Memory & Dementia

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Aims of the Webinar

• Look at the causes and factors relevant to the onset of cognitive decline
• Focus on Alzheimer’s Disease – the most common form of dementia
• Explore ways to nutritionally support memory and brain function
Central Nervous System

- Brain + spinal cord form our central nervous system

- **Brain consists of:**
  - Brainstem
  - Cerebellum
  - Diencephalon
  - Cerebrum

- **Types of brain cells:**
  - Neurones
  - Astrocytes
  - Oligodendrocytes
  - Microglia
Memory

• 3 types: sensory, short term and long term
• Stored in various locations including hippocampus, cerebrum and cerebellum
• Memory in children and young adults affected by lack of sleep more than older adults
Dementia

• ‘Dementia’ covers a range of symptoms including:
  – Changes in mood, depression, anxiety
  – Memory and recall problems, mental confusion
  – Communication problems

• In the UK, 800,000 people living with dementia

• Can be devastating for patient and their loved ones
Dementia

• Many types of dementia:
  – Alzheimer’s Disease
  – Vascular dementia
  – **Mild Cognitive Impairment**: 60% of sufferers will go onto develop Alzheimer’s
  – Dementia with Lewy Bodies
  – Creutzfeldt Jakob disease
  – HIV related cognitive impairment
Dementia

• **Vascular Dementia:**
  - Caused by loss of blood supply to the brain, usually by stroke or transient ischaemic attacks and subsequent death of brain cells
  - Risk factors include history of stroke, CVD, hypertension, smoking, inactivity, ethnic background
  - Can occur alongside Alzheimer’s as mixed dementia
Alzheimer’s Disease

• Characterised by the presence of amyloid plaques and neurofibrillary tangles – clumps of damaged proteins in neurones, astrocytes and oligodendrocytes – in the brain

• Memory loss, mood changes, disorientation, communication problems, aggression

• Because we are living longer, number of people with Alzheimer’s is set to triple by 2050
Effects of ageing on the brain

- Brain shrinkage!
- Lose 2-3% of cerebral volume per decade from age 20.
- Build up of toxins due to effects of ageing on circulation
- Maintenance of mental capacities is unique to individual
Factors involved in development of Alzheimer’s & dementia

- Ageing
- Elevated homocysteine
- Chronic stress; development of MCI to Alzheimers
- Aluminium toxicity – affinity for neurons in the hippocampus
- Infective agents; helicobacter pylori (Kountouras, et al 2009)
- Excess oxygen
- Impaired glucose metabolism; “type-3 diabetes” (Steen E, et al, 2005)
Factors involved in development of Alzheimer’s & dementia

• Malabsorption of nutrients
• Low levels of antioxidants & B-vits
• Low cholesterol, statins
• Poor fat balance
• Compromised intestinal barrier and/or blood brain barrier
• Genetic susceptibility
Factors involved in development of Alzheimer’s

Amyloid and cholesterol are highlighted

Homocysteine

Dietary methionine converting to homocysteine.

**Methyl groups and B-vitamins** required to put homocysteine on either the pathway to **SAMe** or **cysteine**.

Cysteine then forms **glutathione** – vital antioxidant
Homocysteine

• Efficient metabolism of homocysteine requires B2, B6, B12, folic acid, zinc & methyl groups

• Elevated homocysteine associated with cardiovascular disease, stroke (Sydow, 2001) and Alzheimer’s (Quadri et al, 2004)

• **Brain shrinkage reduced with B-vitamins** (Douaud G, et al, 2013)
Fats – lots of them!

• Omega-3 oils
  – Reduce inflammation
  – DHA & EPA work with vitamin D3 to enhance the phagocytosis of amyloid plaques by microglia (brain macrophages)

• Evidence that a Mediterranean diet can reduce Alzheimers risk

• Krill oil for supplementation – phospholipid form of omega-3

• Dietary cooking oils?

• Coconut oil & MCT’s
  – Ketogenic diet
Cholesterol

• Huge amount of cholesterol in brain – 25%!
• Adrenal glands have high concentration; links with MCI and chronic stress, adrenal fatigue
• Transported around our bodies by lipoproteins – VLDL, IDL, LDL, HDL
• Apolipoproteins determines which tissues can access the contents of the lipoprotein
Cholesterol

• ApoE-4 associated with increased risk of Alzheimers because of how fat metabolism by the brain is affected

• **Vit E & COQ10** are part of the lipoprotein to protect fats and cholesterol on their journey to the brain

• Vit E & COQ10 aid the protection of fats and cholesterol against oxidation

• **Statins** compromise COQ10 production
Importance of the blood-brain barrier

• Key ingredients are iodine, zinc, DHA, D3 and phospholipids
• Barrier is developing until 6mths of age
• Linkages between intestinal barriers and blood-brain barrier, and how these barriers have developed during life.
Supporting brain function

Intestinal support & integrity

Specific brain nutrients

Blood-brain barrier support

Homocysteine metabolism
Nutrients to support brain function

• Cholesterol & essential fats – Omega 3
• Zinc
• B6, B2, B12, folic acid
• D3
• Turmeric: traditionally used in India, antioxidant, enhances actions of microglia.
• Antioxidants: vitamins C & E, the Mediterranean diet
Phosphatidylserine

• Part of a group of phospholipids, found in high concentrations in the brain

• Active at cell membrane levels:
  – Enhances the transmission of messages between nerve cells: the jump across the synaptic gap
  – Promotes the production of nerve cell growth
  – More cell growth = increase in metabolic rate of brain = increase blood flow
Phosphatidylserine

- No main dietary sources
- Levels decline with age and ill-health
- Beneficial effects of supplements have been noted within 3 weeks
- Huge improvements in memory, learning, recall, overall cognitive function
- Newsletter: “Phosphatidylserine”
Lifestyle factors

• Quit smoking!
• Regular exercise can cut the risk of developing dementia by up to 45%
• Use your brain; connections are being formed all the time, making new connections maintains brain plasticity and flexibility
• Limit alcohol intake
Summary

• Wide range of risk factors for MCI, dementia and Alzheimers.
• Research is ongoing into definitive causative factors
• We can support brain function with healthy fats, cholesterol, D3, antioxidants and B-vitamins.
• Specific brain nutrients such as PS can work quickly and effectively
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We all know that taking pharmaceutical painkillers is one way to relieve acute pain that may occur from conditions such as backaches and headaches. But side effects from these common drugs, such as gastric ulcers and rebound headaches, might be doing us more harm than good. So is there a safe, natural alternative for pain relief?

Common side effects of everyday painkillers such as aspirin include gastric bleeding, indigestion and diarrhoea, which can occur within just a couple of days of use.
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• An Alphabet of Antioxidants
• Fish Oils
• Coconut Oil could support Alzheimers sufferers
• Alzheimer’s: Vitamin D and Omega-3 Oils
• The symptoms of ADHD can be reduced by a daily intake of Phosphatidylserine
• Benefits of Krill Oil
• Benefits of Vitamin C

• Webinars:
• The Blood Brain Barrier
• Cardiovascular Health – Getting to the Heart of the Matter
• Understanding the Omega Oil revolution
• The Art of Detoxing – A Naturopathic Approach
References

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www.nutraingredients.com Accessed 04/13 Omega-3 and vitamin D may help clear Alzheimers plaques


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