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DEMENTIA

DEMENTIA - INTRODUCTION

- De (without) - Mens (sense)

WARNING SIGNS

slowly progression,taking minimum a few months

COGNITIVE DISTURBANCE

- (memory,orientation,speech, attention, delusions, hallucination)
-
- BEHAVIOUR DISTURBANCE
- (personality, emotion-apathy,aggression,depression)

- LOSS OF SELF-SUFFICIENCY
- (employment …..take care about himselfs)

- silent epidemic of the 21. century
- illness of the all familly – objectiv anamnesis!
- 150.000 patients now in the Czech republic
- (10 million inhabitants…)

CLASSIFICATION
Swedish Consensus on Dementia and Dementia diseases

- A. PRIMARY DEGENERATIVE DEMENTIA
- B. VASCULAR DEMENTIA
- C. SECONDARY DEMENTIA

- WHO makes diagnosis of dementia in CZ ?

- Neurologist +psychiatrist +geriatrist
- in cooperation with neuropsychologist

NEUROPSYCHOLOGIC EXAM

- TARGET:
- - examinate of all the brain lobes

- The most exact tests for F lobe
- The less exact tests for T lobe
- The least exact test for O+P lobe

ADVANTAGE of psychologic tests

- Standardization (comparison each other)
- Senzitivity (detection of minimum deficit)
- Repeatable (result during time)
- Quantification (score)

DISadvantage of psychologic test

- Absence of neuropsychologist
- Examination takes o few hours
- Bed – side tests
- Short, orientational assessment of cognitive function ever by general practitioner or ambulatory specialist

ORIENTATIONAL RULE

- The typ of dominant lobe impairment help us with
- diferential daignosis of dementia kind

F (behavior function)	FTD
T….P (memory function)	AD
P + O (visuallconstructive function)	DLBD
multiple impairment	VD

MMSE /Minimental state examination/

- The most used test (1975)
- WHY??
- ADVANTAGE:

- - quick
- - easy administration
- - requirement of Czech insurance company
- - monitoration of dementia progression

- DISADVANTAGE:

- Not enough sufficient for

- - early stage of dementia (MMSE oft normal)
- - diagnosis of FTD (no examination of F lobe)
- - diagnosis of DLBD (no examination of
- O + P lobe)

STAGE OF DEMENTIA according to MMSE (30-0 points)

- Mild 25 - 18 p.
- Medium 17 – 6 p.
- Serious 5 – 0 p.
-
- Standard score 28-30 p.
- ?? IMPORTANCE – therapeutic strategy !

ACE /Addenbrooks cognitive examination/

- SCORE
- Maximum 100 points (MMSE is a part of)

- Less than 82 p.
- : senzitivity of dementia 84%
- : specifity of dementia 100%

MMSE contrary to ACE

MMSE	ACE
10-15 min	25 -30 min
	- EARLY dementia - FTD, DLBD
-MONITORATION of developed dementia	

What a kind of the test CHOOSE?

- 1. ACE:
- Suspicion of the dementia
- Expected another kind of dementia than AD or VD

- 2. MMSE:
- Already developed dementia
- Monitoration of dementia

2. CAUSES OF DEMENTIA

- The causes of dementia : about 60 various diseases

  A/ Primary NEURODEGENERATIVE Dementia

- B/ VASCULAR Dementia

- C/ SECONDARY Dementia attending basic
- NEUROLOGIC or INTERNAL diagnosis
- (disturbance of metabolism,nutrition, endocrinopaty, toxic brain disturbance)

PRIMARY TARGET

- Exclude SECONDARY Dementia (TRETABLE)
- EVERY!! NEUROIMAGING (CT,MRI,PET MRI)
- - Blood Tests : blood count, renal/liver biochemistry, vitamine B12, thyroid function tests (Cu +ceruloplasmin, serology HIV + syphilis)
- - CSF (basic, triplet, protein 14-3-3)
- - (EEG)
- - (genetic)

Disturbance IMITATING Dementia

- 1. Minimal cognitive impairment (MCI)
- 10-15% transformation to AD

- 2. DEPRESSION (pseudodementia)
- - therapeutic test with antidepressant

- 3. DELIRIUM
- - sudden starting, fluctuating,duration days
- + quantitative consciousness failure

- 4. Side effects of FARMAKOTREATMENT
- in old age
- Anticholinergic (Akineton, tricyclics antidepressant)
- opiates
- hypnotic

