

NUTRITIONAL IMPLICATIONS IN NEUROLOGICAL DISORDERS

Food For Thought

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NICK NOLTE SUSAN SARANDON
LORENZO'S OIL

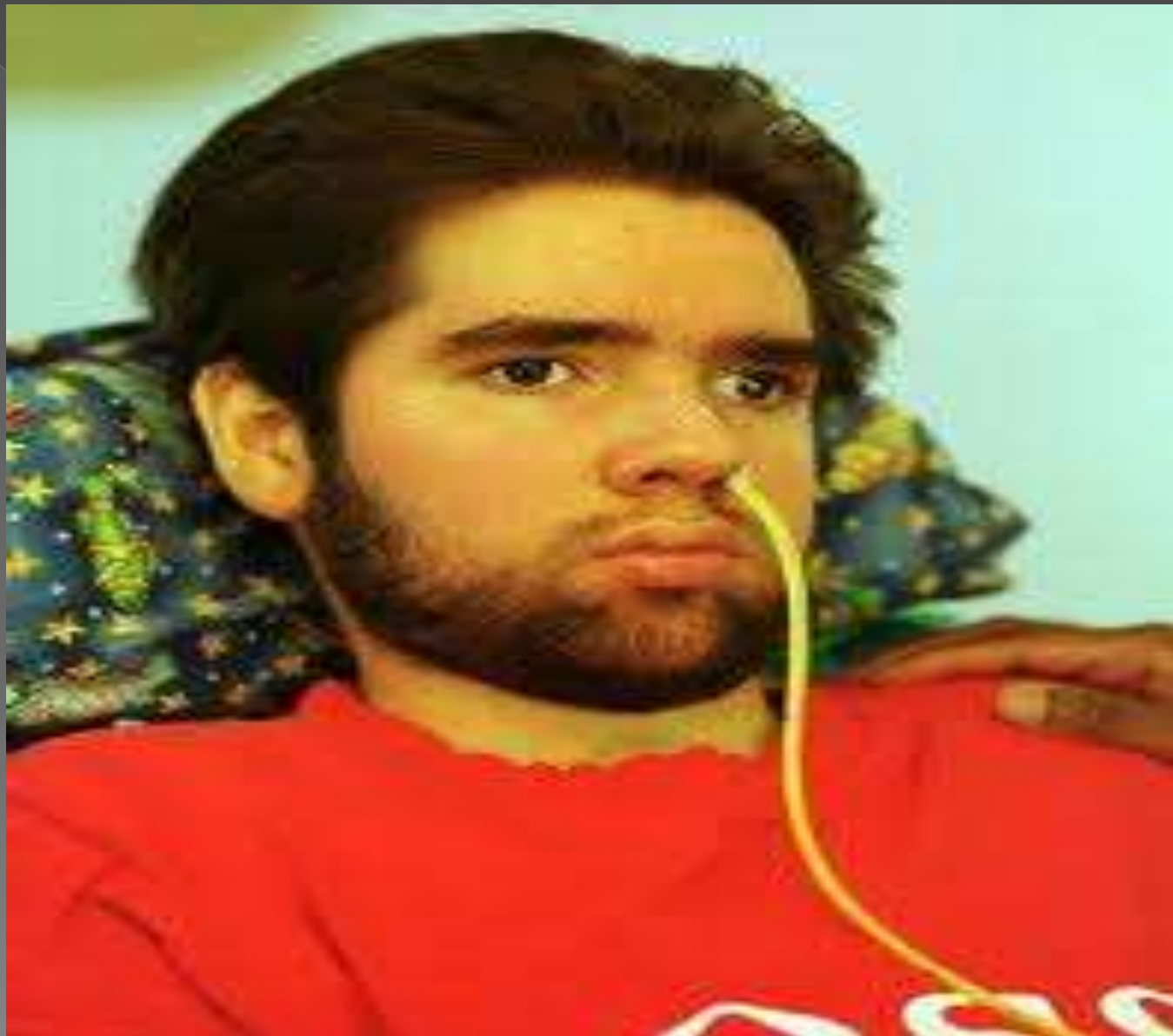


SOME PEOPLE MAKE THEIR OWN MIRACLES.

