

SIDE EFFECTS OF CHEMOTHERAPY

Dealing with the side effects of chemotherapy has always been a major concern. Chemotherapy side effects can be debilitating and can make life very unpleasant.

The following are the common side effect observed in my practice.

1. **SORE MOUTH**

Many chemotherapy drugs can inflame the lining of the area of the mouth as well as the throat. At times ulcerations are seen other than just soreness of the mouth. Radiations delivered to the head and neck can irritate the lining and cause sores too. Chemotherapy and radiation to the salivary glands can make the mouth very dry thus making the sores more painful. Fungal infection like monilia can also cause soreness. A good oral hygiene has to be maintained in order to avoid mucositis.

A good oral hygiene includes daily brushing and flossing to reduce the plaque. Any dental work like cleaning, tooth extraction filling of the cavities should be done at least 2 weeks in advance of the chemotherapy so as to give enough time for the mouth to heal. Ill fitting dentures should be fixed or replaced. A blood count should be taken before any dental work in order to check the WBC and Platelet counts. Low counts of these cells may lead to infection and bleeding respectively.

Use a soft bristle toothbrush. Also if brushing by toothpaste is painful use a cotton swab.

Mouth infections are dangerous and one should look out for any fungal growth in the mouth, which should be promptly treated.

Nutrition- A high calorie, high protein diet which can include scramble egg, custard, milkshakes, gelatins, macaroni and cheese will help the sore mouth or tongue heal faster. Drinking lots of water will also hasten the healing process. Following should be avoided till the mouth sores heals

- Foodstuffs of extreme temperatures.
- Citrus fruits like lemons, oranges and tomatoes.
- Salty foods, dry crackers, chips, toast and hot, spicy food, which cause burning sensation.
- Alcoholic beverages and tobacco since both irritate the lining of the mouth.

2. LOSS/CHANGE OF TASTE SENSE

Many chemotherapy drugs can change the sense of taste. Sweet things might taste sour and sour things taste sweet. Chewed meat may have a bitter taste because of the release of proteins in the mouth. Sometimes there is continuous metallic taste in the mouth after chemotherapy. To lessen the taste effects following things can be tried.

- If food and beverages taste bitter, add sweet food or honey to it.
- Avoid spicy, highly seasoned food instead have bland chicken or fish, eggs and mild cheese or tofu.
- Marinated meat, chicken and fish may taste better. One can make use of soy sauce, sweet and sour sauce, lemon juice, and wine for marinating.

1. NAUSEA AND VOMITING

Nausea and vomiting are both temporary side effects of chemotherapy and radiation. Many chemotherapy drugs and drug combination have the potential to causing nausea and vomiting. Getting three or four drugs at a time can make the reaction even worse. The dosage and the number of cycles also matter. Females, young people, previous history of motion sickness or morning sickness in pregnancy can increase the risk of nausea and vomiting during chemotherapy.

Some patients suffer from ANV i.e., Anticipatory nausea and vomiting wherein the patient starts getting nausea and vomiting not only after the chemotherapy but also before the therapy as a result of conditioned reflex. A person's anxiety state and how he responds to stress and disease are all-important factors in setting up this psychological pattern.

Drugs like Cisplatin, doxorubicin, methotrexate, cyclophosphamide have highest potential to cause nausea and vomiting. Drugs like 5- Fluorouracil, hydroxyurea, etoposide, chlorambucil rarely cause nausea and vomiting. Avoid eating hot, spicy food or other dishes that might upset the stomach. Eating slowly can avoid gas development and heartburn. Try to avoid odour of the cooking food that may bring about nausea. The time of the day when the treatment is given can sometimes make a difference.

4. LOSS OF APPETITE

It is one of the most common side effects of chemotherapy but it may also result from radiation therapy, stress and anxiety, depression and lastly from cancer itself. It is usually a temporary side effect lasting for 3 to 8 days.

