lifestyle will help strengthen your bodies’ disease-fighting ability as well as extend your vitality and happiness.

Editor’s Note: Jayne Wiprovnick, MS, RD, CDN is a Clinical Dietitian/Nutritionist in the Department of Food and Nutrition Services at Memorial Sloan-Kettering Cancer Center in New York City.

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COMMENT: For information about commercially prepared pureed foods contact the Cliffdale Farms Company, 1-800-887-1553.

A TIME FOR SHARING

A HAPPY ENDING AFTER A DIFFICULT JOURNEY

A little more than a year ago, on September 9, 2000, the future looked grim for our family, as it was on that day that we received the news that my wife, Mona, had poorly differentiated squamous cell carcinoma of the right tonsil. This was after nine months of sore throats, an enlarged tonsil, poor response to antibiotics and finally a new specialist, who decided to perform a tonsillectomy despite the fact that no lymph nodes were palpable in the neck and a pre-operative MRI of the neck showed no invasion of nearby structures or lymph nodes.

The diagnosis was indeed a shock to our family. Although I am a physician, I am a neurologist and not familiar with this type of cancer. However, our family soon learned that this type of cancer is rare and that different modalities of treatment are available. We also learned that the best treatment for this rare disease may be at large cancer centers, as they may have the most experience, the best facilities and the greatest accessibility to experimental drugs. Consequently, we decided to consult the physicians at the University of Texas MD Anderson Cancer Center in Houston. We made appointments with the chief of head and neck surgery, the dental oncologist and the radiation oncologist, who agreed to see my wife on the same day. After consultations, they confirmed the original diagnosis and determined that she was at stage II, which meant she would be treated with radiation therapy.

At that time, we did not know what to expect and never suspected that the next three months were going to be a test of endurance, patience and fortitude. The dental oncologist recommended the extraction of all her perfectly healthy molars to avoid radiation damage and osteoradionecrosis of the jawbones.

As for the treatments themselves, Mona was fortunate to qualify for a study being conducted with subcutaneous Ethiol (amifostine). This drug was given to her before each treatment to protect the salivary glands, and decrease the pain and ulceration in the throat produced by the irradiation. The first week of treatment went by fine, with minimal side effects. We thought that all the warnings that the doctors and the nurses had given us about possible side effects were somewhat exagger-

ated. However, during the second week the nausea set in and the fatigue and apathy began in a relentless accelerated manner. The drug that was protecting her was the same drug that was making her very sick. The upside was that she had the weekends to rest and gain strength for the next five days of treatments. However, by the eighth week of treatment, the nausea and vomiting were nearly impossible to handle. Mona was becoming very dehydrated and weak from the inability to keep food/nutrients down. Not even Zofran helped her to control the nausea and she would end up in the emergency room at least once a week from dehydration.

At the advice of the radiation team, we agreed that Mona should get a gastrostomy or feeding tube put in her stomach. While we were fearful of the tube and the procedure, we felt there was no choice, as she needed to gain and maintain her strength to not only finish the treatments but also to fully recover afterwards. To our surprise, the procedure was painless, rapid and very effective. A small tube was inserted through the nose and guided with fluoroscopy (X-ray) to reach the stomach. Air was then pumped to dilate the stomach and another small tube was placed through the abdominal wall and left in place for the feeding; hence the name percutaneous fluoroscopic gastrostomy (PFG). A dietitian taught us how to use the PFG, to purchase food, to set up a schedule, etc. It was amazing to see the difference the tube made for Mona. She no longer felt the pressure to eat and drink by mouth and her weight was maintained and the dehydration disappeared.

At the end of November and after forty radiation treatments, a PFG in place, a small amount of saliva but no throat pain, we drove back home to New Orleans. We began feeling like we were starting to wake up from our worse nightmare. However, not everything was back to normal. Eating came back slowly, first with liquids then with soft foods and finally with solids. The PFG tube was painlessly removed a month after the treatment was over. The taste of food that had almost disappeared or changed for certain foods came back completely and the saliva has almost completely (90%) returned. Mona does not need to

drink water except when she talks too much or when she becomes dehydrated in the New Orleans heat. Recently, she was seen by her dentist and periodontist and was told that she does not have tooth decay or gum disease. Of course she has followed "to the teeth" the advice her dentists have given her about brushing her teeth with baking soda and using fluoride for ten minutes before bedtime. Mona is doing so well that she recently returned from helping one of our daughters with the birth of her second child, our 6th grandchild.

A year after the diagnosis of cancer was made the future could not be more promising. Mona is back to normal with no throat pain, with saliva, eating just about everything and feeling great. We know we still have to wait some time before we can truly say she is cured, but her doctors and our family are very optimistic. As a family, we are closer than ever and we appreciate what we have including our loyal friends and relatives. We thank our New Orleans dentists, the doctors and all the medical personnel of the Anderson Cancer Center for the excellent medical care and their compassion and patience with us. Finally Mona thanks God for guiding us so successfully throughout this ordeal.

Looking back we would like to reflect on some of the things that patients with similar types of tumors need to know:

- Good medical insurance is very important if you want to choose the best doctors and facilities.
- A persistent sore throat needs to be checked and if there are any unanswered questions by your doctor, a second opinion is very important. The earlier the diagnosis the better the prognosis.
- Find a place where the oncologists deal with this rare type of tumor frequently and find out about new experimental drugs.
- The use of amifostine to protect the salivary glands and prevent pain and ulcerations is vital. Keeping the saliva is also important for the preservation of the teeth.
- Do not wait too long to decide on getting the gastrostomy tube.
- Remember that going through the treatment is difficult but the rewards at the end can be enormous.

