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on Aging

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This newsletter is aimed at people who participated to the projects of the Research Centre on Aging.

It is also distributed to anyone who wants to receive it. Contact us!

Preventing Cardiovascular Diseases

By Leila Jaouad, student



Leila Jaouad is a student completing her master's degree in physiology-biophysics at the Université de Sherbrooke. Her work is supervised by Abdel Khalil, Ph.D., a researcher and professor at the Research Centre on Aging.

Cardiovascular diseases (CVDs) are responsible for approximately 19,000 deaths each year in Quebec. Treating those diseases costs the Canadian economy more than 18 billion dollars. Fundamental and clinical research aim to develop the next generation of interventions that will reduce the clinical manifestations of this disease.

Cardiovascular diseases are linked to the development of atherosclerosis, a condition in which the walls of the arteries thicken and can even become obstructed. The principal manifestations of atherosclerosis are heart attack and cerebrovascular accidents (CVAs). Many risk factors such as age, gender, diabetes, hypercholesterolemia, smoking and physical inactivity can contribute to this condition.



A number of studies have shown that a high cholesterol level is associated with the development of atherosclerosis. It is within this backdrop that we frequently hear about good and bad cholesterol. In fact, cholesterol is carried in the blood by particles called lipoproteins, a union of lipids (fat) and proteins. Low density lipoproteins (LDLs) carry cholesterol to the body's cells, where it plays an essential

role in the cell membrane synthesis. It is also essential for the production of some hormones. High density lipoproteins (HDLs) carry the excess of cholesterol accumulated in the cells to the liver so that it can be eliminated.

Lipoproteins, in circulation, are exposed to "aggressions" or oxidation resulting from a process called oxidative stress (see the text on oxidative stress). LDL oxidation is considered the first stage in atherosclerosis. The oxidized LDLs accumulate more rapidly in the cells of the artery wall and form plaques, thereby their moniker "bad cholesterol".

HDLs, called "good cholesterol", play a protective role by preventing the deposit of cholesterol in the artery wall. HDLs also play an antioxidant role. This property comes mainly from the action of the enzyme paraoxonase1 (PON1).

Paraoxonase1 is an enzyme that is synthesized by the liver and secreted in the blood. It is worthwhile to note that there is a decrease of the paraoxonase1 in diabetics, people suffering from chronic kidney failure and smokers, all conditions that are risk factors for cardiovascular diseases. Some antioxidants maintain the activity of paraoxonase1 such as fruit rich in vitamin C, the juice of pomegranates, red wine and some medications that reduce cholesterol.

The increase in cardiovascular diseases in the aging process encourages us to look for predisposing elements that could explain this trend. In 2001, our team showed that the activity of the enzyme paraoxonase1 declines with age.

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Trial Of A New Group Program For Family Caregivers Of People Suffering From Dementia And Living At Home

By Louis Voyer, M.Ps., psychologist, and Réjean Hébert, M.D., M.Phil. (epidemiology), geriatrician *



Louis Voyer is a research officer at the Research Centre on Aging of the Sherbrooke Geriatric University Institute.



Réjean Hébert is a researcher at the Research Centre on Aging of the Sherbrooke Geriatric University Institute and dean of the Université de Sherbrooke's medical faculty.

Alzheimer's disease and other memory conditions are a major health problem. The family becomes the initial support group for those suffering from Alzheimer's. The family caregiver is then faced with his relative's difficult, even disturbing behavior. For example, the person afflicted with dementia can lose objects, begin activities but fail to complete them, destroy goods, and threaten to injure others and so on. This source of stress has a negative impact on the family caregiver. That is why our team focused on this problem and looked for ways to improve the condition of caregivers and their afflicted loved ones.

A program adapted to the caregivers' condition

Twelve groups of caregivers followed a psycho-educative program whose goal was to improve their response towards relatives suffering from Alzheimer's or other forms of dementia. The group program included 15 weekly meetings lasting two hours each involving five to nine volunteers and led by a health professional. The program focused on stress management and was divided into two components. The first centred on evaluating the situation. Its goal was to allow caregivers: a) to better evaluate the stressful conditions to which they are exposed and to identify their fixed and alterable aspects; b) to develop the best customized strategy to face the situation.