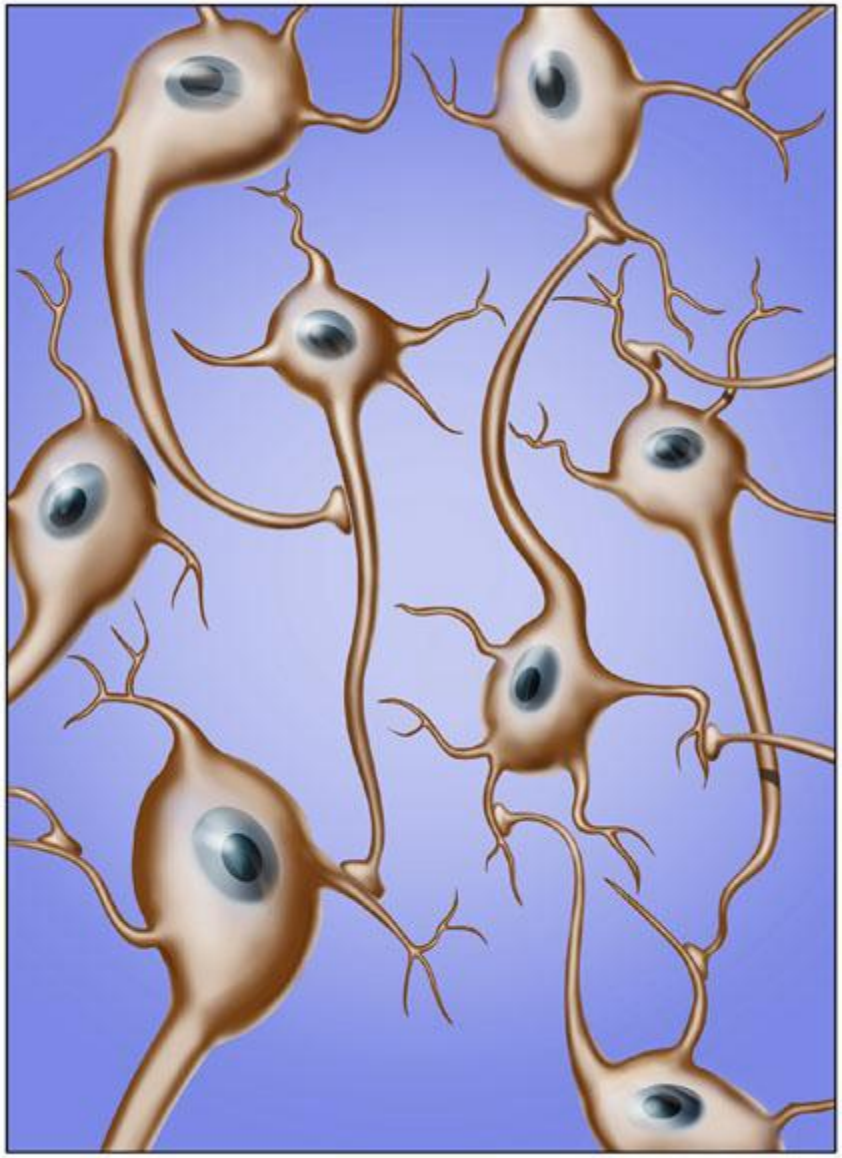
A/ PRIMARY DEGENERATIVE DEMENTIA

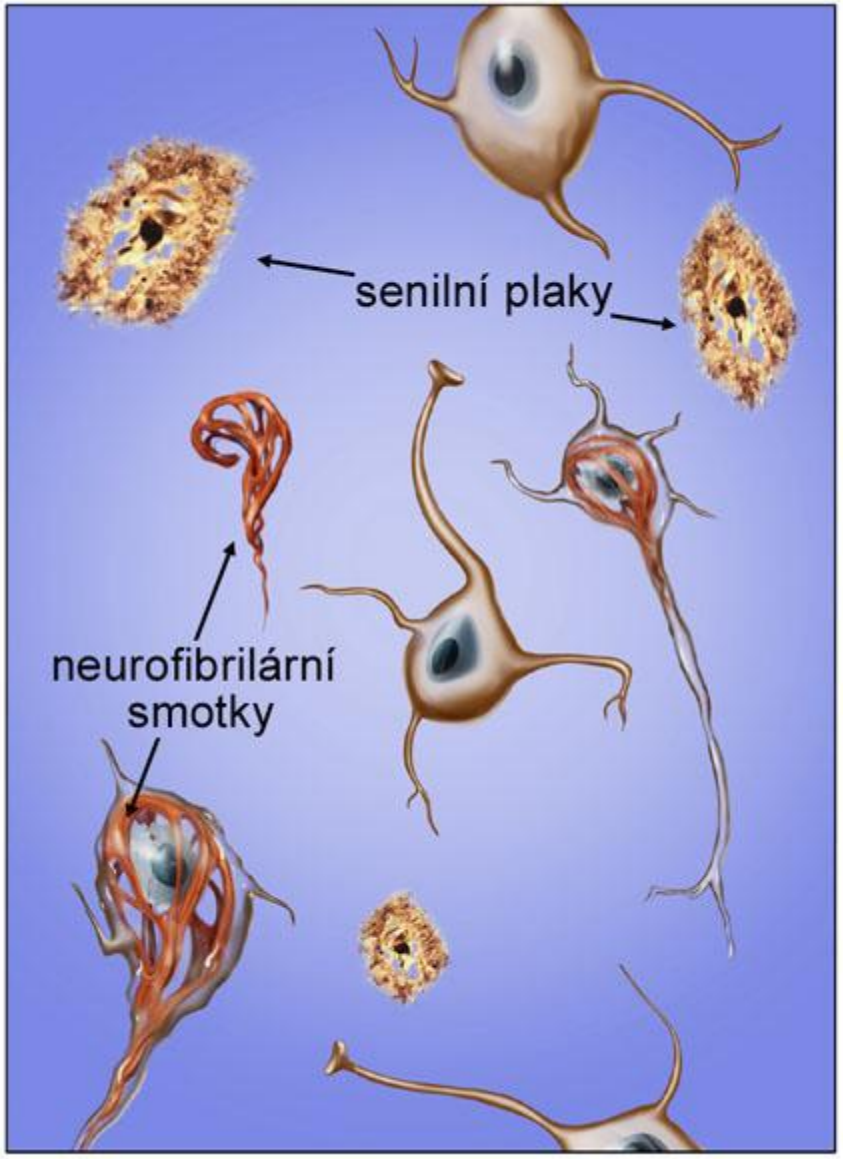
- HISTOLOGIC CRITERIA:
- 1. AMYLOIDOPATHIES - ALZHEIMER´S D.
- Amyloid plaques… deposits of B amyloid
- 2. TAUOPATHIES - FRONTOTEMPORAL D.
- - CBD, PSP
- Pick bodies …. deposits of Tau protein /ubiquitin protein/
- 3. SYNUKLEINOPATHIES – DLBD, PDD
- Lewy bodies… deposits of synuklein

ALZHEIMER´S DISEASE

MOST OFTEN!!

