

Headlines

Spring 11

A newsletter for brain tumour patients and their families

MEDICAL UPDATE

Vaccine therapy for brain tumours

VACCINES WORK BY STIMULATING the body's specialized defense mechanism, the immune system, to prevent illness (prophylactic vaccines) or to treat illness (therapeutic vaccines). The immune system is a complex and organized network of cells, tissues and organs that is primed to distinguish the normal cells of the body from those that are foreign, such as viruses, or those that are abnormal, such as cancer cells. The immune system recognizes invading or abnormal cells by the presence of antigens, which are molecules found on the surface of the invading or abnormal cells. A healthy immune system ceaselessly patrols for these antigen-bearing cells and eliminates them when they are encountered. Some immune system cells release specialized proteins called antibodies to help destroy the antigens. Other immune system cells attack the antigens directly. The immune system is left with a "memory" of the antigens, and this helps it to identify and respond to those cells in the future.

Viruses and bacteria are clearly intruders from outside the host's body, but cancer is somewhat different, as it arises from the body's own cells. Genetic changes accumulate in our cells

over time, or as a result of exposure to environmental hazards, and these changes lead to cellular mutations that can cause cancer. Although cancer cells possess abnormal cell surface molecules, they are an aberrant version of an individual's normal cells, and this makes it more challenging for the immune system to recognize that cancer cells should be eliminated. A healthy immune system will readily attack a virus, but typically does not attack an individual's own cells, as this could be harmful to the body's normal functioning. The lack of a clearly defined target is a major challenge for vaccine therapy for brain tumours.

In fact, some cancers are associated with, or prompted by, a viral infection. In these cases, a vaccine targeting the specific virus may prevent the associated cancer. Examples include vaccines for the human papillomavirus (HPV), which can cause cancer of the cervix, or the vaccine for the hepatitis B virus (HBV), which can cause cancer of the liver. There is at present no virus that has been positively linked to the development of gliomas, the most common type of malignant brain tumour, and there is no prophylactic vaccine available to prevent brain tumours.

Instead, the vaccines currently under development are given to people who already have brain tumours in order to prevent disease recurrence. These vaccines aim to recognize the tumour cells and stimulate an immune response to kill them.

There have been attempts to directly infuse specialized immune cells, taken either from a patient or donor, to kill cancer cells. This is termed "passive" immunotherapy. But most of the vaccine trials for brain tumours to date have focused on the activation of a patient's own immune system to respond to the tumour. This is called "active" immunotherapy. A popular approach has been to use the patient's own dendritic cells (DC), a type of white blood cell that plays a role in the immune response. The DC are exposed to the patient's tumour cells in a laboratory culture, and are loaded with antigen from the tumour cells in order to facilitate tumour recognition when the "trained" DCs are re-infused into the patient.

Other vaccines work by identifying and targeting specific proteins, or antigens, on the surface of the tumour cells. For example, the EGFRvIII vaccine exploits the discovery that about a third of patients with gliomas possess tumours characterized by the presence of a particular antigen, a variant of the endothelial growth factor receptor (EGFR) protein. This mutated protein is the target for the CDX110 vaccine. Other vaccines

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For more information on how you can support enhanced patient care, patient information and brain tumour research, please contact Sharon Kennedy at the BC Cancer Foundation, 604 877 6160 or 1 888 906 2873 or skennedy@bccancer.bc.ca

Nutrition

UNDER NORMAL CIRCUMSTANCES, we tend to think of eating as something pleasurable and sociable, but sometimes forget that food is also essential for nourishment. Our bodies require good nutrition to maintain health, especially when we're struggling to fight cancer or recover from the effects of cancer treatment. The best way to ensure adequate nutrition is to eat a variety of different foods, and make sure that you eat the following each day:

1) Fruits and vegetables

(6-7 servings in any form, including fresh, frozen and juices). Try to include one dark green and one orange vegetable each day.

2) Whole grains

(6-7 servings, including bread, rice, oats, cereal and pasta).

