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Brain Tumour Foundation of Canada Information Sheets are provided as an informational and educational tool and are not intended to replace the advice or instruction of a professional healthcare practitioner, or to substitute for medical care. We urge you to seek specific medical advice on individual matters of concern.

Brain Tumour Foundation of Canada is generously supported by individuals, corporations and employee groups. It is through the tireless dedication of donors that help is available for anyone affected by a brain tumour, including patients, survivors and their loved ones.

Ask the Expert Information Sheet

Stroke-Like Migraine After Radiotherapy (SMART) Syndrome

By: *Rosemary Cashman*

Advances in treatment for brain tumours have resulted in longer survival for patients. Unfortunately, as patients live longer, some will also develop late effects of treatment. One of these late treatment –related complications is SMART syndrome.

SMART syndrome is a rare condition and neither its cause nor its treatment is clear. Most cases develop within 5 years after treatment, but the range in the interval between radiotherapy and the onset of SMART is 1 to 35 years.

Possible factors in the development of SMART include the dose of radiation received, treatment-related changes in brain blood vessels and genetic causes, but none of these has been proven. The dominant feature of SMART is the onset of a bad headache accompanied by other symptoms which may include nausea, visual changes, partial paralysis or weakness, and speech or hearing impairment. Seizures are a feature in about 75% of patients who develop SMART.

Routine blood tests do not typically provide useful diagnostic information. MRI findings may be absent, or ribbon –like bands of “enhancement” may be seen along the surface of the brain in the area that received radiation. The enhancement is caused by leakage of the MRI contrast medium, which appears white on the scan. These changes occur most commonly in the temporal, parietal and occipital lobes of the brain, suggesting that these areas may be more sensitive to the effects of radiotherapy. The radiologic changes resolve as the patients’ symptoms fade, usually over the course of hours to several weeks. SMART syndrome may recur and patients may develop irreversible neurological changes, including difficulty with speech, limb weakness or problems with memory or thinking.

There is no standard therapy for SMART and its symptoms often resolve without treatment. However, seizure medications are helpful in those cases involving seizures; patients’ symptoms may also improve with the use of corticosteroids (dexamethasone). Some clinicians have tried to prevent recurrent SMART through the use of aspirin and verapamil, a calcium channel blocking medication used in migraine, angina and high blood pressure.

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Additional support, information and education offered by Brain Tumour Foundation of Canada:

Adult, Pediatric and Non-Malignant Brain Tumour Handbooks available in English and French.

“A Friend in Hope” children’s storybook available in English and French.

20+ Adult Support Groups across Canada (in-person and virtual)

Toll-free information and support line

BrainWAVE Pediatric Support Program

Print BrainStorm Newsletter
Email Newsletters:
• E-BrainStorm
• Peace of Mind

“Grey Matters” Blog

SMART is a rare clinical syndrome that develops after brain irradiation. As its incidence grows and our clinical experience accumulates, we may expect improvements in diagnosis, treatment and understanding about measures to prevent its occurrence.

Author:

Rosemary Cashman is a Nurse Practitioner in the Department of Neuro-Oncology at BC Cancer in Vancouver, BC. Rosie sits on the Board of Directors for Brain Tumour Foundation of Canada and volunteers her time on multiple committees of the Board, including the Information Support and Education Committee, Advocacy Committee, and the Governance Committee. Rosie has also been a guest speaker at many events for Brain Tumour Foundation of Canada including the Brain Tumour National Conference and the Vancouver Health Care Professional Symposium.

All patient resources are available free-of-charge in Canada. Call 1-800-265-5106 or visit www.BrainTumour.ca for additional details and information.



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