- 60% of all the kinds of dementia
- Preclinic stadium even 15 years
- Neuropsychologic exam : The first sign -
- DISTURBANCE OF RECENT MEMORY
- T-P lobe
- HISTOLOGY: AMYLOIDOPATHIES




senilní plaky
neurofibrilární
smotky

RISK FACTORS

AGE !!!! 65 years - 5%

- 85 years - 50%

- Low education
- Low intelect and physic activity
- Social izolation
- female gender (3,1 x)
- genetic factors (early onset)

- 1. AD with early onset (to 60 years age) 5%
- - genetic risk faktors …APO E4 (alela E4 for apolipoprotein E)

- 2. AD with late onset (most of patients) !
- -sporadic form

CLINIC DIAGNOSIS OF AD

- 1.PROBABLY
- - disturbance 2 or more cognitive function, progression between 60-90 years, depression, anxiety, delusion,hallucination, emotion instability, incontinency
- Possible neurologic signs (epilepsy, parkinsonism)
-

- 2. DEFINITIVE

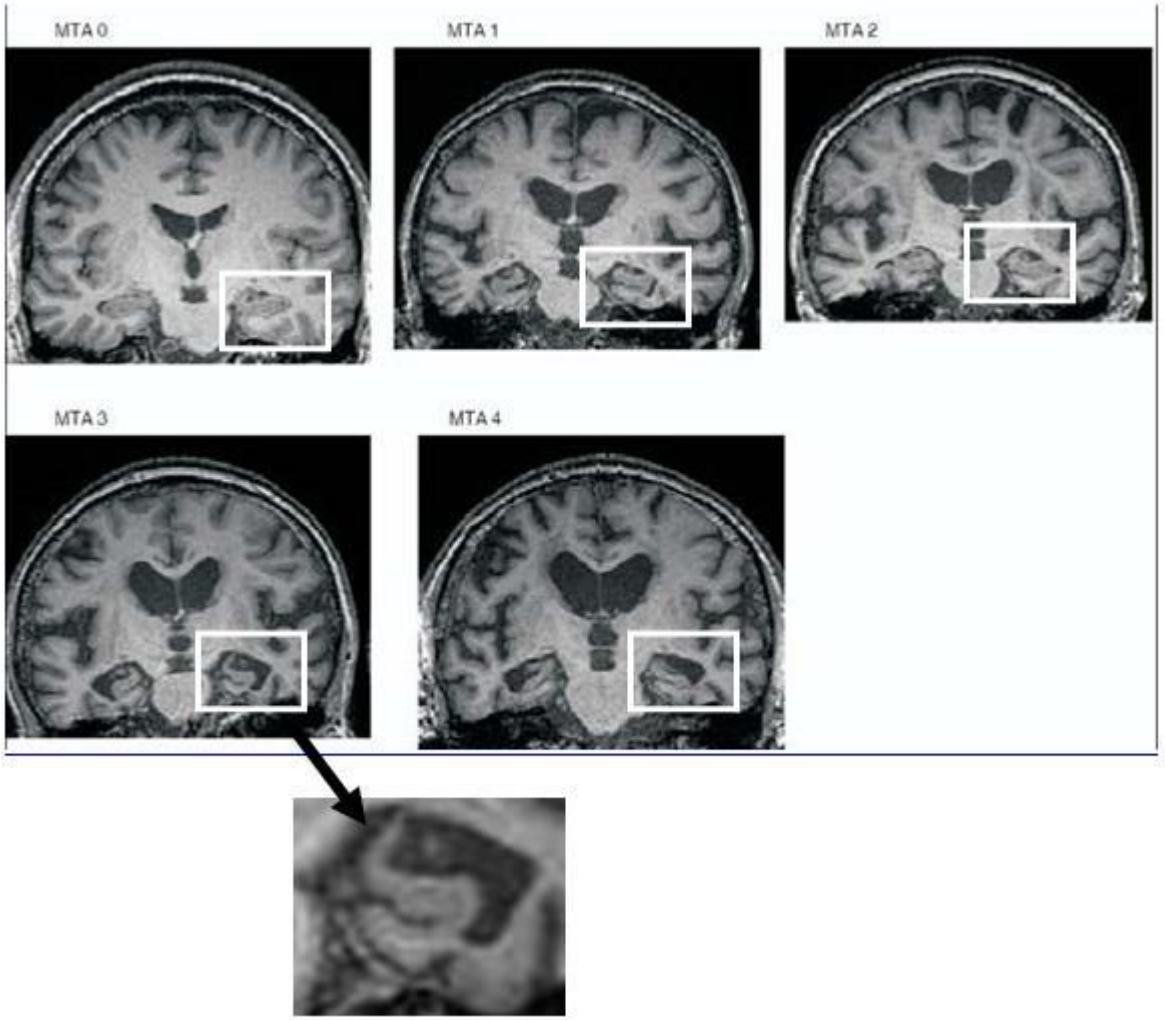
- Histologic verification by brain biopsy (post mortem)

NEUROIMAGING AD

- (BRAIN CT):
- - atrophy T lobe (P), extension of lateral ventricles

- BRAIN MRI:
- - hippocampal atrophy (high specifity)