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New Orleans

TELECONFERENCE from page 3

maximum probability of tumor control without chronic complications. Some of the side effects of radiation therapy were also discussed. These included mucositis, skin reactions, dry mouth, changes in taste perception (no taste, metallic taste or horrible taste), redness, gum infections, dental caries, inability to open mouth (trismus) and osteoradionecrosis (bone death).

Dr. Streeter stressed that treating the side effects of radiation therapy starts before treatment and that the dentist should be included in the treatment plan. If the patient's dentist is not familiar with treatment protocols, a dental oncologist should be contacted. He then mentioned a relatively new quality of life improving drug that has recently come on the market. Amifostine (Ethyol) is a radioprotective agent that protects salivary gland function. Dr. Streeter also noted that although not an officially approved indication, Ethyol seems to ease the effects of mucositis and reduces redness and pain. With less pain, patients are able to maintain better nutrition. Ethyol must be given via IV just before treatment begins. However, the clinical experience of Dr. Streeter and other doctors has led him to conclude that Ethyol can be given off-label every other day. A side effect of Ethyol can be a drop in blood pressure. Patients must be well hydrated and monitored while in the clinic. The need for extra attention is making it difficult for some clinics to offer the drug to head and neck cancer patients. Regardless, Dr. Streeter feels strongly that if half of the salivary gland found along the ear will be in the radiation field, Ethyol should be used.

David G. Pfister, MD, Attending Physician, Division of Solid Tumor Oncology at Memorial Sloan-Kettering Cancer Center in New York City, spoke of the role of the medical oncologist, which is to oversee the delivery of chemotherapy and other drug therapies, and to work with members of a multidisciplinary team to insure that treatment protocols are followed appropriately.

The treatment of head and neck cancer is challenging in that more than one therapy is often involved, especially with Stage III and IV disease. Whereas surgery and radiation are localized, systemic

therapy, such as chemotherapy, involves the administration of drugs, most commonly via a vein, that travel through the bloodstream to distant parts of the body to kill cancerous cells.

Dr. Pfister then spoke of the four areas where systemic therapy is being used in the management of head and neck cancer. The first is the use of chemotherapy with local therapy, especially, radiation. Chemotherapy is used to improve the outcome of such local treatment, and to kill any microscopic cancer cells that may have traveled to distant sites and escaped detection.

The second area utilizes chemotherapy by itself and is used in palliative care. Among the drugs being used are cisplatin, carboplatin, 5-fluorouracil, paclitaxel, docetaxel, methotrexate and gemcitabine. When used for their palliative effects, these drugs may not be completely effective. Experimental studies in development include therapies that block the mechanism that helps tumors use blood vessels to grow; immunotherapies that use antibodies directed against certain receptors on the tumors; injectable therapies injected directly into the cancer; and therapies that block specific proteins needed for tumor growth.

The third area of systemic therapy involves the management of the side-effects of treatment. Specific drugs can be used to prevent nausea and pain, and other side effects of radiation and chemotherapy may be mitigated with the use of Amifostine (Ethyol) and Pilocarpine. The American Society of Clinical Oncology recently conducted an evidence-based review of the various chemoprotectants.

The last area for the use of chemotherapy is the prevention of secondary cancers. This is an investigational area where certain vitamin therapies are of great interest. Accutane (cis-retinoic acid), a medication approved for the treatment of acne, is currently being studied as a drug for preventing secondary cancers.

James J. Sciubba, DMD, PhD, Director of Dental & Oral Medicine at Johns Hopkins Medical Center, in Baltimore, Maryland, was the final speaker of the teleconference and spoke of the relationship between cancer management and the role that the patient must play in his own care. Dr. Sciubba stressed the vital need for day to day oral care. Oral

and head and neck patients have a significant risk of developing second primary cancers not only in the throat, mouth and pharynx but also at distant sites. It is therefore of great importance for the patient to perform daily self-exams and have routinely scheduled follow-ups with the oncologist, surgeon and/or radiation therapist.

Dr. Sciubba focused on the major long-term effects of radiation therapy on the salivary glands. When irradiated, these glands may cease to function. Amifostine, a fairly new and promising drug, helps prevent this loss of function to a significant extent. However, for those individuals who have already been through radiation therapy without the advantage of Amifostine, Pilocarpine may be helpful. Studies have shown that Pilocarpine when used to repetitively stimulate the salivary glands during radiation, show improve salivation post-radiation. Cevimeline (Evoxac), another drug with actions similar to pilocarpine, may also be helpful.

Dr. Sciubba also talked about the deleterious changes in the mouth that may result from loss of saliva. Though largely water, saliva also contains antibodies, enzymes that reduce bacteria in the mouth, buffering agents and mineralizing ions that help maintain tooth integrity. Cancer patients, with their dentist's help, must practice a remineralizing regimen, daily concentrated fluoride application, careful attention to diet and scrupulous oral hygiene. If this strict protocol is not followed, the teeth are susceptible to xerostomia (dryness) induced caries and perhaps abscesses in the jawbone that can lead to osteoradionecrosis (bone death).

The oral cavity is also affected by chemotherapeutic agents such as Cisplatin, 5-Fluorouracil, methotrexate, etc. Severe mucositis may result from these agents impacting on the lining of the oral cavity. Reducing this side-effect is extremely difficult. However, Dr. Sciubba suggested that through scrupulous oral health care, reducing the bacterial burdens in the mouth, using antibacterial mouthwashes such as chlorhexidine without alcohol, the side-effects of chemotherapy may be minimized.

Editor's Note: To listen to the entire Head and Neck Cancer Teleconference, please visit our web site at www.sphncc.org.

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