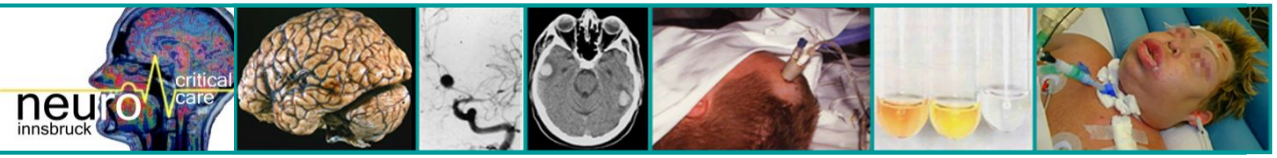

Rome WFN, October 3 – 7, 2021

TEACHING COURSE NCC - FUNDAMENTALS OF NEUROCRITICAL CARE

SEVERE INFECTIONS OF THE CENTRAL NERVOUS SYSTEM
Overview / learning objectives

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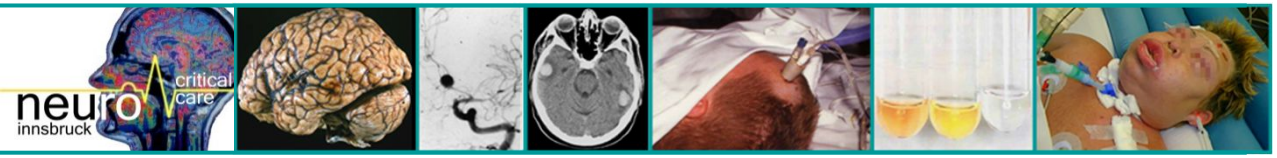
No conflict of interest with respect to the topic of this lecture

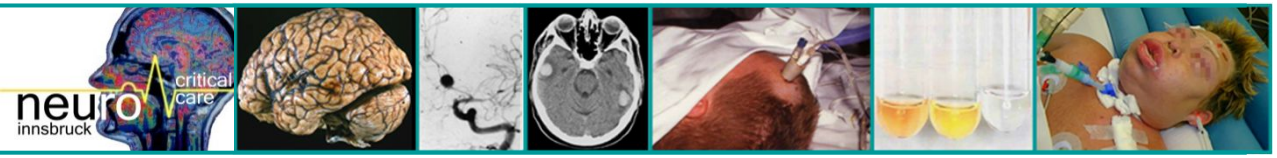


ACUTE CNS INFECTIONS

EXACT HISTORY AND KNOWLEDGE OF EPIDEMIOLOGY IS THE KEY TO OPTIMAL MANAGEMENT

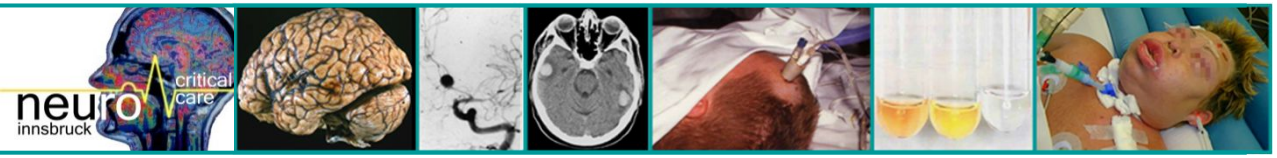
FASTEST POSSIBLE EMPIRIC ADEQUATE ANTIMICROBIAL CHEMOTHERAPY IS ESSENTIAL, EVEN MORE IN TIMES OF RAPIDLY EVOLVING MULTI-DRUG RESISTENCE

ADJUNCTIVE TH.-STRATEGIES, IN PARTICULAR THE FULL RANGE OF NEUROCRITICAL CARE INCL. INVASIVE (NEURO-) MONITORING, ARE OFTEN A KEY TO SUCCESS



ACUTE CNS INFECTIONS – A CHALLENGE IN (NEURO-)CRITICAL CARE

-CHANGING EPIDEMIOLOGY
-FROM RARE OR SINGULAR CASES TO PANDEMIC
-NEW / FIRST DESCRPTION OF CNS INVASIVE PATHOGENS
-IMPORTED, EMERGING AND RE-EMERGING PATHOGENS
-ZOONOTIC SPILLOVERS
-FIRST EVER DIAGNOSES IN NEUROLOGY, ACUTE AND LONGTERM
-SECONDARY CNS AND PNS AFFECTION IN SYSTEMIC INFECTIONS, e.g.
SEPSIS ENCEPHALOPATHY, CIP/CIM
-CHANGING ANTIMICROBIAL RESISTANCE PATTERNS
-GLOBALISATION OF PATHOGENS
-GLOBALISATION OF VECTORS
-NEW DESCRIPTION OF POST-/PARAINFECTIOUS CNS AND PNS SYNDROMES
-NEWLY DESCRIBED AUTOIMMUNE ENCEPHALITIDES TRIGGERED BY CNS-INVASIVE PATHOGENS, e.g. HSV-I-Virus
-INVASIVE (NEURO-)CRITICAL CARE ➔ INVASIVE INFECTIONS
-NEW WAYS OF TRANSMISSION
-MORE AND HIGHLY SUSCEPTIBLE HOSTS (e.g **IMMUNO-COMPROMISED HOSTS)**