3) Milk and milk alternatives

(3-4 servings including soy beverages, yogurt and cheese). Low fat products are the healthiest choice.

4) Meat and meat alternatives

(1-2 servings for adults, including fish, chicken and meats, but also nuts, peanut butter, eggs and tofu). Choose lean meats and avoid processed meats such as deli meats, bacon and sausage. Include fish and meat alternatives such as beans, nuts, lentils and tofu several times a week.

Side effects from brain tumour treatment are not uncommon and may require adjustments to your diet. Here are some problems you may encounter and tips for dealing with each of them:

Nausea and loss of appetite: Small, frequent meals may be easier to handle than three large meals. Avoid drinking water or other low calorie beverages during mealtimes, as they can cause you to feel full before you have finished eating. Cool or room temperature foods may be more palatable than hot foods, as their smells and flavours are usually less intense. If the smell of food bothers you,

avoid spicy or fried foods and let someone else cook when possible. Ensure®, Boost® and yogurt smoothies provide calories, hydration and nutrition and can be sipped throughout the day.

Mouth sores and infection: Notify your health care team if you develop pain in the mouth or throat, as mouth sores and yeast infections are not uncommon for those on treatment and can be easily managed. In the meantime, use a straw to drink liquids and avoid acidic, salty or spicy foods. Rinse your mouth frequently with a bit of baking soda in lukewarm water and avoid any mouthwash containing alcohol.

Diet and dexamethasone (Decadron®): Dexamethasone is used to treat the brain swelling that tumours sometimes cause. This steroid medication has a number of side effects, and can stimulate appetite quite significantly. If you are taking dexamethasone, try to snack on nutritious foods like raw vegetables, fruit, and yogurt, rather than the "junk food" you may find yourself craving. Long term use of steroids causes changes in the body's metabolism with the result that muscle mass is reduced and converted to fat. The fat tends to accumulate around the face and trunk, and the legs and arms become thin and weak. This problem resolves when the medication is tapered, but muscle loss can be minimized to some extent through a modified program of regular activity. Speak to your health care team about ways to reduce the negative effects of steroids on the body.

Diet and brain tumours: There are no dietary modifications that have been proven to treat brain tumours or to keep them in remission, but a healthy diet will help you to remain in good physical condition so that you are strong enough to undergo treatment when necessary. Although there is a widespread concern among patients that sugar will "feed" cancer, this is not exactly true. Much of the food we eat in a healthy diet is converted to sugar as a source of energy for our bodies — and our

brains — to perform their normal functions. The brain regulates the amount of sugar it receives, so it does not receive too much at any time. Still, if you eat too many sugary foods, you may not have room for the wide variety of nutritious foods your body needs, so it's best to keep sugar and refined foods to a minimum (see this Headlines issue's Q&A, page 4).

Herbs, vitamins and other supplements: Vitamins from food sources are an important part of a healthy diet. The use of large dose supplements, either taken in pill form or by infusion, have not been shown to be effective in the treatment of brain tumours, and can be dangerous. Similarly, there are many different types of herbal remedies and some can be beneficial to your health, but others can be harmful. Gingko biloba can cause bleeding, especially if you are on chemotherapy, and St. John's wort can cause dizziness and confusion. Some supplements interfere with cancer treatments. High doses of antioxidants are generally not recommended for patients receiving radiotherapy or chemotherapy as they have the potential to undo the harmful effects of these treatments on tumour cells. Although no vitamin or herb has been shown to be effective in treating brain tumours, vitamin D and calcium supplementation is recommended for bone health for most people. The Canada Food Guide www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php is a reliable source of information for all ages and is available in several different languages. The BCCA libraries www.bccancer.bc.ca/PPI/Library/ stock a number of resources devoted to nutrition and the librarians can assist you to find the information you need. You might also consider a referral to the Nutrition Department at the cancer agency or call HealthLink BC at 8-1-1 and ask to speak to a nutritionist.