- Stimulate the appetite by exercising for 5 or 10 min about a half-hour before the meal.
- Eat frequent, small meals and have snacks between meals that appeal to the senses.
- Add extra protein in the diet. Fortify milk by adding one cup of nonfat dry milk to each liter of whole milk. Use of nutritional supplements can be helpful.

5. **CONSTIPATION**

It means infrequent movements as well as collection of dry hard stools. If it persists it may lead to stool 'impaction' a very large hard stool with difficulty in passing. Constipation may also lead to bloated feeling leading to decrease in the appetite. The discomfort and pressure of an impaction can especially aggravate patients with heart, respiratory, or gastrointestinal diseases.

CAUSES: Lack of exercise, emotional stress, and lack of high-fiber or bulk-forming foods in your diet. Chemotherapy drugs such as vincristine, vinorelbine, and vinblastine are often constipating. Also morphine and codeine, gastrointestinal anti-spasmodics, anti-depressants, diuretics, tranquillizers, sleeping pills, and calcium and aluminum based antacids.

TIPS TO PREVENT CONSTIPATION:

- Eat high-fiber and bulky food like fresh fruits and vegetables, dried fruit, whole-grain breads and cereals, and bran. Raw fruits and vegetables, including lettuce, when the WBC count is lower than 1,800.
- Drink plenty of fluids and avoid dehydration.
- Add bran to the diet gradually. Start with 2 teaspoons per day and gradually work up to 4 to 6 teaspoons per day. Sprinkle bran on cereal or add it to meat loaf, stews, pancakes, baked foods, and other dishes.
- Avoid refined foods such as white bread, starchy desserts, and candy. Also avoid chocolate, cheese and eggs since these can be constipating.
- Prunes contain natural laxative as well as fiber. Warmed prune juice and stewed prunes will be the most effective.
- Eat large breakfast with some type of hot beverage, tea, hot lemon water, or decaffeinated coffee.

TREATING STOOL IMPACTION: It develops when all of the stool doesn't pass through the colon or the rectum. The stool gradually gets harder and harder as water is absorbed by the bowel. Then the stool gets larger and larger. If it is not passed it may cause partial obstruction of the bowel obstruction or cause irritation of the rectum or anus. Defecation may cause small fissures or tear in the anus. The treatment includes getting fluid into the bowels to soften the

stool for easy defecation or removal. Sometimes enema and manual extraction of the stool by a physician is required.

6. **DIARRHOEA**

It may be because chemotherapy, radiation therapy to the lower abdomen, malabsorption because of surgery to the bowel, or a bowel inflammation or infection. Some broad-spectrum antibiotics can cause diarrhea, and it might develop because of intolerance to milk.

Treatment- limit the diet to mostly liquids like fruit drink, ginger ale, water and weak tea. Hot and cold liquid foods tend to increase intestinal muscle contractions and make the diarrhoea worse, so they should be warm or at room temperature. Allow carbonated drinks to lose their fizz- stir with a spoon and drink them.

Gradually add foods low in roughage and bulk- steamed rice, bananas, mashed potatoes, dry toast and crackers. As the diarrhoea decreases low-residue diet should be included. Frequent small meals will be easier on the digestive tract.

AVOID

- Fatty greasy and spicy food.
- Coffee, regular teas, and carbonated beverages containing caffeine.
- Citrus fruits
- Food high in bulk and fiber, such as bran, whole grains cereals and breads, popcorn, nuts, and raw vegetables and fruits except apples.

LACTOSE INTOLERANCE: A lactase deficiency can sometimes develop after intestinal surgery, radiation therapy to the lower abdomen, or chemotherapy. One may experience bloating, cramps in abdomen with diarrhoea.

Avoid: milk and milk products such as ice cream, cottage cheese and cheese, butter and sour cream.

Consume lactose free, non-fat milk solids. One can use buttermilk or yogurt because the lactose in them is already been processed and is digested.