MRI - hippocampal atrophy



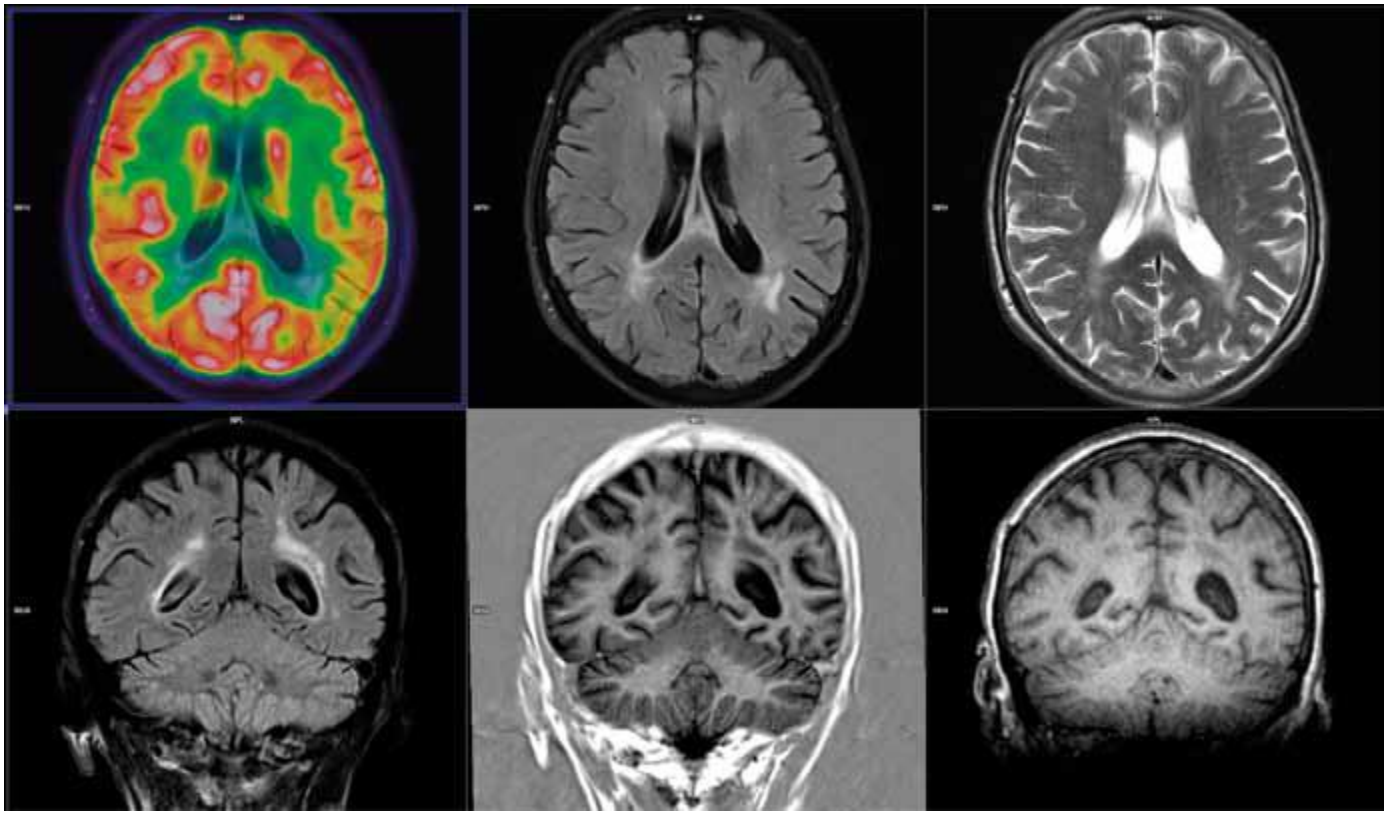
BRAIN PET MRI

- i.v.aplication of radioactive isotopes

- - FDG (fluorodeoxyglukoza) – decreased glukose metabolism MEDIOTemporal LOBE
- (gyrus cinguli, precuneum)...late T-P lobe