For more information about nutrition and cancer see: www.bccancer.bc.ca/PPI/copingwithcancer/nutrition/default.htm

Mindfulness Based Stress Reduction (MBSR)

WHAT IS MBSR? Jon Kabat-Zinn developed this unique synthesis of Eastern and Western techniques for the cultivation of wisdom, awareness, and insight. Its object is not to fix or cure, but to connect within our lives to that which is most vital.

Kabat-Zinn pioneered the 8 week MBSR course at the University of Massachusetts Medical Centre in 1979. It is now commonly used in the treatment of stress, anxiety, and pain throughout the world. In the last 25 years, there have been concerted efforts to study the clinical applications of meditative practices. Since 2000, the BC Cancer Agency has been offering MBSR for people living with cancer. The BC Cancer Agency and the Tom Baker Cancer Centre in Calgary have collaborated on a study using this technique for women after treatment for breast cancer.

Kabat-Zinn defines mindfulness as a non-judgmental, moment-to-moment awareness. It is a turning inward, a quiet observation of the stream of changing thoughts, feelings,

drives, and visions. He says that the practice of mindfulness is not so much about an attainment of enlightenment, but about discovering the path to leading a good life.

Rather than resisting life's challenges, participants learn to develop a compassionate and accepting stance to whatever they encounter. Research shows that this approach enhances our ability to cope, reduces anxiety, lowers pain levels, and increases our sense of well-being and self-esteem. Most people go through their life on autopilot. MBSR is one way to become more conscious in our lives and to allow the mind to be as it is, in a gentle and compassionate awareness. MBSR involves embracing the full experience of life, including the times of challenge and turbulence, such as living with cancer. Classes include a mixture of meditation (sitting, lying down and walking), gentle stretching and movement, teaching of techniques and homework assignments. The program requires commitment to daily practice (approximately 45 minutes) for optimal benefit.

The 8 week MBSR courses are offered through Patient and Family Counselling Services at various times throughout the year. For more information about MBSR, or about Relaxation Therapy, contact Sarah Sample at 604-877-6000 Ex.2192

For more information about MBSR see: www.mbsrbc.ca or www.umassmed.edu/cfm/ or www.mindandlife.org

By Sarah Sample, MSW, RSW

Here are some comments from participants in the BCCA MBSR programs:

"(MBSR) helped me to become my 'authentic' self...to take better care of myself and to change some aspects of my everyday life to make it more valuable and meaningful."

"The program allowed me to have a greater awareness of what is going on with my body and mind and reduced the distress in my life."



Spring Sprint 2011

To benefit the Brain Tumour Foundation of Canada

The Brain Tumour Foundation of Canada is geared up once again for 22 Spring Sprint events across Canada. The goal is to raise \$1,500,000 for research, support, information and education to help the 55,000 brave Canadians living with a brain tumour, and those who will be diagnosed in the future.



Register today and raise funds online, or hold a fundraiser. Walk/run with your friends, family and co workers! Put together a team and have even more fun!

Vancouver

When: Sunday, May 29th
Registration: 10 am
Sprint Start: 11 am

Where: Burnaby Lake East, Rowing Pavilion
Details: 5 km walk/run

Victoria

When: Saturday, May 28th
Registration: 9:30 am
Sprint Start: 10:30 am

Where: Cedar Hill Recreation Centre
Details: 3.5 km walk/run

For more information: swhiteside@braintumour.ca
1-800-265-5106 or 519-642-7755 ext 229
www.braintumour.ca/225/locations-dates

Q I have heard that sugar feeds cancer, so I have been avoiding all sweets. My wife also says I should not eat any refined or processed foods. I haven't had much appetite because I'm on chemo, so my weight has been dropping. I've always had a sweet tooth and I miss my ice cream and home made cookies! Should I continue to stay away from all sweet foods or is it okay to eat muffins or cookies, etc?