LORENZO'S OIL

- ◉ 4:1 mix of erucic acid and oleic acid
- ◉ Extracted from rapeseed oil and olive oil
- ◉ Designed to normalise the accumulation of the very long chain fatty acids in the brain
- ◉ Thereby halting the progression of ADRENOLEUKODYSTROPHY
- ◉ Available to patients taking part in a clinical trial

- Specific to ALD
- Does not repair myelin
- Doesn't affect other dysmyelinating disorders
- May prevent the disease in presymptomatic boys



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VITAMIN B12 DEFICIENCY

- Can cause damage to CNS if not treated for longer than 6 months
- Humans obtain almost all B12 from dietary means
- Pernicious anemia is usually the result of insufficient secretion of intrinsic factor within the stomach

- Till recently, it was widely believed that B12 deficiency was due to dietary factors
- Now, it is well known that improper absorption may be more important than low consumption

STORAGE AND LEVELS

- Total B12 stored : 2-5mg
- 50% → In the liver
- 0.1% lost each day
- Liver can store 3-5 years worth of vitamin B12 under usual conditions



METABOLISM

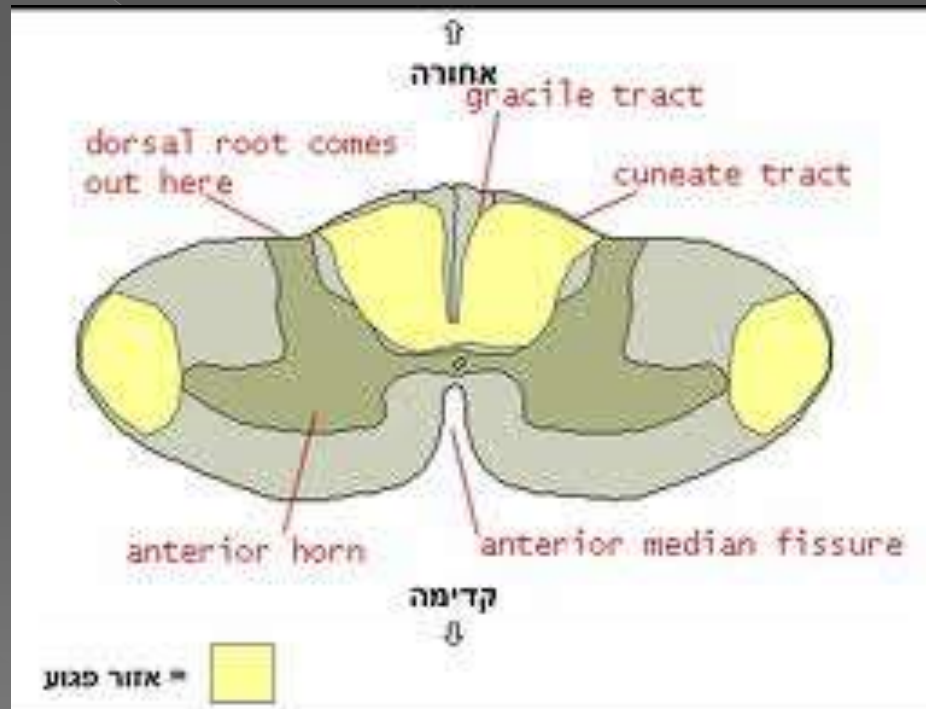
- 5 MTHF releases a methyl group for a reaction with homocysteine, resulting in methionine
- This reaction requires cobalamin as a co-factor
- Methionine → S-adenosyl methionine → aids in purine and pyrimidine synthesis, neurotransmitter production, DNA methylation

- ◉ Both B12 and folate are involved in homocysteine metabolism
- ◉ Therefore hyperhomocysteinemia is a non-specific marker of B12 deficiency
- ◉ Methylmalonic acid is a more specific marker

PATHOMORPHOLOGY

- ◉ Spongiform state of neural tissue, edema of fibers
- ◉ Myelin decay, later axonal degeneration
- ◉ Later, fibrous sclerosis of nervous tissue
- ◉ Dorsal cord and pyramidal tracts → SACD

SUBACUTE COMBINED DEGENERATION



CLINICAL FEATURES

- Anemia
- GI symptoms
- Sensory and motor symptoms
- Dementia
- Psychiatric symptoms

MYELOSIS FUNICULARIS

Impaired perception of deep touch, pressure and vibration, abolishment of sense of touch, paresthesias

