Study of side effects associated with chemotherapy in cancer patients in Al Hilla city, Iraq.

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Introduction

Cancer is a disease in which some of the body's cells grow uncontrollably and may spread to other parts of the body [1]. Cancer can start almost anywhere in the human body [1]. Under normal conditions, human cells grow and multiply through cell division to form new cells as the body needs them [1]. When cells grow old or become damaged, they die, and new cells take their place [1]. Sometimes this orderly process breaks down, and abnormal or damaged cells grow and multiply when they shouldn't [1]. These cells may form tumors that are lumps of tissue [1]. Tumors can be cancerous or not cancerous i.e., benign [1].

Cancer types:

There are assumed to be more than 100 types of cancer [1]. Types of cancer are usually named for the organs or tissues where the cancers form e.g., lung cancer starts in the lung, and brain cancer starts in the brain [1].

Cancer treatment:

Cancer treatment is to use surgery, radiation, medications and other therapies to cure a cancer, shrink a cancer or stop the progression of a cancer [1]. Many cancer treatments exist depending on the underlying situation, you may receive one treatment or you may receive a combination of treatments [1].

Cancer treatment options may be:

Primary treatment: The goal of a primary treatment is to completely remove the cancer from body or kill all the cancer cells [1]. Any cancer treatment can be used as a primary treatment, but the most common primary cancer treatment for the most common types of cancer is surgery. If cancer cells is particularly sensitive to radiation therapy or chemotherapy, then they are regarded as primary treatment [1].

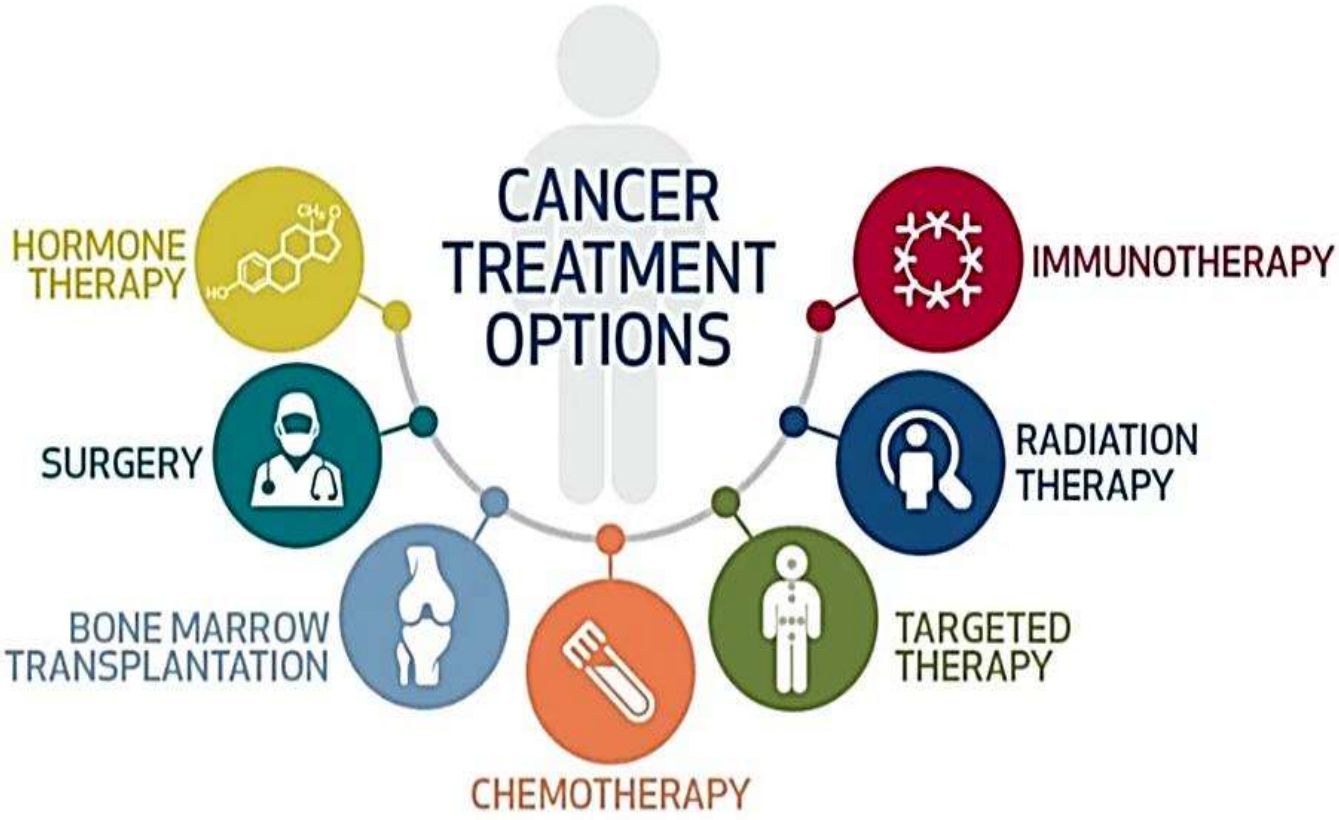
Adjuvant treatment: The goal of adjuvant therapy is to kill any cancer cells that may remain after primary treatment in order to reduce the chance that the cancer will recur [1]. Any cancer treatment can be used as an adjuvant therapy [1]. Common adjuvant therapies include chemotherapy, radiation therapy and hormone therapy [1].

