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 EVMS Journal Club

P: In patients presenting to the ED with a history of chronic ETOH abuse
 I: Does the empiric use of thiamine
 C: Compared to withholding thiamine
 O: Associated with the prevention of Wernicke’s encephalopathy

Question:

In the chronic alcoholic what is the evidence that empiric thiamine repletion prevents Wernicke’s encephalopathy

Clinical Scenario:

A well known frequent flyer to your ED arrives for the second time this week via EMS. The patient is roomed in order to sleep it off. Do you have to provide thiamine for this patient and if so what is the correct dose and route of administration. Is it malpractice to empirically provide thiamine supplementation?

Search Strategies:

PubMed , Cochrane, Trip Database, was searched using the words “Thiamine” AND deficiency” AND English [language] AND Humans [terms]. 319 articles resulted from search of those articles that were reviewed 11 relevant articles were identified and included in handout.

Author	Patient Group	Study Type	Outcomes	Key Results	Study Weakness
Baines M, et al 1988 UK	25 healthy alcoholics 250mg thiamine daily IM vs Oral	Controlled trial	Thiamine diphosphate levels at 1 day Thiamine diphosphate levels at 5 days	Increase in both groups. Only significant in the IM group Significant and identical increase in both groups	
Bachevalier J, et al 1981 Germany	85 patients in three groups: control, folate deficient, alcoholic	Prospective observational study	No significant correlation between thiamine levels and RBC folate level	Compared to the control alcoholics had significantly lower thiamine levels(p <.001) and folate levels(p<.025)	Open to selection bias Levels are relative to “control” group Non-randomized, non-blinded
Boyd DH, et al 1981 Italy	73 patients with an alcohol problem	Retrospective observational	9 patients had WKS, 1/3 of patients derived 40% of their	By dietary recall 81.5% didn’t get enough	Depended on alcoholics to recall there dietary habits.

			calories from etoh	thiamine in their diet	
Harper CG 1998 Australia	2212 brains from autopsies examined for WKS after the introduction of thiamine enriched flour	Prospective observational	25 (1.1%) cases of WKS mostly identified in the 5.9% of people etoh abuse. Only 4(16%) were dx in life	After the fortification of flour the rate of WKS went from 4.7% to 1.1%	Original article was done years before and in another part of the country
Jacob J, et al 2008 USA	77 patients with acute etoh intoxication	Prospective cross-sectional observational study	0/77 pt had low B12 or folate level 0% (0-.05) 6/39 had a low thiamine level 15% (.06-.31)	15% had thiamin edeficiency and none of those had signs of WKS	Only got thiamin levels on 39/77 pt. no control group. At least 3 pt tx prior with thiamine
Jamieson 1999 USA	120 randomly selected ED admitted pt versus 80 healthy blood donors	Controlled trial	49.2% were deficient in one or more vitamin	21% of admitted pt were deficient in thiamine	Control group consumed for etoh than the study group
Lee DC, et al 1992 USA	75 consecutive nursing home pt aged 65 years or older being admitted	Observational pilot study	14% (8%-24%) were thiamine deficient If no dietary support 27% deficient if support 7% deficient	Elderly nursing home pt admitted through the ED require empiric thiamine repletion	No control, nonrandomized.
O'keeffe ST, et al 1994 Ireland	36 consecutive pt admitted to geriatric unit	observational	17% had thiamine deficiency Delirium occurred in 32% of thiamine nml group and in 76% of thiamine deficient group	Thiamine deficiency is common in the elderly and may contribute to delirium	Small study
McConachie I 1988 UK	5 previously healthy adults admitted to ICU with ISS >12	observational	All five pt had thiamine deficiency despite standard vitamin supplementation	Pt admitted to trauma unit should be given increased amount of thiamine	Small study, noncontrolled
Schwab RA, et al 1992 USA	103 pt who presented with alcohol related injury or medical	Controlled Prospective observational	3/52 (5.8%) in the etoh group and 2/48(4.2%) in the control group were	Mean difference was 1.6% (-6.9% to 10.1%)	

	condition		folate deficient	Didn't recommend folate repletion	
Wreen KD, et al 1989 USA	989 consecutive pt receiving IV thiamine	Prospective observational study	12 adverse reactions (1.1%) only one major reaction (.093%)	IV thiamine is safe route	Uncontrolled, nonrandomized trial

Clinical Bottom Line

While the overall rate of thiamine deficiency is very low in the intoxicated patient and the rate of WKS even lower there is limited downside (Harms) to thiamine supplementation. Any patient at high risk for nutritional deficiency as judged by the treating physician should be considered a candidate for IV thiamine replacement. If the patient is at moderate risk and likely to be discharged from the hospital oral supplementation may be adequate though questions regarding absorption remain particularly in the ETOH abuser. Patients at low risk of malnutrition generally do not need acute thiamine supplementation. Any patient with signs of overt MS changes, WKS, hypothermia, coma, or hypotension should be treated with high dose IV thiamine. Clinicians should consider the possibility of thiamine deficiency in any patient with evidence of malnutrition.