



PREVENTION OF DEMENTIA

Neurology

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ABSTRACT

Dementia is a syndrome consisting of impairment of memory judgment and reasoning, and changes in mood and behaviour. Most of the cases like Alzheimers cannot be properly treated. Hence the need for prevention. Several factors have been studied. Prevention of development of hypertension, hypercholesterolemia ,diabetes mellitus, obesity is important and as is important increased omega 3 fatty acid and antioxidants intake, increased physical activity, and treatment and prevention of depression. Thus a good nutritious diet, Aerobic exercise which increases the blood flow and oxygen to the brain reduction of stress anxiety ,sufficient sound sleep, reading books, solving mathematical problems ,maintaining a diary of names and contacts of people may be highly helpful in preventing dementia. There must be a combined effort by self, parents, schools, health workers, audio visual media and goverment to raise awareness and educate the public.

KEYWORDS

Dementia, Alzheimers, Prevention, Exercise.

INTRODUCTION

Dementia is a syndrome consisting of a number of symptoms that include a reduced ability to perform familiar task, impairment of memory judgment and reasoning, and changes in mood and behavior. Some dementias are caused by treatable conditions such as depression, thyroid disease, infections or drug interactions. However, treatments are not satisfactory for progressive, dementias. The brain abnormalities that occur with Alzheimer's diseases can start as early as one's 30's or 40's, however, the gradual onset of dementia symptoms usually begins in one's 60's or 70's. Improved testing technique, plus the consultation of a doctor at the first signs of behavioural and memory impairment are now leading to earlier diagnoses of Alzheimer's diseases. In 2010, there were estimated 35.7 million dementia cases globally, expected to double by 2030 and 115.4 million by 2050. The cause of 50% to 75% dementia cases is Alzheimer's diseases. Since it is an incurable disease, the most important aspect is prevention^{1,14}.

What are the best established modifiable risk factors for dementia?

Hypertension

Several systematic reviews have found that the effect of hypertension upon dementia risk appears to be age dependent. Mid life hypertension consistently increases the risk of late-life dementia, while the effect of late life hypertension upon dementia risk is less clear, possibly because of the confounding effects of medication and iatrogenic hypotension.²

Smoking

Although some early studies surprisingly found reduced incidence of dementia in smokers, more recent longitudinal studies have consistently found and increased incidence of dementia in smoker³

Diabetes mellitus

Diabetes mellitus has been associated with an increase risk of dementia in several studies⁴.

Physical inactivity

One systematic review of physical inactivity and cognitive function observed that 20 out of 24 longitudinal studies found that physical inactivity was associated with some level of cognitive impairment.

Depression

Depression has consistently been identified as a risk factor for dementia, with some studies finding that onset of first depression in later life carries the strongest risk of dementia. Two recent meta-analysis have found that any history of depression is associated with a two-fold increase in the risk of dementia.⁵

Cognitive inactivity

The variables are much more difficult to quantify in this area and the literature is consequently more limited. However, one systematic analysis compared dementia risk in subjects according to whether or not they're engaged in "cognitively stimulation leisure activity" and found that subjects who engaged in such activity had a reduce risk of dementia³.

Dietary factors

Obesity

As with hypertension, studies of mid life of obesity consistently find an increased risk of dementia in obese subjects^{4,11}.

Hypercholesterolemia

Several studies have reported an increased risk of Alzheimer's disease (AD) and all cause dementia in patients with hypercholesterolemia. There is some evidence from animal models and cerebrospinal-fluid (CSF) bio-makers studies to indicate the statins may have effects on AD pathology rather than on concomitant vascular pathology, but clinical trial shave been disappointing to date^{5,11}.

Low omega 3 fatty acid intake

Some (but not all) population-based studies have shown a reduced risk of AD in individual who consume higher level of fish which are reach in the omega 3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the latter of which is the most abundant polyunsaturated fatty acid (PUFA) in the brain. Animal studies have suggested that DHA intake modifies AD pathology, but clinical trial have been disappointing⁷.

Low antioxidant intake

Several risk factor studies provided evidence that consumption of Vitamin E, Vitamin C, or the combination is associated with a reduced risk of AD. However, clinical trial have been discouraging to date^{5,6}

B Vitamin-related hyperhomocysteinemia

Elevated serum homocysteine, which in many cases is a reflection of B Vitamin status, has been associated with increased risk of stroke, dementia and AD Trials of B Vitamins for the treatment or prevention of AD have shown successful reduction of serum hyperhomocysteinemia, but mixed effect on cognitive outcome^{5,7,15}.