The program's second component focused on three strategies to deal with a relative's difficult behavior: a) solving problems (to change an alterable stressful situation); b) changing thoughts (to manage emotions under unalterable stressful conditions); and c) getting help from others, whether the situation can be improved or not.

Participants

Some 158 family caregivers participated in our study. Half of the caregivers followed our program and the other half attended the regular meetings held by community organizations in their region (i.e., Alzheimer Society, the CLSC). The participants were mostly women (83% v. 17% men), were married (80% v. 20% single, divorced or widowed) and lived with the sick person (80%). Fifty-six per cent were taking care of their spouse, while 44% were helping a parent, a brother or a sister. The average caregiver age was 59. They were questioned on their experiences by our team members before and after their participation in either one of the programs.

Program efficiency

The results show that after participating in our program, the caregivers reported a 4% decrease in difficult behavior by the sick person, while the other caregivers reported an 8% increase. The caregivers' reactions and negative feelings towards their relatives' difficult behavior decreased in both groups, but more notably so among those who attended our workshops (16% v. 5%).

In spite of the decrease in the caregivers' negative reactions, the program does not appear to have had any impact on the burden, anxiety, psychological distress, psychological well-being, feelings of personal efficiency, perceptions of social support and use of community services. It is nonetheless possible that the program's impact on those aspects will appear in the long run. Our team will investigate this outlook in the following months.

Summary

Our psycho-educative group program specifically and intensively targeted the most fundamental element of the burden of family caregivers of people suffering from dementia: managing their difficult behavior and the stress that they provoke. It has been demonstrated that our program has allowed caregivers to better respond to the difficult behavior of their sick relatives. 📌

***Louis Voyer** acted as a coordinator in this study. Besides **Dr. Réjean Hébert**, the researchers responsible for the study are: **Louise Lévesque** (Institut universitaire de gériatrie de Montréal), **Jean-Pierre Lavoie** (Direction de la santé publique de Montréal-Centre), **Jean Vézina** (Université Laval), **Carole Gendron** (Douglas Hospital and McGill University), **Michel Prévile** (Sherbrooke Geriatric University Institute) and **Francine Ducharme** (Université de Montréal).

Better Trained Nurses to Reduce Urinary Incontinence

By Caroline Collette, M.A. (gerontology)



Caroline Collette is a doctoral student in clinical sciences at the Université de Sherbrooke and at the Research Centre on Aging. She is conducting her work under the supervision of Gina Bravo, Ph.D., and Le Mai Tu, M.D.

In Canada, the elderly are the fastest growing population segment. The accelerated aging of the population carries its own problems. For example, health problems are often more prevalent with aging. Many of those problems, such as cerebrovascular accidents, diabetes, prostatic hypertrophy, dementia and so on, present high risk factors for urinary incontinence. It is therefore not surprising that urinary incontinence is increasingly prevalent in industrialized countries. In Canada, it affects some 10 to 30% of the elderly living at home. Many elderly people must learn how to cope on a daily basis with this condition and occasionally face humiliating situations.

Experts note that urinary incontinence can have multiple effects at the physical, psychological, social and economic levels. Involuntary urinary loss is often responsible for various complications in the body such as urinary infections and cutaneous lesions. Bladder problems are also difficult to deal with for people who are afflicted. In fact, there are significant impacts on daily activities, which end up diminishing the quality of life of those suffering from urinary incontinence. They can feel anxiety, embarrassment and have depressing thoughts. At the social level, those affected can become more isolated. They reduce their contacts, but need more help from others. In the U.S., the economic costs associated with treating urinary incontinence are estimated to be in the range of a few billion dollars.

