Diagnosis and treatment of Wernicke's encephalopathy in patients with alcohol use disorder : literature review and case series

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INTRODUCTION

Wernicke's encephalopathy

Acute neurological complication

Secondary to thiamine deficiency (vitamin B1)

Multifactorial : decreased intestinal absorption / Insufficient nutritional intake / Failure to store and use thiamine

Global prevalence : 0.4 – 2.8 %

Severe outcome : 75% move to Korsakoff syndrome (chronic dementia) and 17 - 20% die

Curative treatment : parenteral vitamin B1

Alcohol/Substance use disorder and Wernicke's encephalopathy

Prevalence among chronic alcohol users : 12.5% (Galvin et al, 2010)

Wernicke's encephalopathy (WE) : potential cause for cognitive impairment

Cognitive impairments may decrease treatment efficiency of alcohol/substance use disorder (AUD / SUD)

Wernicke's encephalopathy : Current Issues

Limits to diagnosis

Only one of the following signs, or in combination
Confusion / Ataxia / Ophthalmoplegia

75 - 80% chronic alcohol users with post mortem WE not diagnosed when alive **(thomson et al. 2008)**

Treatment issues

Curative treatment underused or misused

OBJECTIVES

Objective 1 : Clarify diagnostic criteria

Objective 2 : Describe treatment modalities

METHODS

Literature Review

Systematic review of the literature
PubMed database
Between May 31, 2006 and May 31, 2016

Terms obj. 1: Wernicke encephalopathy/diagnosis [Mesh]
obj. 2: Wernicke Encephalopathy/therapy [Mesh]

Excluded : animal models / technical modalities of paraclinical examinations only (obj.1) / preventive treatment only (obj.2) / case reports

Case series

Retrospective description of suspected cases of Wernicke's encephalopathy

Patients treated for alcohol use disorder

In an outpatient addiction treatment center, Bordeaux, France

Treated for WE with parenteral thiamine

RESULTS – LITERATURE REVIEW

Diagnostic criteria : 30 studies

Context of appearance : Clinical situation of malnutrition

Context	Number of studies
Brainstem pathology	1
Severe Obesity	1
Heart failure	1
Creutzfeld Jakob	1
Oral glucose intake	1
Diabetic ketoacidosis	1
Tuberculosis	2
Iatrogenic IV	2
Hypoxique encephalopathy	2
Others	2
Alzheimer	2
Intoxication	3
Thyroid disease	4
Nutritional comorbidity	5
Sepsis	8
AIDS	9
Renal failure	9
psychiatric disorder	9
Parenteral nutrition	11
Digestive surgery	12
Digestive disease	14
Cancer/chemotherapy	15
Malnutrition	16
Alcohol	19
Vomiting	22

Biology

Serum thiamine dosage : not specific, can be normal
Erythrocyte transketolase activity : not specific / technical difficulties

Clinical signs

High Variability
Neurological signs are the most frequent, but not necessary
One sign is enough

Clinical signs	Number
Triad	10
Caine criteria	9
General signs	22
Digestive signs	17
Consiousness disorders	14
Neurologic signs	88
Ocular signs	42
cardio-respiratory	13
Others	28

Neuroimaging

CT scan : not sensitive (19%)
MR imaging : useful, recommended in clinical practice (17 publications, 57%), can be normal
Variability of lesions : atypical lesions, according to the clinical context
Should not delay treatment

Treatment modalities : 23 studies

Type of treatment

Thiamine / Multivitamins (B1, B2, B6, C, Nicotinamide, Magnesium)

Route of administration

Intravenous preferred (15 publications)
Intra muscular possible (6 publications)

Dosage

High variability (100 - 1500 mg/day)
1500 mg / day most frequently 3 t.d.s (8 publications)

Duration

3 - 8 days, depending on the clinical response

RESULTS - CASE SERIES

Patients

n = 8 (5 men, 3 women)
aged 44 - 63 (51.75)
with AUD

Comorbidity

cirrhosis (2)
chronic pancreatitis (1)
depression (4)
bipolar disorder (2)
obsessive compulsive disorder (1)

Acute patholoy

weightloss (3)
vomiting (2), diarrhea (2)
alcohol withdrawal (2)
acute pancreatitis (1)

Clinical signs

High prevalence of cognitive disorders (88%)
Clinical triad : 0

Neuroimaging

4 Neuroimaging
2 CT scan : normal
2 MRI : abnormal

Biology na

Treatement

Thiamine 50% IV / 50% IM
Dosage : 100 mg/day - 1000 mg/day
Duration : 5 day - 19 day

Clinical sign	Number of patients
Hallucinations	1
headaches	1
asthenia	1
rigidity	1
Inversion of nycthoemeral rhythm	1
walking disorder/step by step	1
behavior disorder/aggressiveness	1
neuropathy	1
tremors	1
urinary incontinence	1
dizziness	1
tinnitus	1
Diplopia	1
Altered general state	2
Confusion	2
Mutism	2
Désorientation	3
cerebellar syndrome	5
cognitive impairments	7

CONCLUSION

Diagnostic

More systematic tracking of Wernicke's encephalopathy

Identify patients at risk : malnutrition

Treatement

Parenteral thiamine high dosage 1500 mg/day
Safe and feasible outpatient
To be implemented as soon as probable diagnosis ?

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