- ◉ Sensory ataxia
- ◉ Decreased ankle jerk
- ◉ Increased knee and other DTRs

IMPORTANCE OF EARLY DETECTION

- B12 deficiency can cause severe and irreversible CNS damage
- The chance of complete reversal decreases with the length of time the neurological symptoms have been present

CAUSES OF B12 DEFICIENCY

- ◉ Inadequate dietary intake
- ◉ B12 occurs in animal products
- ◉ In some algae (chlorella and susabi-nori)
- ◉ Vegans at a high risk

IN CHILDREN

- Children are at a higher risk
- Due to inadequate dietary intake
- Have fewer vitamin stores
- Relatively larger vitamin need per calorie of food intake

- ◉ Selective impaired absorption of B12 due to intrinsic factor deficiency
- ◉ May be caused by loss of gastric parietal cells
- ◉ Surgical resection of stomach
- ◉ Malabsorption syndromes, esp terminal ileum involvement

- Achlorhydria is an important cause in the elderly
- Prolonged use of ranitidine
- Bariatric procedures
- Blind loop syndromes
- Metformin
- Alcoholism

TREATMENT DILEMMAS

- ◉ B12 available in various forms → cyanocobalamin, hydroxocobalamin, methylcobalamin, adenosylcobalamin
- ◉ Usually given parenterally
- ◉ Oral absorption poor

Vitamin B₁₂

Food sources of
vitamin B₁₂:

Eggs, meat, poultry,
shellfish, milk and
milk products



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DIETARY SOURCES

- ◉ Animal products
- ◉ High B12 content

Mussels

Mackerel

Herring

Salmon

Crab

Tuna

Beef

Lobster

Lamb

Swiss cheese

- ◉ Eggs have a low bio-availability of B12 content



- ◉ Some fermented foods contain B12
- ◉ Kombucha cultured tea
- ◉ Batabata-cha
- ◉ Fortified foods with B12
- ◉ Some algae

NUTRITIONAL NEUROPATHIES

- ◉ Thiamine deficiency
- ◉ Pyridoxine deficiency
- ◉ Niacin deficiency
- ◉ Pantothenate deficiency
- ◉ Alcoholism

