

# THE IMMUNE SYSTEM AND BREAST CANCER

**Moderator: Hope Nemiroff**

**Panelists:**

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# Examining the role of the immune system in breast cancer survival and prognosis

- ***Looking the elements of a healthy immune system and how they can help to reduce illness***
- ***Looking at the effects of lifestyle factors on gene expression***

# Panel Questions

1. What is the connection between the immune system and cancer?
2. Does getting breast cancer mean that I have a weak immune system?
3. Why do my cancer doctors say that the immune system has nothing to do with getting cancer?
4. Do women with immunologic disorders have a higher risk of breast cancer?
5. Can I test my immune status?
6. Can I alter my immune status
7. Does immune system status following treatment predict the risk of recurrence?
8. Does immuno-surveillance prevent breast cancer?

# IMMUNE SYSTEM

- The immune system is composed of white blood cells and substances called interleukins & interferons.
- There are many types of white blood cells, but the most important cancer-fighting white blood cells are the lymphocytes, macrophages and dendritic cells.
- Lymphocytes include T, B and natural killer cells (NK cells).

# IMMUNE SYSTEM, con't

<b>Immune Cell</b>	<b>Macrophages &amp; Dendritic Cells</b>	<b>T-helper 1 Cells</b>	<b>T-cytotoxic &amp; Natural Killer Cells</b>	<b>B-cells</b>	<b>T-Suppressor &amp; T helper 2 Cells</b>
<b>Function</b>	Finds cancer cells & presents them to T cells	Initiates a coordinated attack against cancer cells	Directly kills cancer cells	Makes antibodies to target cancer cells for destruction	<b>Suppresses the immune attack against cancer cells.</b>
	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>GOOD</b>	<b>BAD</b>

# LYMPHOCYTES

- **Lymphocyte counts:** You should have normal levels of lymphocytes in your blood.
- **Lymphocytes represent your cancer fighting army.**
- **Low levels of lymphocytes in the blood may encourage a relapse & decrease survival rates:** Studies have shown low levels of lymphocytes in the blood increased a breast cancer patient's risk of a recurrence and a correlation between lower lymphocyte counts and lower survival rates.
- **Low lymphocyte counts prior to chemotherapy may predict a poorer response to chemo:** The International Journal of Biological Markers in 2004 showed that responses to chemo were 33% higher in metastatic breast cancer patients with normal pretreatment lymphocyte counts than in patients with low pretreatment counts.

# T CELLS

- **T-cell tests:** It's important to monitor the numbers (subsets) of each type of T cell as well as their function.
  - T cell subset tests: This test determines the number of each kind of T cell in your bloodstream. T cells include: T-helper 1, T-helper-2, T suppressor & T cytotoxic.
- **You should have twice as many T-helper cells than T suppressor cells.** T helper 1 cells activate the immune system whereas T suppressor cells suppress the immune system. *Journal Tumori, 2000*
- **Your T helper cells should be Type 1 Cells.** T helper 1 cells help initiate a response against cancer cells, whereas T helper 2 cells decrease the response.

# EVALUATING YOUR IMMUNE SYSTEM

- You can determine the state of your immune system by having a blood test called the *comprehensive immune evaluation panel*.
- This blood test can be ordered by your oncologist.
- The comprehensive immune evaluation panel will determine how many T cells, B cells and natural killer cells you have in your bloodstream and will even separate the T cells into their individual categories: T helper 1, T helper 2, T cytotoxic & T suppressor



# WHAT THINGS IMPACT THE IMMUNE SYSTEM?

- **Stress alters immune function**, especially in a group of people classified as “high reactors”. In response to stressors, these people experience significant increases in certain hormones, heart rate and blood pressure. “People classified as “low reactors” show little or no change in those areas. Stress also can change the balance of bacteria that naturally live in the gut, according to research published this month in the journal *Brain, Behavior, & Immunity* “These bacteria affect immune function, and may help explain why stress dysregulates the immune response.”
- **Obesity depresses T-cell response** and macrophage movement.
- **Mercury** (e.g. from dental amalgam) reduces the number of T-cells and reduces activity in the immune system.
- **Saturated fat** makes the cancer T-killer cells unable to recognize "self" cells gone badly.
- **Heavy metals such as Cadmium** (from industrial pollution and cigarette smoke) and Lead slows down the speed of T- and B-cells' producing antibodies in the immune system and reduce the activity and speed the macrophages, thus increasing susceptibility to infection.