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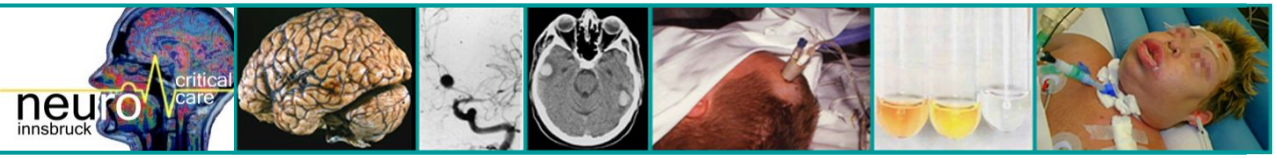
-CHANGING EPIDEMIOLOGY
-FROM R
-NEW / FI
-IMPORT
-ZOONOT
-FIRST E
-SECOND
-CHANGI
-GLOBAL
-GLOBAL
-NEW DE
-NEWLY I
-INVASIV
-NEW WA
-MORE A

History: multi-dimensional!

1. Signs and Symptoms

when and how did they start
type of neurological **and** systemic signs and symptoms
in which sequence and intensity, for how long
contact with similar patients
pre-morbidity, immunestatus, vaccinations



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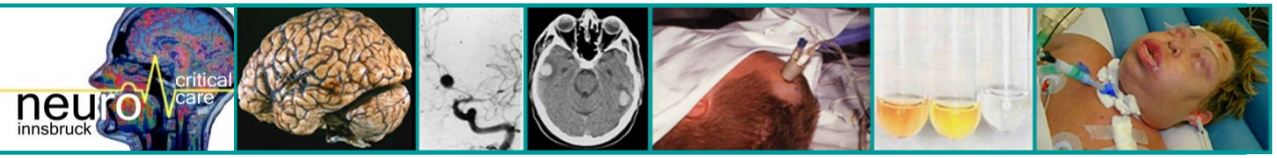
History: multi-dimensional!

2. Exposure

vectors, environment, endemicity of pathogens, epidemic, pandemic
geographical history
incidences of pathogens
travel history, where, how, when
prophylactic measures
sexual activities
seasonality of pathogens
medical tourism



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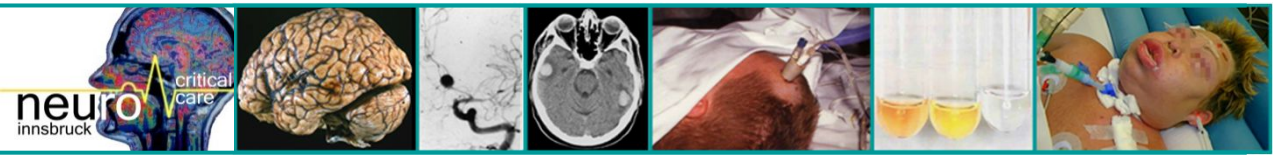
History: multi-dimensional!

3. Immune-Status of the patient

Immuno-competence
Immuno-modulation
Immuno-compromise
Immuno-suppression
HIV
malnutrition
drug dependence, alcohol dependence
post transplantation, incl. origin and safety of the donated organ
(transmission by donated organ, e.g. Rabies, Borna, TBE viruses)



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While your colleague takes the appropriate, correct, targeted and exhaustive history:

Clinical, i.e. neurological, incl. GCS, and systemic, examination
Rapid decision
1. specific antimicrobial chemotherapy, indicated? and which?
2. which further investigations and in which sequence?
➔ Laboratory
➔ Microbiological specimens (e.g. blood culture)
➔ Molecular-biological examinations of which specimen
➔ Imaging, EEG
➔ Spinal tap, routine CSF
➔ CSF: micro- and molecularbiological exams, lactate,
➔ Fundoscopy
3. Emergency measures, cardiopulm., neuro-stabilisation, (N)ICU
4. No probatory steroids, no prophylactic anticonvulsants

OSTS)

Then: Emergency admission to Neuro-Critical Care Unit

ICP: intracranial pressure
CPP: cerebral perfusion pressure
cEEG: continuous EEG
DC: decompressive craniectomy
TTM: targeted temperature management

REVIEW

CURRENT OPINION

Invasive neuromonitoring and neurological intensive care unit management in life-threatening central nervous system infections

Verena Rass, Mario Kofler*, Ronny Beer, and Raimund Helbok*

Volume 34 • Number 3 • June 2021

KEY POINTS

- Besides effective measures to control increased ICP, which is common in comatose patients with neuroinfectious diseases, a CPP-targeted protocol to prevent cerebral hypoperfusion relates to improved outcomes.
- Brain tissue oxygen monitoring may be especially valuable in neuroinfectious diseases prone to ischemic complications (e.g., pneumococcal meningitis) to follow a $P_{bt}O_2$ based treatment concept.
- Metabolic distress should be considered as a marker of secondary brain injury; neuroglucopenia has been associated with poor outcome and is amendable to treatment, arguing against tight glycemic control in patients with neuroinfectious diseases from a brain-metabolic perspective.
- cEEG is an important neuromonitoring tool in the management of patients with CNS infections, particularly in those with decreased levels of consciousness, to detect and treat subclinical and nonconvulsive seizures.
- Available evidence demonstrates reduced mortality in patients with life-threatening CNS infections in whom DC is performed when refractory intracranial hypertension occurs, although data on the effect of DC on the long-term neurological outcome remains controversial.
- Despite limited data assessing benefits of outcome and mortality, TTM can be considered as a second-line intervention on a case-by-case basis when faced with a potentially fatal situation, such as refractory intracranial hypertension.

neuro critical care innsbruck