NEUROCYSTICERCOSIS

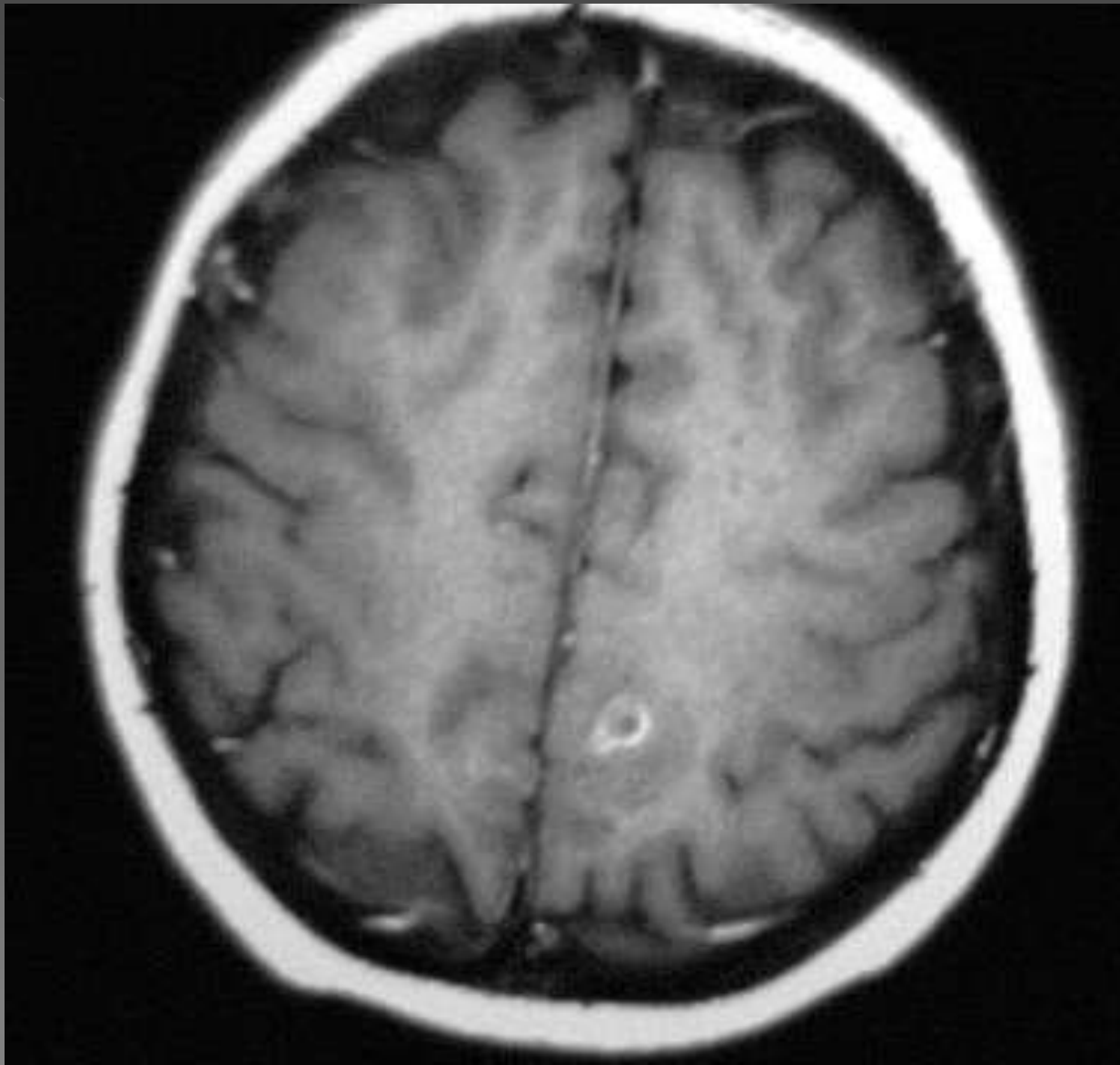
- NCC is the result of accidental ingestion of eggs of *Taenia solium*
- Most common parasitic disease of the nervous system in developing countries
