Strokes: Prevention and Recovery

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Facts:

More than 4 million people in the United States have survived a stroke or brain vascular attack and are living with the after-effects, 75% between 55 and 84 yo

Two types: ischemic (80%) and hemorrhagic (20%). Ischemic cause cerebral infarction much like a myocardial infarction (heart attack)

Transient Ischemic Attacks (TIA) often proceeds full blown stoke.

Stroke is the leading cause of disability among adults in the U.S.

- 10 percent of stroke victims recover almost completely.
- 25 percent of stroke victims recover with minor impairments.
- 40 percent of stroke victims experience moderate to severe impairments requiring special care.

Stroke is the No. 3 cause of death in the U.S. 1/3rd do not survive the initial attack

The total cost of stroke to the United States is estimated at $43 billion per year.

The average cost of care for a patient up to 90 days after stroke is $15,000.

For 10 percent of patients, the cost of care for the first 90 days after a stroke is $35,000.

Stroke recovery goal is to survive acute stroke. Acute care priority is to get patient to a stroke care facility.

Symptoms:

Sudden, unexplained, and rapid onset of:

- Dizziness, trouble walking, loss of balance
- Confusion, trouble speaking, or understanding
- Weakness or numbness of face, one side of the body, arms or legs
- Loss of vision in one or both eyes
- Sudden and severe headache

Right sided strokes fail to "put things together" and may be in denial that anything is wrong. Left side of body fine motor functions are affected.

Left sided strokes may have language problems, organizational difficulties, right sided motor problems, and may be depressed.

Allopathic Medical Management:

Thrombolysis of ischemic stroke – treatment must start within 3 hours. Earlier treatment has more favorable outcome. Time is brain, unsalvageable beyond 1-2 hrs

Aspirin (325 mg) given in the 24-48 hour range as an antiplatelet drug and adjuvant to recombinant tissue plasminogen activator (rtPA) for ischemic stroke

Albumin: Reduces brain swelling if levels are low and can be given within 24 hr timeframe. Long ½ life, keeps fluid in vessels, potent antioxidant. Safe for ischemic

MgSO4 IV: Within 12 hours after onset. Best if given within first 2 hours of onset. Neuroprotective potential. Ongoing "FAST-MAG" trial study.

Stroke Prevention:

Over the last 30 years there has been a reduction in incidence. The risk factors of high blood pressure, diabetes, smoking, and cholesterol have been reduced.

Perhaps even more significant is the blood level of homocysteine, a byproduct of metabolism. Dr, Kilmer McCully (Harvard undergrad, med school, and 14 year professor) described the significance in vascular disease and won the Linus Pauling award in 1998. Further research found a relationship between homocysteine and strokes. Tufts University researchers found that elevated levels of homocysteine corresponded to carotid narrowing as seen by ultrasound. As much as 50% greater carotid narrowing was found in elevated homocysteine blood values of elderly male subjects.

Elevated levels of homocysteine can be reduced by 50% with 0.65 mg of folic acid, 0.4 mg B12, 10 mg of B6.

DHA (docosahexanoic acid – a fish oil) - animal models had reduced oxidative damage, lessened learning disabilities, and normalized levels of brain-derived neurotrophic factor (BDNF) which facilitates synaptic transmission and learning ability.

CoQ10: helps prevent stroke damage in animal models. A powerful antioxidant. Statin drugs work also to lower CoQ10 levels along with intended target of cholesterol.

Vit E: may reduce recurrence for patients with high oxidative stress. A lipid soluble antioxidant and will help maintain cell membranes.

Carnosine: non-toxic –alanine and histadine dipeptide. Protects against Maillard or browning reactions to produce AGE - an important components in the formation of potentially lethal atherosclerotic plaque. Supplemented before the onset of stroke consistently reduced the severity of stroke by as much as 50%. After onset 30-40% .

NaEDTA: Chelation to remove calcium plaque build-up in arteries. Hazardous.

Potassium: study at Harvard showed potassium supplement taken with diuretic decreased stroke incidence by 60%. Crucial for elimination of wastes. Excess is dangerous to heart function and potentially fatal.

Management of risk factors:

Hypertension, diabetes, elevated cholesterol and triglycerides, smoking, drinking in excess, over weight, lack of aerobic exercise.

Intracranial atherosclerosis, atrial fibrillation (high Hcy quadruples risk of ischemic stroke), coronary heart disease

C-reactive protein (CRP) reduction. CRP is a marker for inflammation

Healing:

After a stroke, there is an area called a "ischemic penumbra" where the neurons are "idling" – neither dead nor functioning.

Neural Therapy: As indicated, 0.5% procaine in the "Crown of Thorns" (COT) will help to reset neural pathways.

HBOT:

Hyperbaric Oxygen Therapy - All stoke victims in Germany can have an intensive 3 week course of HBOT. 100% O2 under 1.5 ATM pressure for 1-2 hours and perhaps minimum 30-32 treatments for 100% efficacy. Increased O2 levels has several long term effects. SPECT scans shows improvement of brain functioning

1. enhanced growth of new blood vessels
2. increase in ability of white blood cells to remove toxins and kill bacteria
3. increase in fibroblasts
4. enhanced metabolism of marginally functioning neurons

Over 1,000 cases have demonstrated 40-100% increase in the rate of improvement and in cases as late as 14 years after the event.