- University Hospital Brno 2017

FDG PET MRI

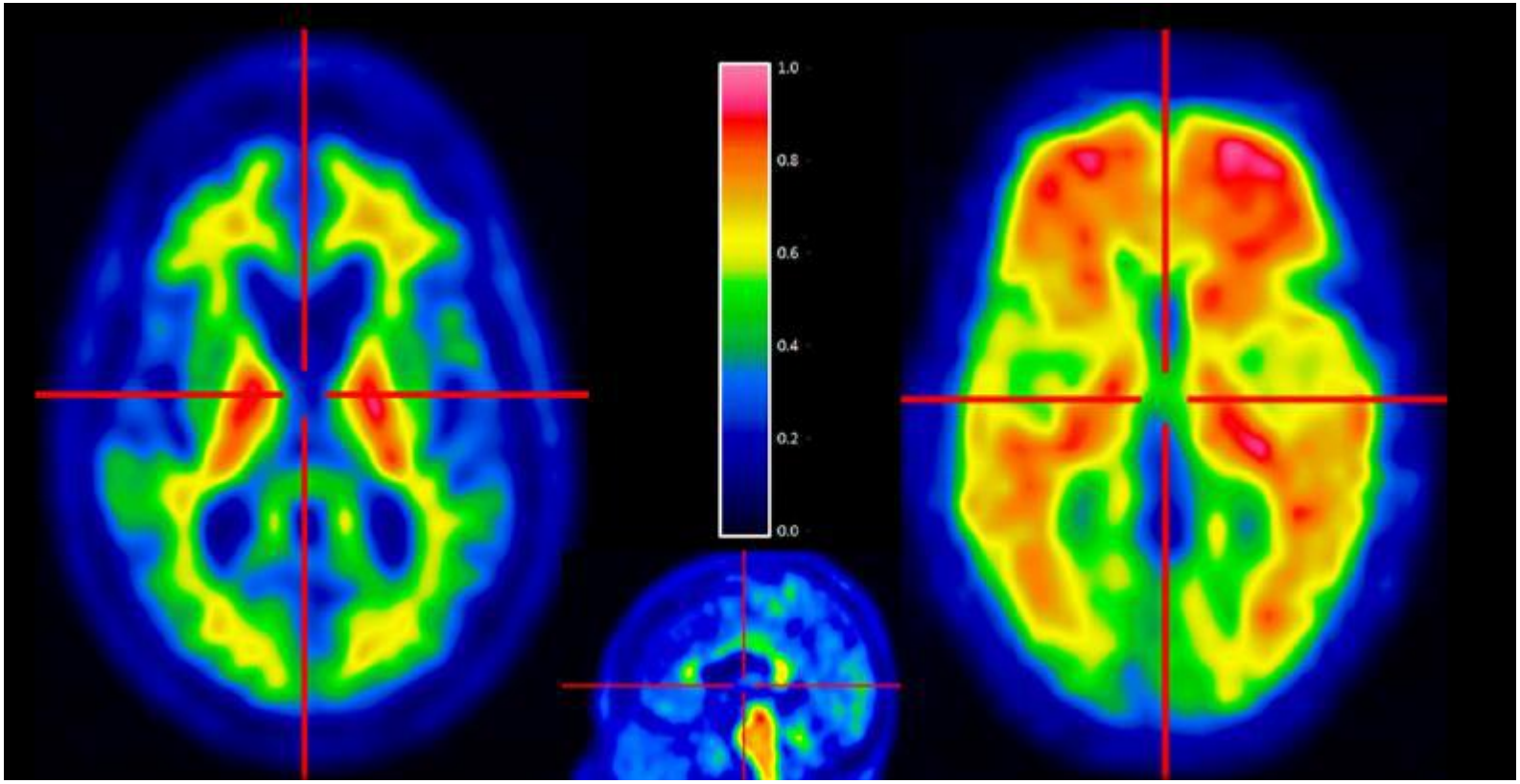


- AMYLOID BRAIN PET MRI :
- In vivo detection of amyloid plaques
- Prague 2015 expanzive /1800 dollars/

- ADVANTAGE: MCI….start of therapy
- early diagnostic
- negative result exclude,no risk
- clinical trials
- NO: asymptomatic patient with + genetic
- + familial history

AMYLOID PET MRI

- NORMAL PATOLOGY



CSF AD

- TRIPLET : 3 biomarkers, proteins

- BETA-AMYLOID decreased
- TAU-PROTEIN increased
- P/TAU-PROTEIN increased - most exact

- Negativ result exclude AD

- University Hospital Brno (2019)

FARMAKOTREATMENT AD as soon as possible

- SYMPTOMATIC : NO CURE, NO STOP
- BUT SLOW DOWN
- A/ ACETYLCHOLINESTERASE INHIBITORS
- I: Mild and medium stage of AD (MMSE 25-13)
- - Donepezil 10mg 1x1
- - Rivastigmin 6mg 2x1 (9,5 mg patch 1x1)
- - Galantamin

Side effects: impaired digestion, parkinsonism

- B/ MEMANTIN – influence on NMDA receptors
- Medium stage of AD (MMSE 17-6)

- A+B/ DUAL THERAPY (MMSE 17-13)

- Mild stadium .. Memory Late stadium... Behaviour

- DO NOT Prescribe : nootropics, vasodilatans

- Parallel therapy !!: cognitive training
- physical training
- (only to swallow a pill is insufficiently)

- We have got yet no new drug since 2004

- New trials : biologic therapy - monoclonal antibody against amyloid

TREATMENT of DEPRESSION + ANXIETY:

SSRI, SNRI BZD

- cave tricyklics (AMT, Prothiaden) – anticholinergic side effect

- TREATMENT PSYCHOTIC SYMPTOMS:
- Neuroleptics

DLBD –difusse Lewy body disease

- HISTOLOGY: SYNUKLEINOPATHIES

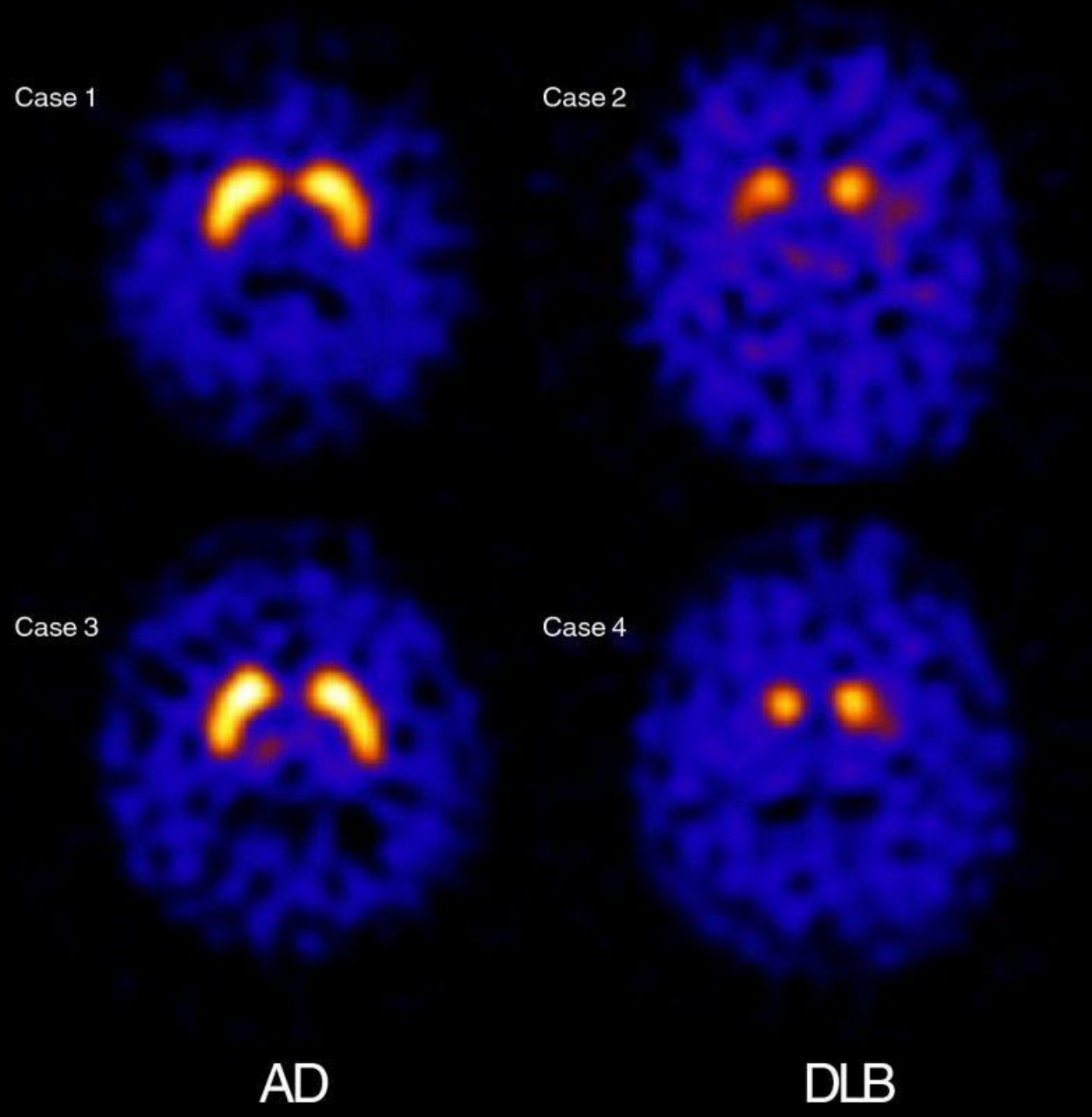
20% of dementia! underdiagnosticed

HISTOPATOLOGY: Lewy bodies (brain stem, limbic cortex, neocortex T-F

DAT scan – asym. hypofunction in striatum
PET MRI – sym cortical hypoperfusion T-P-O

Neuropsychologic exam: vizuokonstructive dysfunction T-P-O

Dopaminergic FP-CIT SPECT Imaging



CLINICAL F.: fluctuate cognitive disturbance
visual hallucination
parkinsonism

TREATMENT:

- CAVE neuroleptic hypersenzitivity (rapid deterioration of parkinsonism)

- Only atypic neuroleptic
- Acetylcholinesterase inhibitors
- L-Dopa in early stadium

FTD – FRONTOTEMPORAL DEMENTIA
Pick´s disease

- HISTOLOGY: TAUOPATHIES (ubiquitinopaties)

- Neuropsychologic exam. : 1. SYMPTOM –
- BEHAVIOUR OR LANGUAGUE DISTURBANCE
- F + T lobe

- YOUGER AGE of onset - (45 -65)
- FAMILIAR OCCURENCE (30-50%)
- RAPIDLY PROGRESSION

VARIANTS

- 1. BEHAVIOURAL (Frontal) -55%
- 2. LANGUAGE (PPA)

- And combination of both

1. FRONTAL VARIANT

- DOMINANT symptoms:
- Early change of behaviour (perseverative, stereotyp)
- Early change of personality
- Early emotional changes (apathy, verbal or physical impulsivity)

- LATE somatic signs :
- Parkinsonism, MND (10-15 %)

- NEUROIMAGING (MRI, PET MRI) :
  - sym atrophy F + front T lobe

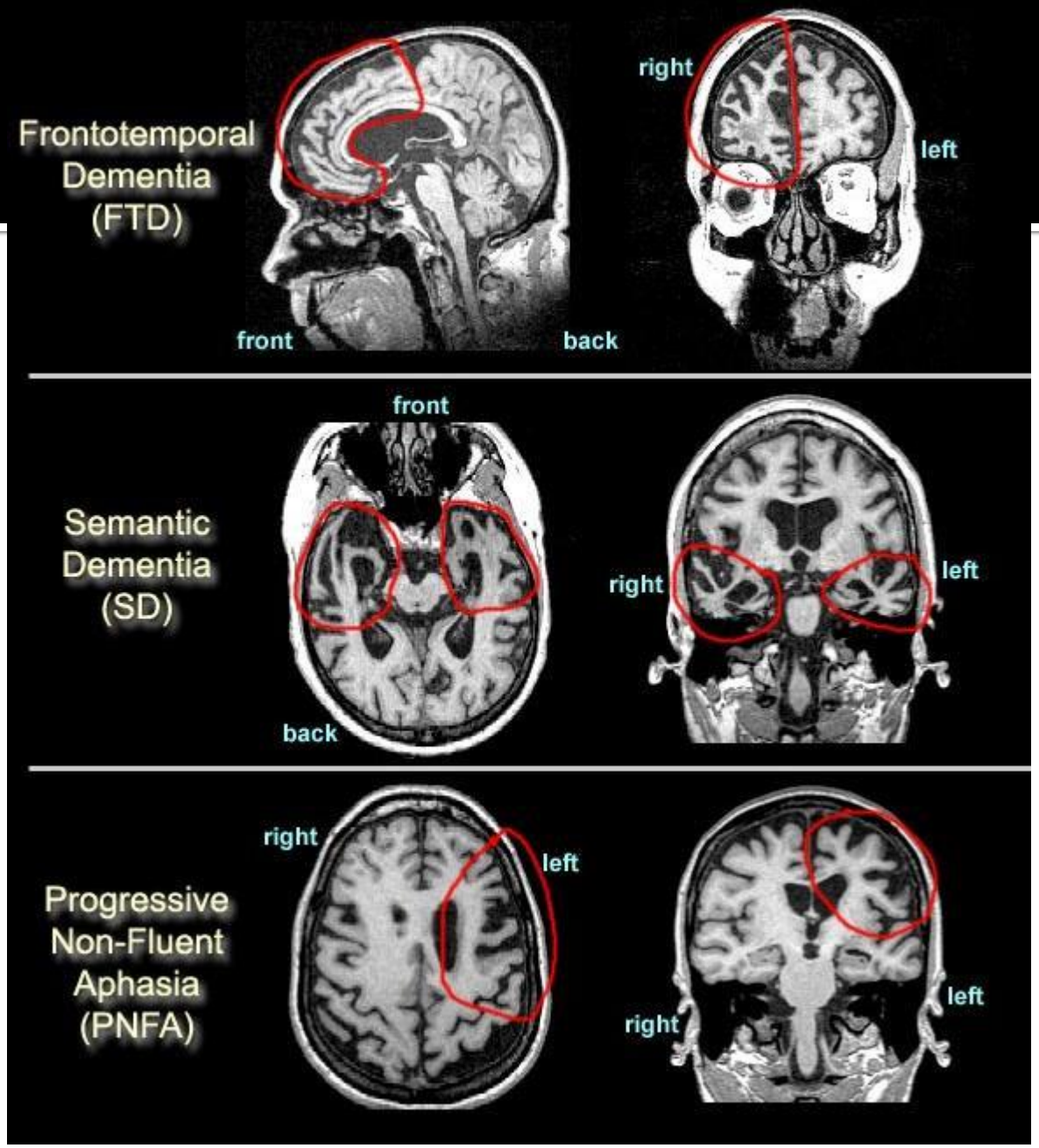
- TREATMENT :
- Deficit of serotonin and dopamin transmiter system
- - SSRI (Triticco)
- - atypic neuroleptic
- (cognitiv drugs rather no)