7. **LYMPHEDEMA**

It is a swelling caused by the build up of lymph in the soft tissues- develops because of some blockage of lymphatic system. Mostly lymphedema in cancer patients results from scarring after the surgical removal of the lymph nodes or after the radiation. It usually involves areas next to large collections of lymph nodes in the axilla, pelvic region and

groins. Swelling in the legs and arm develop on obstruction of the lymphatics.

People with chronic lymphedema are more susceptible to infections and local injuries, which results in more scarring and additional lymphedema. Cellulitis often develops after minor cuts or abrasions. Lymphedema can be aggravated by poor protein intake that may result from loss of appetite, nausea and vomiting from chemotherapy. Decrease in the albumin of the blood also leads to leakage in to the tissues, which leads to additional arm and leg swelling.

It more commonly develops in patients-

1. Of breast cancer who have been treated after surgery with radiotherapy to the regional lymph nodes areas.

2. Malignant melanomas with lymph node dissection and/or radiation involving an extremity.

3. Prostate cancer or gynaecologic cancers after surgery, with or without surgery.

4. Testicular cancer with lymph node dissection, with or without radiation.

5. Patients who have had several courses of radiation to axilla, shoulder, or groin, especially if surgery have been performed there to treat recurrent cancer.

PREVENTING AND CONTROLLING LYMPHEDEMA:

- Whenever possible keep the affected limb elevated.
- Clean and lubricate the skin daily with oil or skin cream.
- Try and avoid any injuries or infection in the affected limb, also avoid extreme hot and cold application on the swollen limb.
- Don't use blood pressure cuffs on the affected limbs. Wear clothes of loose fitting to avoid constrictive pressure.
- Watch for the signs of infection-redness, pain, heat, swelling, fever .

8. HAIR LOSS

Alopecia is the most visible side effects of chemotherapy and hence most upsetting. Chemotherapy drugs have an especially destructive effect on rapidly growing cells like hair and the cells lining your mouth and gastrointestinal tract. Drugs like Cytosan, Adriamycin, and vincristine cause hair loss. One may not lose all the hair, it may just become thin or patchy. Hair loss may happen in the first cycle, but it may not happen until the second cycle. Patient may develop some scalp irritation, dermatitis, or scaling. The hair may almost always come back, it may take around 3 to 6 months. The new hair might have a slightly different texture, colour and

curl. Hair loss due to radiation to skull or brain may cause total and permanent hair loss.

9. ALLERGIC AND DERMATOLOGIC REACTIONS

Chemotherapy can cause several skin reactions:

- Vinorelbine may cause burning along the vein during injection. In some cases, blisters along the vein have been reported.
- Patients receiving tretinoin can experience redness, dryness, itching, and increased sensitivity to sunlight and hence should take extra precaution.
- 'Hand-foot' syndrome is a painful, redness, irritation and fissuration of the hands and soles seen with fluorouracil, capecitabine, and liposomal doxorubicin. Moisturize the affected parts.

10. EFFECTS ON FERTILITY:

Alterations in the reproductive function are now recognized as a common complication of chemotherapy. Women may experience premature gonadal failure, menopause, sterility, and even osteoporosis. Men may have low sperm count and infertility. The major drugs that cause gonadal dysfunction are the alkylating agents such as cyclophosphamide, thiotepa, nitrogen mustard, and chlorambucil. For patients in whom fertility is spared, the outcome of pregnancy has not shown a higher incidence of congenital anomalies, spontaneous abortion or neonatal mortality.

Chemotherapy can be safely given during the second and the third trimester of pregnancy. Methotrexate therapy should be avoided strictly during the 1st trimester. Both cyclophosphamide and doxorubicin can be safely given in any trimester of the pregnancy.

11. EFFECTS ON HEART

Some chemotherapy drugs such as doxorubicin, daunorubicin, epirubicin and idarubicin, or radiation therapy to the chest can cause adverse reaction to the heart. Cardiac congestion, decrease exercise tolerance are generally seen with prolonged treatment. The physician should obtain ejection fraction and echocardiography before and also during the treatment of chemotherapy. In case of damage to the heart the drugs can be stopped or modified.