The role of nurses

Many recent studies show that incontinence can be cured or at the very least successfully managed. Researchers concluded that an intervention by a medical team that is trained and motivated can correct the physical condition and improve the quality of life of those suffering from bladder problems. However, even though nurses play an essential role in satisfying the need to eliminate, they are not necessarily sufficiently informed about the topic or have the required skills to deal with the problem. It was also noted that they do not appear truly motivated to recognize and properly treat the elderly who have problems retaining

their urine. The lack of information, wrong perceptions and lack of motivation by the nurses affect their behavior and hinder their actions towards those suffering from incontinence and whose quality of life is often significantly altered. The development and assessment of training methods for nurses who work with elderly people living at home are still in their embryonic stages. It therefore seems to us necessary to pursue research in this field in order to set up programs that have proven their relevance and efficiency.

We conducted a pilot project from 1999 to 2001 that aimed to fill this void. In this initial study, a training program for nurses responsible for incontinent people living at home was elaborated and evaluated. An analysis of the results showed that participants improved their knowledge, skills and attitudes.

The negative effects of urinary incontinence and the positive results of that pilot project justify the continuation and evaluation of the program with a greater number of people. The pilot project also showed that it was necessary to focus the program more on attitudes. Finally, it seems timely to spread the evaluation of the program and its impact not only on nurses who receive the training, but also to the incontinent people that they are treating.

The present study aims to evaluate the program's impact on the nurses' knowledge about urinary incontinence, on their ability to plan an intervention towards those suffering from the condition, and on their attitudes towards incontinence. If possible, the study will evaluate the impact of the change of knowledge, skills and attitudes of nurses on the bladder autonomy of incontinent people and their quality of life.

We believe that this second research has every chance of improving the nursing profession and the quality of care provided to those suffering from urinary incontinence. 

...CARDIOVASCULAR DISEASES

The relationship between paraoxonase1's activity and atherosclerosis is not fully established and is the object of important studies. However, some studies have shown that a low-level activity of the paraoxonase1 enzyme is related to the presence of heart injuries. Research in our laboratory presently focuses on this relationship.

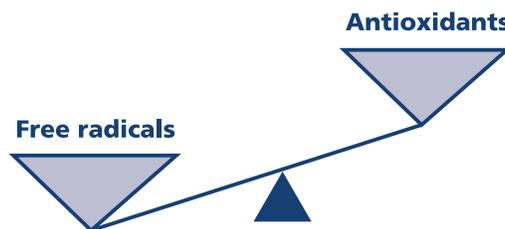
Finally, the drop in the enzymatic activity over the course of the aging process could be an important factor in the increase of cardiovascular disease incidence that accompanies aging. Therefore, it is necessary to conduct further research in order to understand the processes that make lipoproteins sensitive to oxidation (oxidative stress and so on) and to examine the role of physical activity and antioxidants in the improvement of paraoxonase1's enzymatic activity over the course of aging. 

OXYDATIVE STRESS

Free radicals are highly reactive molecules that are normally produced by the body during biological activities such as respiration. Free radicals have many beneficial effects, including protecting the body against certain disease-causing microorganisms. Under normal conditions, there is equilibrium among the production of free radicals as well as the vitamins and enzymes in our body. However, that equilibrium can be shattered when:

- 1) The production of free radicals in our body is abnormally high;
- 2) The enzymatic defense systems are inefficient;

OXYDATIVE STRESS = IMBALANCE BETWEEN ANTIOXIDANTS AND FREE RADICALS



- 3) The diet does not contain enough antioxidants.

Under such conditions, our body is overwhelmed with oxidants, which is what we call oxidative stress.

Excess free radicals can "attack" or oxidize different cellular components (lipids, proteins and DNA). That could lead to cancers, cardiovascular diseases and degenerative diseases such as Alzheimer's.

Don't miss the next conference of the Board of Governors:

Why Can't I Sleep Anymore?

By **Dominique Lorrain, Ph.D.**

Researcher at the Research Centre on Aging and full professor at the Université de Sherbrooke's psychology department

Wednesday, September 29, 2004, at 2:00 p.m.

Amédée- Beaudoin Community Centre
10 Depot St., Lennoxville

Admission is free and the presentation is intended for the general public.



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