Neoadjuvant therapy is similar, but treatments are used before the primary treatment in order to make the primary treatment easier or more effective.

Palliative treatment: Palliative treatments may help relieve side effects of treatment or signs and symptoms caused by cancer itself. Surgery, radiation, chemotherapy and hormone therapy can all be used to relieve symptoms [1]. Palliative treatment can be used at the same time as other treatments intended to cure your cancer [1].

Cancer treatment options:

Figure 1: options of cancer treatment.



Surgery : using surgery for remove the cancer or as much of the cancer as possible [1].

Radiation therapy: radiation therapy uses high-powered energy beams, such as X-rays or protons, to kill cancer cells [1]. Radiation treatment can come from a machine outside your body i.e., external beam radiation, or it can be placed inside the body i.e., brachytherapy.

Bone marrow transplant: bone marrow is the material inside bones that makes blood cells from blood stem cells [1]. A bone marrow transplant i.e., stem cell transplant, can use own bone marrow stem cells or from a donor. A bone marrow transplant allows health care provider to use higher doses of chemotherapy to treat cancer. It may also be used to replace diseased bone marrow [1].

Immunotherapy: immunotherapy i.e., biological therapy, uses body's immune system to fight cancer [1]. Cancer can survive unchecked in body because your immune system doesn't recognize it as an intruder [1]. Immunotherapy can help immune system "see" the cancer and attack it [1].

Hormone therapy: some types of cancer are fueled by body's hormones e.g., breast cancer and prostate cancer [1]. Removing those hormones from the body or blocking their effects may cause the cancer cells to stop growing [1].

Targeted drug therapy: targeted drug treirregular periods — this can include temporary cessation (usually resume after medication is completed) or permanent cessation of menstrual periods depending on your age and other factors [7].

Aim of study

In the current study, the primary objective was to estimate the most common side effects in cancer patients undergoing chemotherapy in Babylon Governorate, Iraq.

A secondary objective was to evaluate possible relationships of side effects with the patient's age and gender.

Materials & Methods

- The study was a retrospective, survey-based, and cross-sectional study Survey and data collection.
- The study included a paper questionnaire targeting women with cancer who are undergoing chemotherapy and attending the oncology center at Imam Al-Sadiq Teaching Hospital and Marjan Medical City Hospital in Al-Hilla, Babyl, Iraq.
- Later, an online-based questionnaire was shared in order to include the largest possible number of cases.

- The study lasted for five months, from 6 December, 2022 to 30 April, 2023.

Results and discussion

Cancer cells tend to grow fast, and chemo drugs kill fast-growing cells. But because these drugs travel throughout the body, they can affect normal, healthy cells that are fast-growing, too. Damage to healthy cells causes side effects. Side effects are not always as bad as you might expect, but it's normal to worry about this part of cancer treatment.The normal cells most likely to be damaged by chemo are:

● Blood-forming cells in the bone marrow

● Hair follicles

● Cells in the mouth, digestive tract, and reproductive system

Some chemo drugs can damage cells in the heart, kidneys, bladder, lungs, and nervous system. Sometimes, you can take medicines with the chemo to help protect your body's normal cells. There are also treatments to help relieve side effects.

Doctors try to give chemo at levels high enough to treat cancer, while keeping side effects at a minimum. They also try to avoid using multiple drugs that have similar side effects.

What do I need to know about side effects?

Every person doesn't get every side effect, and some people get few, if any. The severity of side effects (how bad they are) varies greatly from person to person. Be sure to talk to your cancer care team about which side effects are most common with your chemo, how long they might last, how bad they might be, and when you should call the doctor's office about them.