A While it is true that brain tumor cells use sugar for energy, that particular sugar is a molecule called glucose. Glucose is derived from a number of sources, predominantly carbohydrates in the diet. Common refined sugar or sucrose (a molecule made up of glucose and another sugar, fructose), is only one such carbohydrate source. Starches (carbohydrates made up of multiple molecules of glucose) come from potatoes, pastas, rice and breads and are a major source of glucose in the diet. Proteins also become a source of glucose in persons who restrict carbohydrate intake. Proteins are digested into molecules called amino acids which can be converted by the liver into glucose.

The metabolic machinery of the body is designed to maintain a fairly constant and steady supply of glucose. The reason

for this: **the human brain solely survives on glucose for energy.** If you restrict carbohydrates in your diet, the body will metabolize proteins (both dietary and those in your muscle) to get the level of glucose up in your bloodstream. So there really is no

way to restrict the supply of glucose to brain tumour cells by significantly altering your diet. To do so would require starvation which would lead to adverse consequences to your brain and general health.

So is there a reason to avoid sweets? Well, there are some adverse consequences of eating simple sugars rather than more complex carbohydrates like starches. Simple sugars

are rapidly digested and will lead to a spike in blood glucose. Your body will respond by producing a spike in insulin from the pancreas. Insulin in high levels has a growth factor-like effect and it is postulated, but not proven, that it may promote tumor growth. Insulin spikes also promote fat storage and insulin resistance which can lead to diabetes.

In the end, the best diet is likely one that limits carbohydrates but doesn't restrict them. Complex carbohydrate sources such as rice and whole grains are better as they are digested slowly and don't lead to rapid glucose spikes and high levels of insulin secretion. Mixed with proteins and fats from

nutritious sources such as fish, poultry, and lentils, these complex carbohydrates serve as the backbone of a healthy diet that won't compromise your brain tumor treatment.

So is it okay to sneak a sweet here and there? Yes, but in small amounts and not at the expense of more nutritious carbohydrate sources.

*By Dr. Brian Thiessen, Neuro-oncologist
BCCA, Vancouver Centre*

Question + answer



A member of the *Headlines* editorial board, who is a patient and also a nutritionist, offers the following additional tips:

- Try to maintain your weight during treatment, even if you are overweight. The need for nutrition at this time far outweighs any risk associated with eating fattening foods.
- Foods that are high in protein and calories are essential, like the yogurt shakes mentioned in the nutrition article, but milkshakes made with ice cream and real fruit are also good.
- Adding nuts and/or natural peanut butter to baked goods, including cookies, is another way of making them a bit healthier while incorporating more protein and calories.
- Dark chocolate, anything over 70% cocoa mass, is also a healthy sweet food choice.

Vaccine therapy for brain tumours *continued from page 1*

have attempted to combine tumour cells with actual viruses, which are then re-introduced into the patient in hopes of stimulating an immune response.

Vaccine trials to date have proven to be safe and represent a potentially promising avenue of treatment for brain tumours.

However, this treatment is fraught with challenges. The research is costly and complex, and has so far involved small numbers of patients with different types of gliomas, restricting our ability to generalize the effects of this therapy. Furthermore, the use of chemotherapy and dexamethasone compromises a patient's immune system, making it difficult to achieve a robust immune response. Conversely, there is a

risk of treatment toxicity, including brain inflammation, should the immune system mount too strong a response.

For more information about vaccines for brain tumours see: www.ninds.nih.gov/disorders/brainandspinaltumors/detail_brainandspinaltumors.htm#175863060, visit your BCCA library www.bccancer.bc.ca/PPI/Library/, or speak to your health care team.

Editions of *Headlines* are also available as a pdf download at:

www.bccancer.bc.ca/PPI/copingwithcancer/specificresources/Neurooncology.htm

If you would like to submit an article, ask a question, or serve on our patient and family advisory board, please contact Rosemary Cashman at rcashman@bccancer.bc.ca or 604 877 6072 (phone) 604 877 6215 (fax).

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