- Main cause of acquired epilepsy

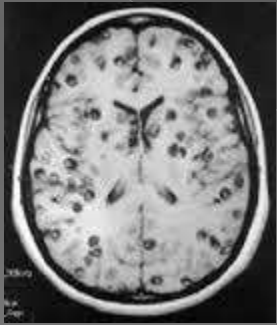
FEATURES OF NCC

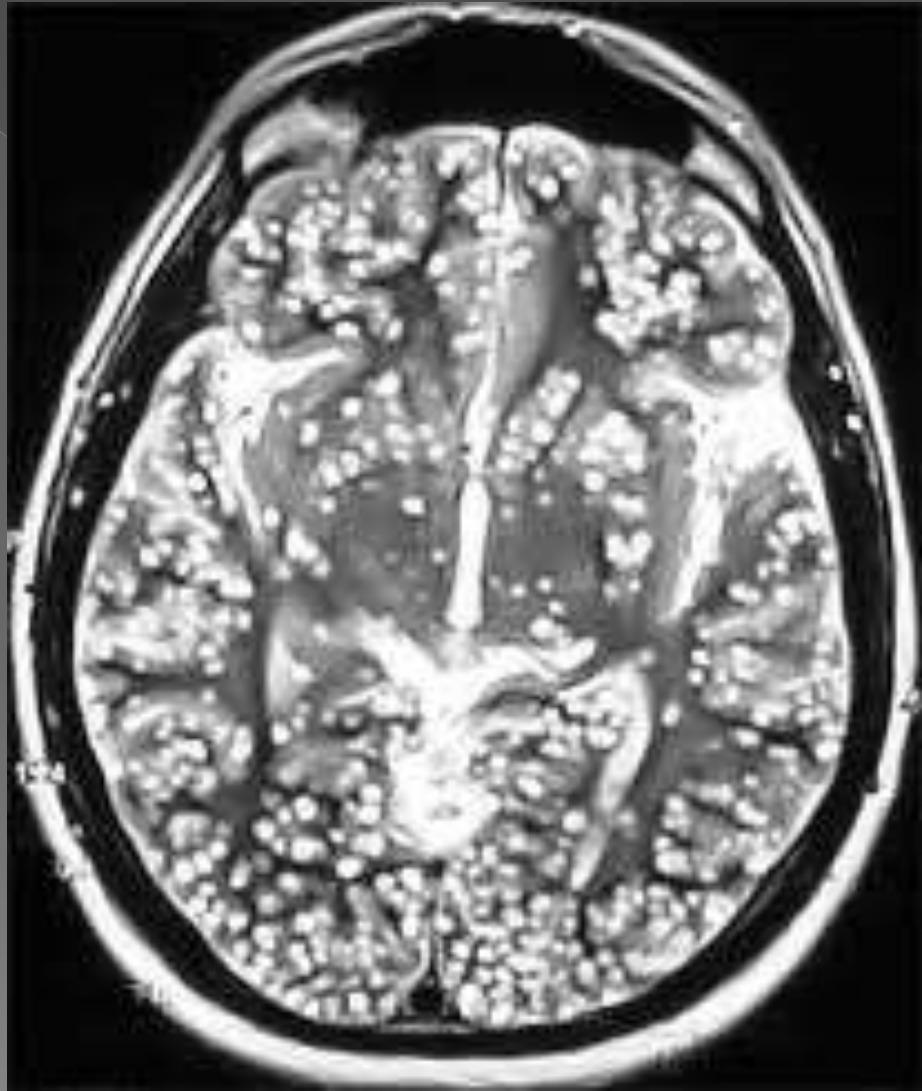
- Epilepsy
- Headache, dizziness
- Stroke
- Neuropsychiatric dysfunction

