



Neutropenic Diet

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Introduction

Therapeutic diets are of much importance in combating various diseases and in easy and effective recovery of patients from illness. It should be safe in terms of not only the visible contaminants but also the invisible microbial agents. Neutropenia is a condition characterized by very low count of white blood cells i.e. neutrophils, especially in any type of cancer, AIDS, organ transplantation and blood infections. As neutrophils help in preventing infections, people suffering from neutropenia have a weak immune system, thus are at higher risk of catching infections more frequently. Not only severe diseased conditions but also certain treatment procedures such as chemotherapy and some medications like administration of steroids, cyclosporin and monoclonal antibodies lead to neutropenia and suppress the immunity. Hence, extra care should be taken regarding the dietary habits and food consumption pattern of neutropenic patients starting from raw material collection up to the ultimate consumption. Neutropenic diet is a kind of therapeutic diet that is free from any external infectious pathogens such as bacteria, fungi, viruses, protozoans and other microorganisms.

Types of neutropenia

Normal level of neutrophils is 2.0 to $7.5 \times 10^9/L$ of blood i.e. 2,000-7,500 per cubic millimetre of blood. Two types of neutropenic conditions are observed such as neutropenia characterized by less than 2,000 neutrophils per cubic millimetre of blood and severe neutropenia in which neutrophil count falls below 500 per cubic millimetre of blood.

Signs and symptoms

- Fatigue and nausea
- Hyperthermia and frequent fever
- Excessive perspiration
- Shivering
- Cough and sore throat
- Watery stools
- Itching and redness in skin
- Unusual discharge and itching in genital area
- Burning sensation during urination
- Recurring infections