Your doctor may give you medicines to help prevent certain side effects before they happen.Some chemo drugs cause long-term side effects, like heart or nerve damage or fertility problems. Still, many people have no long-term problems from chemo. Ask your doctor if the chemo drugs you're getting have long-term effects.While side effects can be unpleasant, they must be weighed against the need to kill the cancer cells. Be sure to talk to your cancer care team about which side effects are most common with your chemo, how long they might last, how bad they might be, and when you should call the doctor's office aboutthem. How long do side effects last?

Many side effects go away fairly quickly, but some might take months or even years to go away completely. These are called late effects. Sometimes the side effects can last a

lifetime, such as when chemo causes long-term damage to the heart, lungs, kidneys, or reproductive organs. Certain types of chemo sometimes cause delayed effects, such as a second cancer3 that may show up many years later.

People often become discouraged about how long their treatment lasts or the side effects they have. If you feel this way, talk to your cancer care team. You may be able to change your medicine or treatment schedule. They also may be able to suggest ways to reduce any pain and discomfort you have. What are common side effects of chemo? Most people worry about whether they'll have side effects from chemo, and, if so, what they'll be like. Here are some of the more common side effects caused by chemotherapy:

- Fatigue
- Hair loss
- Easy bruising and bleeding
- Infection
- Anemia (low red blood cell counts)
- Nausea and vomiting
- Appetite changes
- Constipation
- Diarrhea
- Mouth, tongue, and throat problems such as sores and pain with swallowing

Peripheral neuropathy or other nerve problems, such as numbness, tingling, and pain

- Skin and nail changes such as dry skin and color change
- Urine and bladder changes and kidney problems
- Weight changes
- Chemo brain, which can affect concentration and focus
- Mood changes
- Changes in libido and sexual function
- Fertility problems

Learn more about these and other problems in Managing Cancer-related Side Effects4.

Chemotherapy drug interactions and side effects

When looking at how best to combine chemo drugs, doctors must look at interactions between chemo drugs and other medicines the person is taking, including over-thecounter medicines, vitamins, and supplements. These interactions may make side effects worse and affect how well chemo drugs work.It's important that you tell your doctor about all medicines, including over-the counter medicines, vitamins, herbal or dietary supplements you are taking– even if you only take them "as needed."

For instance, platelets help blood clot and prevent bleeding. Many chemo drugs lower the number of platelets for a time. Taking aspirin or other related drugs can also weaken blood platelets. This isn't a problem for healthy people with normal platelet counts, but if a person has low platelet counts from chemo, this combination might put them at risk of

a serious bleeding problem.

Your doctor can talk with you about the safety of using other medicines, vitamins, and supplements while you are being treated for cancer.

How vitamins affect chemotherapy drugs

Many people want to take an active role in improving their overall health. They want to help their body's natural defenses fight the cancer and speed up their recovery from chemo. Most people think of vitamins as a safe way to improve health, so it's not surprising that many people with cancer take high doses of one or more vitamins. But some vitamins might make chemo less effective.More research is needed, but until more is known about the effects of vitamins on chemo, keep these points in mind:

● If your doctor has not told you to take vitamins, it's best not to take any.

Always check with your doctor first before starting to take a vitamin of any kind, even a simple multivitamin.

● Ask your doctors if and when it might be OK to start taking vitamins after treatment.

If you're concerned about nutrition, you can usually get plenty of vitamins by eating a well-balanced diet. See Nutrition for People With Cancer5 to learn more about nutrition during and after cancer treatment.

● When to call your cancer care team about chemo side effects

Because your cancer care team will give you lots of information about side effects, you might be more aware of physical changes. Do not take any physical symptoms you have lightly. Some side effects are short-lived and minor, but others may be a sign of

serious problems. Make sure you know how to reach someone on your team any time,

including after hours, weekends, and holidays.Contact your cancer care team right away if you have any of the following symptoms during chemo treatment: A fever higher than what your cancer care team has instructed (usually 100.5°F -101°F or greater (taken by mouth)

●Bleeding or unexplained bruising

● A rash An allergic reaction, such as swelling of the mouth or throat, severe itching, trouble swallowing.

Conclusions

In Iraq, chemotherapy is used to treat various cancer cases according to an international protocol, and the number of doses prescribed to the patient varies according to the goal of treatment and the stage of the tumor.

Chemotherapy is accompanied by many side effects that may last for more than a week, and no significant relationship has been established between them and the age or gender of the patient.

Many patients may experience a sudden allergic reaction during the administration of the chemical solution, accompanied by special symptoms.

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