2. PPA primary progressive aphasia

- Subtypes: non- fluent aphasia
- semantic
- logopenic

DOMINANT signs: APHASIA

- NEUROIMAGING: asym atrophy T lobe (dominant)
- TREATMENT : Logopedics


Frontotemporal Dementia (FTD)
front
back
right
left
Semantic Dementia (SD)
front
back
right
left
Progressive Non-Fluent Aphasia (PNFA)
right
left
right
left

B/ VASCULAR DEMENTIA

- - 20% of dementia
- - after stroke 5x higher risk of onset
- - men more disabled than women

- - diagnosis is problematic, differentiation of AD often only histologic, oft mixed dementia (AD + VD)

DIAGNOSTIC

- Brain MRI (CT)
- Neuropsychologic exam.: more than 1 lobe is
- impared
- SONO cerebral vessels
- CSF: biomarkers negativ

VARIANTS OF VD

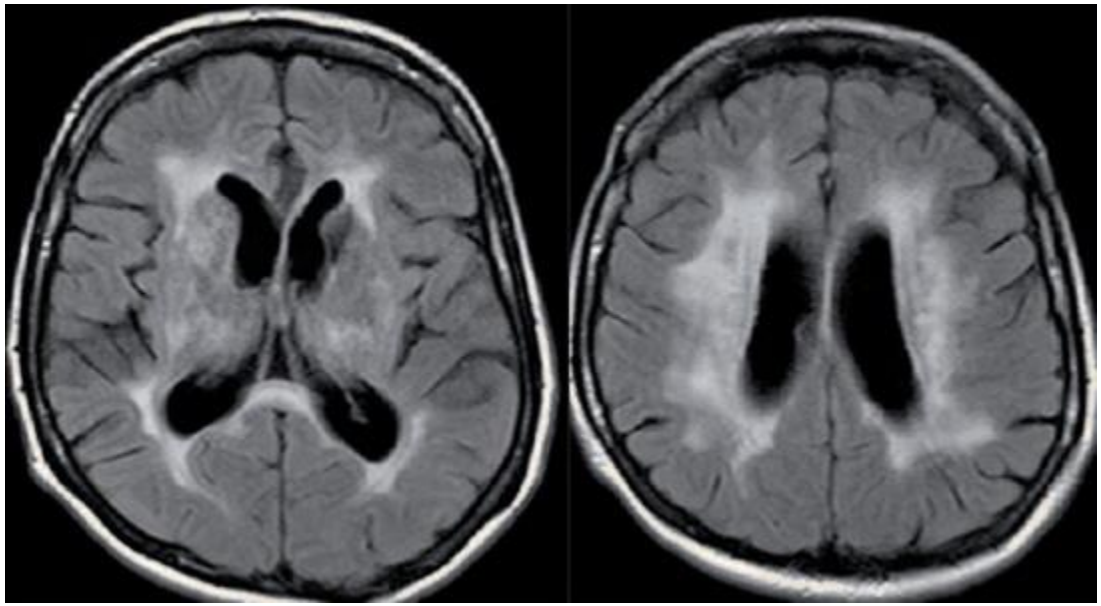
- 1. D. due to mikroangiopathy (90% because of HT)
- - Binswanger´s disease (subcortical leukoencefalopathy)

2. D. due to strategic lokalizated infarct (F, T)

3. Multiinfarct D. (multiply small and large infarcts)

4. D. due to difusse hypoxic-ischemic encefalopathy (KPR)

(5.) D. familial : AMYLOID angiopathy (frequent stroke)
CADASIL (AD, mutation on 19. chromozom)
- young age, migraine, skin biopsy



TREATMENT VD

- Primary and secondary PREVENTION of cerebrovascular disease

- Acetylcholinesterase inhibitors
- Memantin

- DO NOT Prescribe : nootropics, vasodilatans

MIXED DEMENTIA

- Very often!
- - Dominant AD + vascular changes
- - Dominant VD + alzheimer changes
-

C/ SECONDARY DEMENTIA

- 1. Following BASIC NEUROLOGIC DG:

- Normal pressure hydrocephalus
- Brain tumors
- Kraniocerebral injury – chronic SDHematoma
- Epilepsy
- Neuroinfection - JCD, neurosyphilis, AIDS
- SM late stadium
- Huntington´s disease
- Wilson´s disease

Jakob- Creutzfeld disease

- Prion disease
- Incidence 1-2 per million
- 100% mortality
- Incubation time more than 10 years
- The most infectious tissues: BRAIN!
- - cerebral dura, cornea, blood?
- RISK: - Transplant from deseased
- (from 2007 mandatory testing cornea donor)
- - NCH operation (contaminated instrument)
- Disinfectant, UV radiation – DO NOT DESTROY

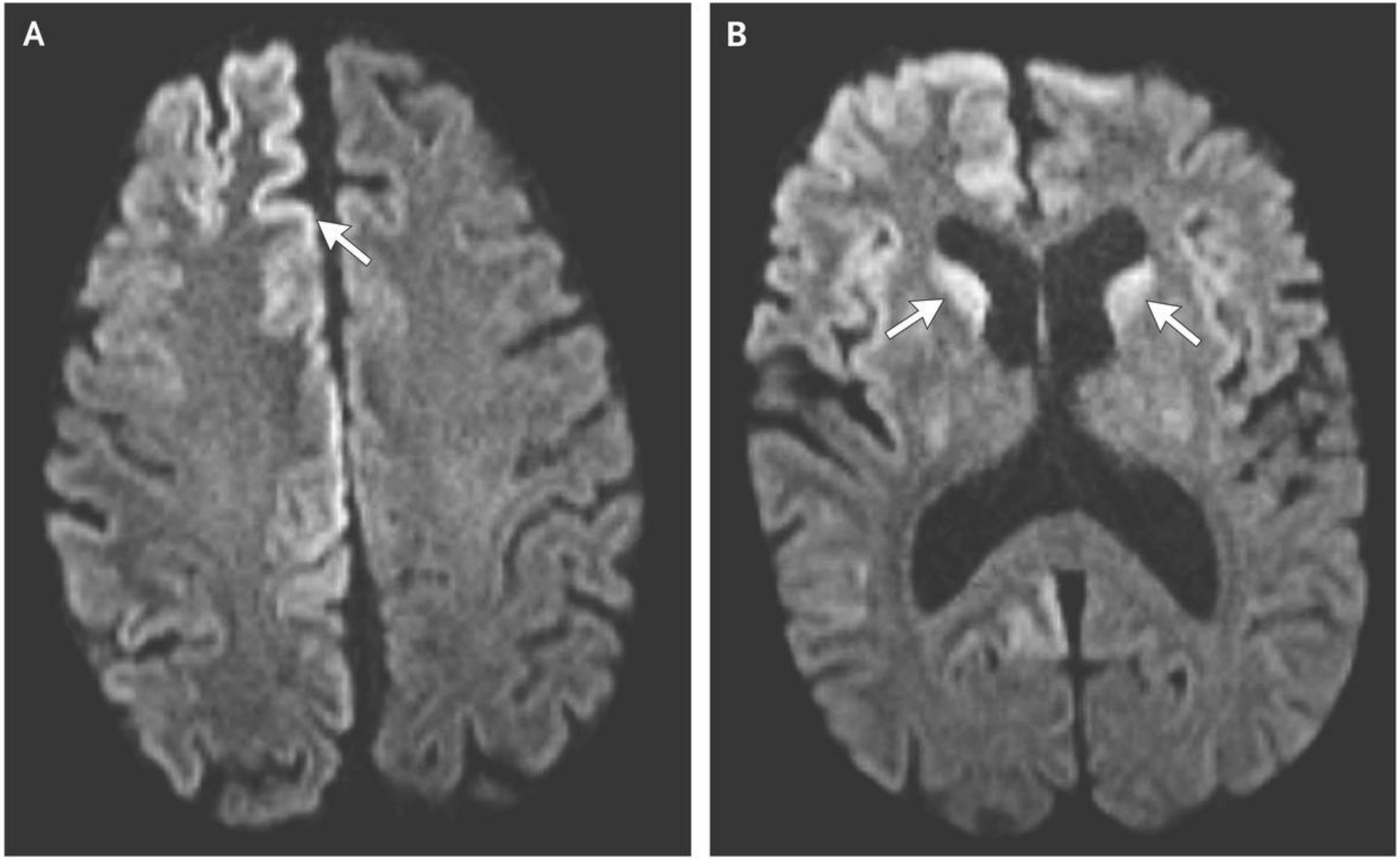
CLINICAL FEATURES

- Rapidly progressive dementia
- Cerebelar or visual signs (ataxia)
- Extrapyramidal signs (myoclonus)
- Pyramidal signs
- Akinetic mutism

- AUTOPSY MANDATORY

DIAGNOSTIC

- EEG - periodic sharp wave complexes
- CSF: 14-3-3 protein detection
- Brain MRI: high signal abnormalities in caudate nucleus + putamen
- NO TREATMENT


A
B

VARIANTS

- 1. SPORADIC 85%
- 50-70 years
- Duration 6 months

- 2. GENETIC (mutation) 10-15%
-

- 3. NEW variant (infectious) 2-3%
- 19-39 years
- Duration 1-1,5 years
- Due to consumption of infectious animal (BSP)

Other (rare) prion diseases

- KURU (kanibalism, Papua N. Guinea)

- FFI Fatal familiar insomnia
- (+ dementia)
- Gerstman-Straussler-Scheiner d.
- (dementia)

- 2. Following BASIC INTERNAL DG:

- Hepatal encephalopathy
- Renal (uremic) encefalopathy
- Endocrinopathy (hypothyreodism)
- Deficiency B12,B1,B6,folat acid
- Alcohol abuse