Trace metals

The effects of environmental aluminum upon AD risk are reported since 1970s, but research on this topic has not borne out the "aluminum hypothesis" and most people in the field no longer consider aluminum are relevant factor. However, some more recent evidence has implicated copper intake in the pathogenesis of AD, with both epidemiological and animal studies suggestion and interaction between dietary copper and dietary lipids^{5,6}.

Medication

Non steroidal anti-inflammatory drug (NSAID) usage

More than 20 studies of the effects of NSAID, use on dementia risk have concluded that NSAID users have a lower risk of dementia compare to non-users.

Estrogens

It is difficult to believe that as recently as the late 1990s, review articles where concluding that estrogen replacement therapy at menopause had great potential for the prevention of AD. The opinion regarding estrogen for dementia prevention has since been dramatically reversed on the basis of clinical trials. Interestingly, investigators in this area now postulating that there may be a "critical period" for estrogen used in mid life, so that estrogen may be the third dementia risk factor which cannot be fully appreciated without careful consideration of interaction with age of exposure⁹.

What are the recent challenges to prevent dementia?

1. All living longer, more dementia
2. Variable quality of life
3. Little public confidence
4. Increasing cost and buying things that don't work

Different ways of protecting brain from being degenerating, are:

1. Regular aerobic exercise
2. Mental stimulation
3. Healthy and balanced diet
4. Good quality sleep
5. Stress reduction
6. Actively involved in social life
7. Spiritual and positive thinking

Is dementia preventable?

It is preventable partially by adopting following measure.

- Proper nutritional support (green leafy vegetables, fat restricted high protein diet.) several studies have shown that certain fruits like colour vegetables (red tomatoes) contain anti-oxidants. Saturated or trans-fat effect the blood flow to the brain. Food containing omega 3 fatty acid decreases plaque formation in the brain. Some research shows that regular intake or turmeric delays the progression of disease. But not conclusive^{10,12,13}.
- Aerobic exercise (40 minutes three times a week, walking some distance). Physical exercise increases the blood flow and oxygen to the brain and also gives a person a sense of well being^{3,5}.
- Reduction of stress anxiety^{3,5}.
- Sufficient sound sleeps (7 to 9 hours per day). Sleep deprivation impairs ability to think problem solving, processing, store and recall information^{3,4,5}.
- Reading (newspaper, general knowledge books) is essential to a healthy brain. Participating in debates and discussion or simple act like cross word puzzle in morning papers, memorizing small details (mobile number), to learning foreign language, indoor game (cards, chess) all exercise the brain and help keep it sharp^{4,5,16}.

7 tips to prevent memory loss:

- I. Maintain daily written routine
- II. Labelling the photo of relatives and friends
- III. Labelling daily use of utensils and medicines
- IV. Mark the daily calendar date
- V. Maintain reminder service in cell phone for appointment and medicines
- VI. Maintain a diary for personal address and direction of home
- VII. Maintain a diary for relatives phone numbers and nearest phone numbers

Recent advance study:

The Burns study, which appeared in the July 15 issue of *Neurology*, 2014, asks whether fitness level affects brain changes seen early in AD. The researchers measured the fitness of 57 early-stage AD patients, and a similar number of non-demented subjects, during exercise on a treadmill, and determine whole brain volume by MRI. Their results indicate that subjects with AD had a modestly but significantly reduce maximum oxygen consumption (a measure of cardio respiratory fitness) compare to no demented subjects. Fitness level correlated with brain volume in the AD group, so that people with AD who were in better shape had more brain tissue. There was no such relationship in people without dementia, and there was no correlation between brain volume and cognitive measures after adjustment for age^{17,18}. Changes

in the brain that cause dementia may start many decades before symptom appears. This means it is important to look after the brain health throughout one's life. So prevention is not the last word, it is always first word and far better than cure in all times. So, fight against dementia must begin early. Most of the studies have shown that taking preventive measures over a period time decreases the risk of dementia. To ensure good mental and physical health in the coming generation there must be a combined effort by self, parents, schools, health workers, audio visual media and govt. to raise awareness and educate the public. Above all each one of us should be responsible for ourselves, take good care of our body and also our mind.^{17,18}

Lastly we suggest simple 5C approach to prevent dementia:

5'C' Approach

- C- Know current status of patient
- C- Contact for early diagnosis
- C- Counseling about life style and habit
- C- Continue follow preventive advice
- C- Care giver to take care early

CONCLUSION:

Human are not immortal. Death in subject with dementia is however painful for family members since the affected person have contributed so much for the family in one's productive period of life. Mostly sufferers with dementia are incurable, we should to try to prevent it or slow down it if possible. Aging is inevitable, but accelerated aging due to disease process leading to incapacity is not acceptable. All of us should take the vow to prevent dementia from early age of our life.

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