- Mucositis
- Anorexia and numbness
- Weight loss

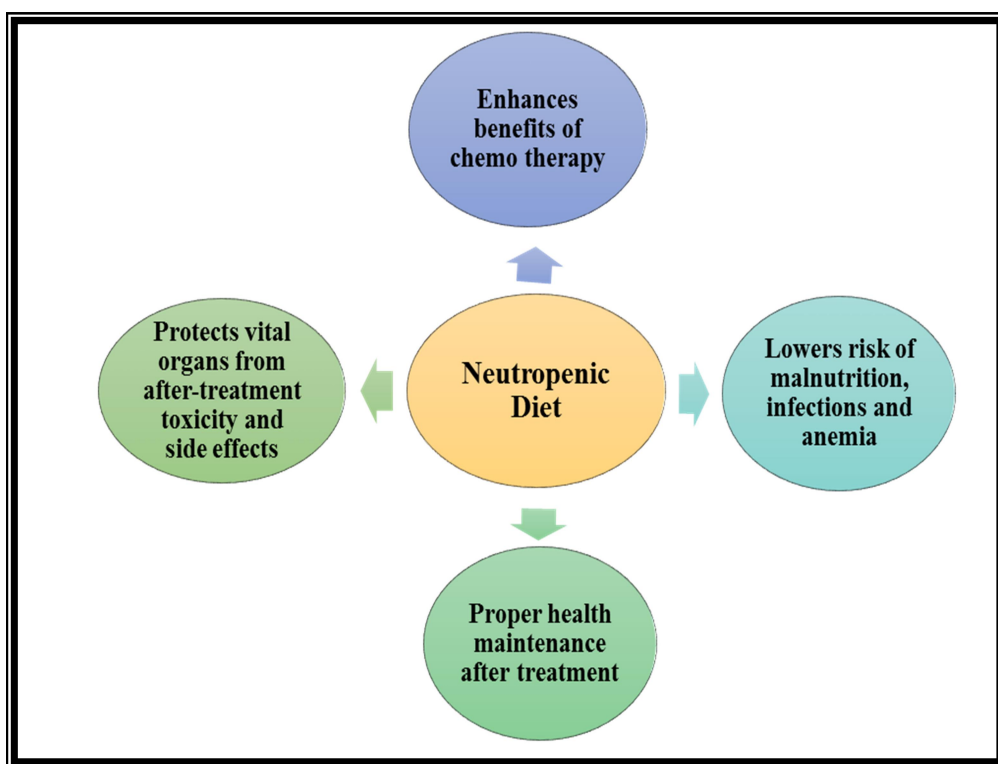
General guidelines

- Wash your hands every time before having food.
- Buy good quality food items and store it safely in small individual pouches.
- Avoid outside street foods. Keep your food items covered.
- Keep raw and cooked vegetables, meat, fish, egg and dairy products separately to prevent contamination.
- Defrost food items inside refrigerator or micro-oven instead of open surfaces.
- Don't reheat any food more than once.
- Sanitize cooking surface and all the utensils before preparing and consuming food.
- Clean cuts, scrapes and grazes with soap or antiseptic and warm water.
- Take regular bath and use oil daily to prevent xerosis in skin.
- Avoid other sick or diseased persons.
- Boil water before drinking and washing your body and face.
- Practice hygienic methods and follow proper handling procedures to prevent cross contamination.
- Don't take fruits or vegetables which are damaged and slimy.
- Check manufacturing and expiry date before using any processed food product.

Advantages

- Low microbial sterile diet.
- Prevents entry of pathogenic microorganisms into human body through food or beverages.
- Lowers the risk of food borne diseases as well as other infections.
- Strengthens immune system to fight against foreign microbes.
- Facilitates good handling practices in daily life.

Useful for deadly diseases such as cancer, COVID and acquired immuno-deficiency syndrome.



Dietary guidelines

Food group	Avoid	Alternative
Dairy products	Unpasteurised milk e.g. milk sold in local farms, soft cheese prepared from unpasteurised milk i.e. feta and parmesan, homemade paneer and butter, mould ripened cheeses e.g. camembert, brie and goat's cheese, blue-veined cheese (Danish blue and Stilton), probiotic items e.g. yakult, Actimel and proviva	Pasteurised milk, soy milk, UHT milk, cheeses prepared from pasteurised milk, processed cheese e.g. Dairylea, Philadelphia and halloumi, pasteurized parmesan, mozzarella and goat's cheese, non-probiotic yoghurts

Meat	Raw and undercooked meat, poultry, fish, egg, smoked meat e.g. salami	Well-cooked or tinned meat, poultry, fish, vacuum-packed meats i.e. stored below 3 ⁰ C
Fish and seafood	Smoked salmon, raw sushi, caviar, oysters, lightly cooked shellfish	Cooked and vacuum packed fish, salmon and shellfish e.g. risotto, stir-fry or curry
Egg and egg products	Raw or under cooked eggs e.g. homemade mayonnaise, ice-cream, mousse, egg-nog, meringue, hollandaise sauce and béarnaise sauce	Hard boiled eggs, scrambled or fried eggs and other pasteurised egg products
Fruits and vegetables	Raw unpeeled fruits or vegetables e.g. salads, stuffed vine leaves, fattuosh and tabbouleh, dried fruits and its products, undercooked herbs, over ripe fruits	Peeled and well-cooked fruits, vegetables, cooked and roasted dried fruits, pasteurised smoothies, UHT products
Nuts and snacks	Fresh nuts, unpasteurised or raw honey, counter foods e.g. houmous, shawarma, baklava	Cooked, roasted or canned nuts, pasteurised or heat treated honey
Water and juices	Water from wells, bottled still water, water from coolers, domestic sources	Pasteurised, boiled water, pasteurized and canned fruit juices

Conclusion

Like all other types of therapeutic diet, neutropenic diet also have many beneficial effects in preventing future risk of any external contamination. Thus, it keeps our body safe by keeping the entry of microorganisms at the minimal level. Diseases such as AIDS, cancer in which immune system becomes weak and unable to fight against other infections due to foreign microbial attack, neutropenic diet is the only measure to minimize the risk of death as well as to increase the chance of survival of the patient. Hence, patients suffering from cancer, hepatitis, AIDS should follow the neutropenic diet to stay fit in their daily life.