CT findings

- ◉ Vesicular stage
- ◉ Colloidal stage
- ◉ Nodular-granular stage
- ◉ Cysticercal encephalitis
- ◉ Active parenchymal stage
- ◉ Calcified stage

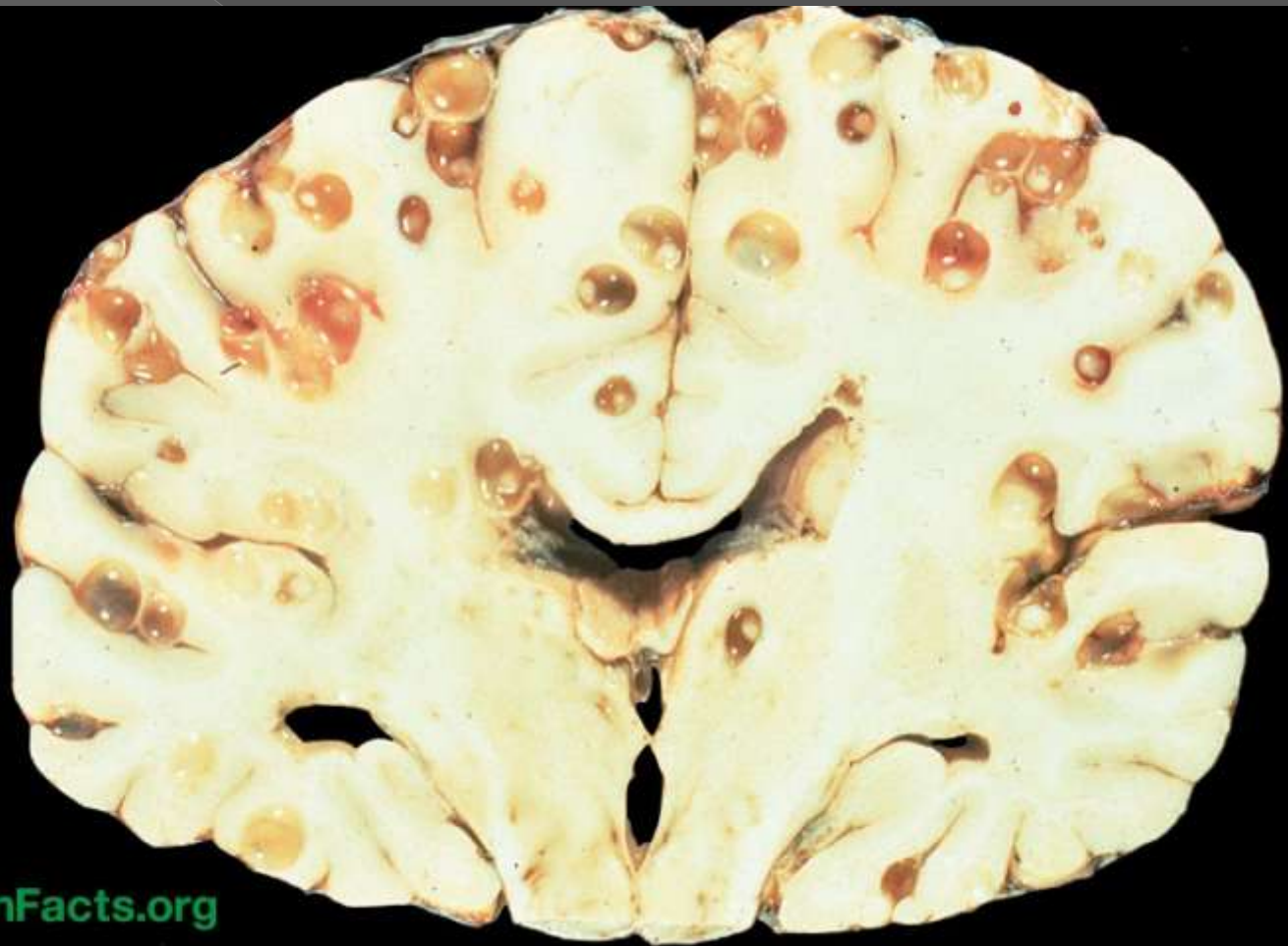








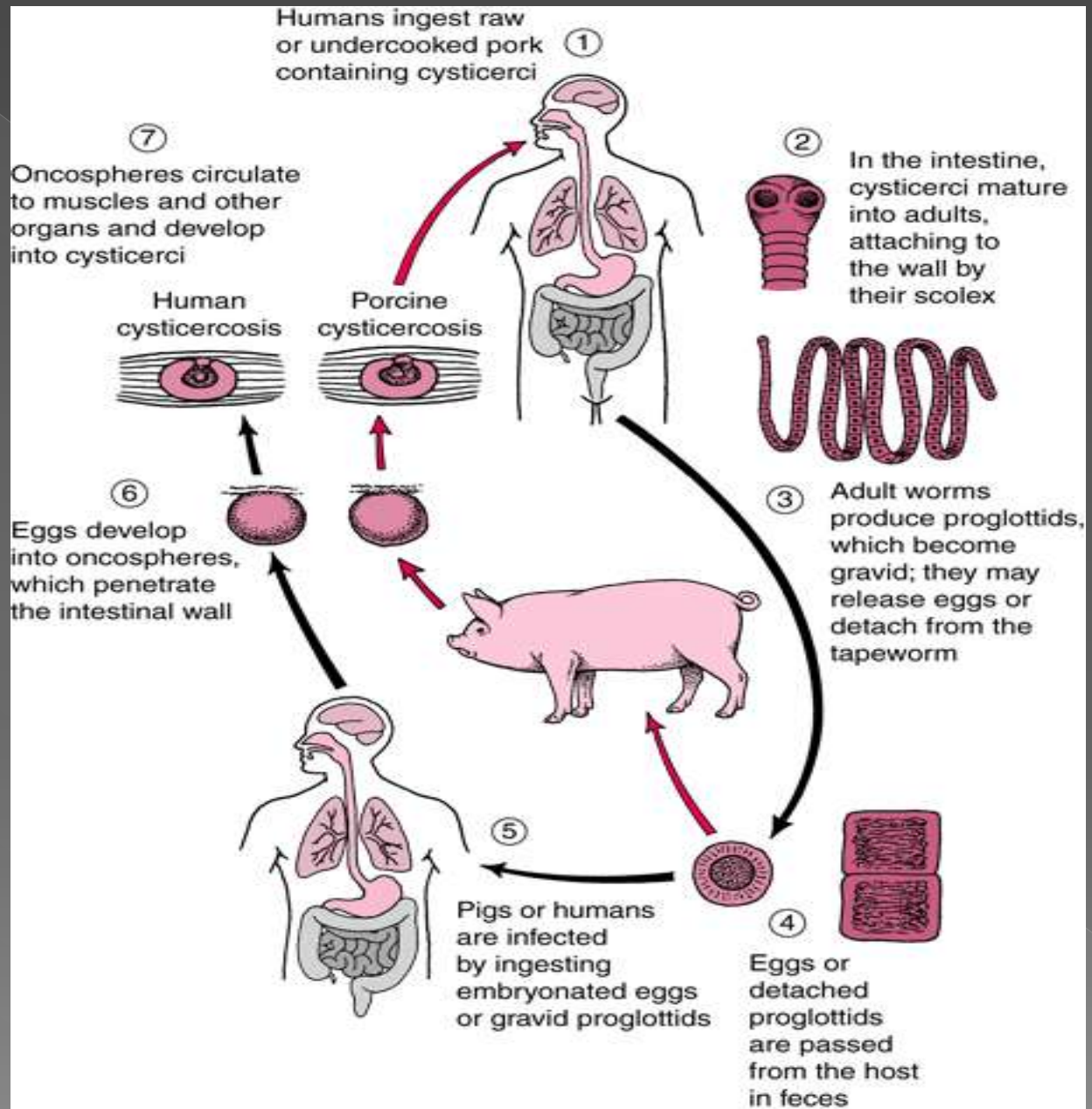
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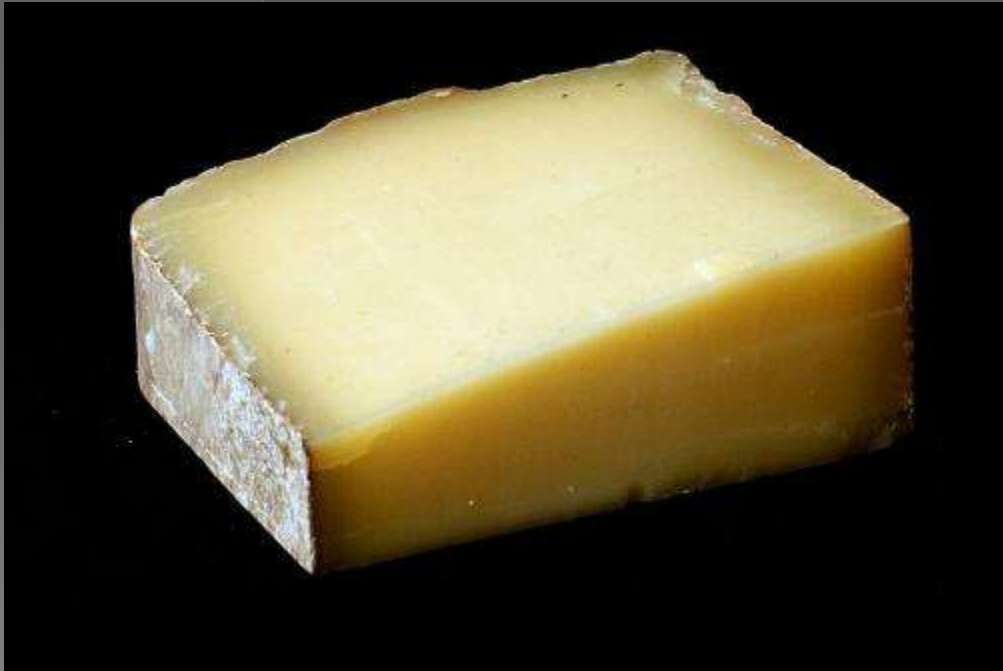


NutritionFacts.org

TRANSMISSION

- Ingestion of measily pork
- Contaminated vegetables
- Auto-ingestion (fecal-oral)















Migraine Triggers

Coffee!



**IS THE PLANET SHAKING
OR IS IT JUST ME?**

THE ROLE OF DIET IN MIGRAINE HEADACHES

- Foods that may trigger migraine attacks
 - Aged or strong cheese
 - Cured meats
 - Citrus fruits
 - Fatty or fried foods
 - Chocolate, nuts
 - MSG
 - Ice cream
 - sea food
 - caffeine containing drinks
 - Alcohol
 - Aspartame

- The culprit chemicals are usually tyramine and other amines
- Phenylethylamine and histamine also play a role
- Tyramine → Cheese
- Phenylethylamine → Chocolate
- Octopamine → Citrus fruits
- Histamine → Red wine and beers

- Caffeine addiction and withdrawal
- Fasting or skipping meals

I'm on a seafood diet,
i see food and i eat it.



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THANK YOU