Botanicals:

Bacopa monniera – "Brahmi". "The bacoposides aid in repair of damaged neurons by enhancing kinase activity, neuronal synthesis, and restoration of synaptic activity, and ultimately, nerve impulse transmission" Alt Med Review 2004 300mg

Arnica: homeopathy remedy has a long history of treating brain injuries. 30C to 1M, QD to TID, from one dose to 12 months of dosing.

Gingko biloba – prevent and enhance stroke recovery 3rd most popular drug in Germany. Caution with BP and stroke medications.

Supplements:

EPA and DHA: long chain fatty acids best studied for of the poorly understood resolution of inflammation in the brain. Downregulates IL-1 and upregulates PG-3

Krill oil: Favorably downregulates C-reactive protein (CRP), a biomarker for inflammation and stroke recurrence. Next generation fish oil with astaxanthin carotenoid Astaxanthin has 100-500 times the antioxidant capacity of Vitamin E and 10 times the antioxidant capacity of beta-carotene. Many laboratory studies also indicate astaxanthin is a stronger antioxidant than lutein, lycopene and tocotrienols.

Glycerophosphocholine (GPC) – a water soluble phopholipid. GPC combines with DHA to make omega-3 phosphatidyl choline which helps establish highly fluid cell membranes.and is a precursor to acetylcholine. Supports neuroplasticity via nerve growth factors (NGF) receptors. Comatose patients come out of comas earlier, have less speech impairments, and more effective return of focal neurological symptoms. Also tended to normalize cerebral blood flow, decrease vascular resistance, and improve spontaneous brain bioelectrical activity. Protects the ischemic zone. Dosing started within 10 days after onset: 1 g QD IM for 28 days and then 1.2 g PO QD for 5 months. 78% of investigators rated it as "very good" or "good".

Citicholine Choline linked to cytidine by a diphosphate bridge. Clinical trials had 2,000mg/day having greatest favorable response, administration beginning 24 hrs after onset, dosing for 6 wks, efficacy assessed at 3 mos. Improved ADL recovery by 29%, improved functional capacity by 42%.

Acetyl-L-Carnitine: helps with providing energy to the cell mitochondria, thus improving cellular metabolism. The acetyl form of L-carnitine. ALCAR crosses the blood-brain barrier and improves mitochondrial function in the central nervous system. It decreases oxidative damage to the hippocampus. Damage to the hippocampus causes

memory loss. ALCAR improves mitochondrial energy production in the brain and has been shown to improve memory.

CoQ10 and B3 (NADH): In the idling neurons, there is a need for increased energy levels and these nutrients revitalize energy availability to the neurons.

Phosphatidyl serine (PS): A key component of both neuronal and mitochondrial membranes. The neuronal membrane is responsible for the reception and transmission of chemical messages. PS modulates the fluidity of cell membranes—essential to your brain cells' ability to send and receive chemical communication.

Vinpocetine (periwinkle) Improves outcome even long after the event. Dilates brain arteries, antioxidant, reduces Rouleaux and increases flexibility of RBC.

B6, B12, and folic acid will reduce homocysteine load – a proven predictor of stroke recurrence. Folinic acid (calcium folinate) is more stabile than folate, longer ½ life, readily crosses BBB. However, since tetrahydrofolate and its derivatives cross mitochondrial membrane slowly, homocysteine recovery in the brain depends upon methyl groups from trimethylglycine (TMG).

Piracetam: extremely safe anti-thrombotic agent which operates through the novel mechanism of inhibiting platelet aggregation and enhancing blood cell deformability. Complementary to warfarin. Can improve cognition after stroke, and reduce symptoms Given at 4.8 to 9.6 grams split into three doses over 8 hrs

DMSO: DMSO has been employed with human patients suffering severe head trauma, initially those whose intracranial pressure remained high despite the administration of mannitol, steroids, and barbiturates. In humans, as well as animals, it has proven the first drug to significantly lower intracranial pressure, the number one problem with severe head trauma. IV administration of DMSO can prevent paralysis and reverse damage from stroke if given within the first 4 hours, and even better if within the first 90 minutes. MSM (methyl sulfonyl methane) is end-product

Nattokinase: Nattokinase produces a prolonged action (unlike antithrombin drugs that wear off shortly after IV treatment is discontinued) in two ways: it prevents coagulation of blood and it dissolves existing thrombus. Both the efficacy and the prolonged action of NK can be determined by measuring levels of EFA (euglobulin fibrinolytic activity) and FDP (fibrin degradation products), which both become elevated as fibrin is being dissolved. By measuring EFA & FDP levels, activity of NK has been determined to last from 8 to 12 hours. DO NOT take with heart, stroke, or bp meds!

Blood Vessel Support: Vit C, bioflavonoids like rutin, Aesculus (horse chesnut), Hamamelis(Witch Hazel), antioxidants like Vit C&E, Se, SOD, CoQ10, Curcumin, NAC

Craniosacral Therapy: Empirical evidence

Physical Therapy: Greatly needed for recovery

Neuroplasticity:

Michael Merzenich and cortical nerve network adaptability

Neurogenesis 1998 Erickson et al mesenchymal stem cells from bone marrow

Erythropoetin crosses BBB and significantly lessens neurological deficit - 5 hrs

Granulocyte Colony-Stimulating factor (G-CSF) promotes angiogenesis – 24 hrs

Homeopathy: Arnica and Hypericum in 200c as indicated.