# General Ways to Maintain or Boost the Immune system

- **Get enough sleep-** Deep sleep is one of the most important ways to boost the immune system. Chronic sleep deprivation or insomnia can lead to immune system deficiency. It is important to get enough sleep in a dark room, and especially beneficial to get to sleep by 10pm and sleep in total darkness.
- **Exercise- Moderate exercise, helps your immune system.** Daily walks or moderate exercise at least 3 times a week. Excessive and prolonged heavy exercise can temporarily reduce the function of the immune system.
- **Reduce stress any way you know how. Stress of any kind -- emotional, physical, psychological – affects your immune system and releases the stress hormone cortisol which wreaks havoc with the immune system.** Use relaxation techniques, breathing exercises, meditation, imagery and visualization, prayer, yoga, EFT or other stress management techniques.
- **Eat nutrient-rich, whole foods, especially fruits and vegetables.** Use garlic, onions, and culinary herbs - they have flavonoids that have anti-bacterial and anti-viral activity.
- **Avoid cancer causing chemicals that disrupt hormones and damage DNA.** (See the Healthy Lifestyles Calendar)

# General Ways to Maintain or Boost the Immune system, con't

- **Avoid excessive sugar intake.** Three ounces of sugar at one sitting *significantly inhibits the ability of white blood cells*, which are the heart of the immune system, in destroying bacteria and viruses.
- **Ingest healthy probiotic bacteria in yogurt or probiotic drinks.** These friendly gut bacteria boost the immune system.
- **Drink more tea (up to mid afternoon) -** Tea is very high in antioxidants and appears to boost the immune system. An ingredient found in black, green, oolong and pekoe teas boosts the ability of immune system cells to attack a bacterial invader. Avoid caffeine later in the day to avoid interfering with sleep.
- **Bodywork, energy work, acupuncture and massage-** These therapies reduce cortisol levels.
- **Pray, meditate, listen to music, or find a way to still your mind.** Do yoga, or relaxed breathing and stretching, at least once or twice a week.
- **Keep your Vitamin D levels optimal.** Have your 25-OH Vitamin D levels tested and keep them at least 50-60. Most people need 2000-5000 units of vitamin D<sup>3</sup> a day for healthy levels, some people may require up to 10,000 units a day. Ask your physician to test your levels.

# Supplements that may strengthen immune function

- **Lactoferrin**, a natural substance derived from milk is usually effective at increasing T helper cells.
- **Astragalus** can help lower T suppressor cells.
- The herb Astragalus is effective in increasing T-helper 1 cells and lowering T-helper 2 cells.
- **Astragalus and Lactoferrin**, in combination may raise the ratio of T-helper:T suppressor cells which may decrease recurrence rates, decrease metastasis risk and improve responses to chemotherapy.
- **Iscador**. A 30-year-long study with more than 35,000 participants reports that extract of mistletoe (Iscador®) greatly improves survival rate for a wide variety of cancers, including breast cancer. *Use of Iscador®, an Extract of European Mistletoe (Viscum Album), in Cancer Treatment*
- **ImmPower-AHCC** does not effect tumors directly, but works to support the immune system. Its effects are not cancer cell type specific. *Active Hexose Correlated Compound (AHCC) Improves Immunological Parameters And Performance Status of Patients with Solid Tumors*
- **Avemar**- Taken orally, Avemar can inhibit metastatic tumor dissemination and proliferation during and after chemotherapy, surgery, or radiation. *Nichelatti, M. & Hidvégi, M., Experimental and clinical results with Avemar (a dried extract from fermented wheat germ) in animal cancer models and in cancer patients, Nőgyógyászati Onkológia, 7:180-185; 2002.*