PALLIATIVE CARE IN STROKE: HOW TO MAKE DECISION & PROVIDE CARE

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Interesting case conference

August 31, 2022

12.00-13.30 O'clock

AGENDA

- Case
- Knowledge
  - Ischemic stroke and covid19
  - Prognosis of ischemic stroke
  - Severe acute brain injury (SABI)
  - Role of palliative care

BASIC INFORMATION

- ชายไทยคู่, อายุ 78 ปี
- **Residence:** อำเภอชุมแพ จ.ขอนแก่น
- สิทธิการรักษา: สิทธิจ่ายตรง
- **Chief complaint:** หมดสติ 1 วันก่อนมาโรงพยาบาล

PRESENT ILLNESS

- **3 day PTA (DO1 1 = 7/7/65)** คนไข้มีอาการไข้ ไอมีเสมหะขาวขุ่น รู้สึกเหนื่อยมาขึ้น อยู่เฉยๆก็เหนื่อย เดิม **functional class I** ไม่มี **orthopnea** หรือ **PND** ไม่มีขาบวม ไม่มีเจ็บหน้าอก ไม่มีท้องเสีย ไม่มีปัสสาวะแสบขัด ได้ไปตรวจ **ATK** เองผล **negative**
- **1day PTA (18.00** น). ญาติคนไข้กลับมาไปที่บ้าน พบผู้ป่วยนอนหมดสติ ซึมลง เรียกไม่รู้สึกตัว จึงเรียก **EMS** ออกรับส่งรพ.ชุมแพ ประเมิน **E1V1M1, RR 46, Sp02 80% --> ได้ใส่ ETT --> หลังจากใส่ ETT GCS E3VTM5**
- ตรวจร่างกายพบ **fine crepitation both lung**

PRESENT ILLNESS

- CXR: bilateral interstitial infiltration, no cardiomegaly
- CT brain (9/7/65): no intracranial lesion, no hemorrhagic or ischemic stroke
- Swab PCR for COVID (9/7/65): inconclusive
- Impression: pneumonia
- Ceftazidime + Clindamycin + Azithromycin
- Fentanyl iv 30 mcg/hr

PRESENT ILLNESS

- Swab PCR for COVID (10/7/65): positive (Ct ratio - 22.55)
- Impression: covid19 pneumonia
- Ceftazidime + Clindamycin + Azithromycin + Remdesivir
- Fentanyl iv 30 mcg/hr
- Refer รพ.ศรีนครินทร์
- At SNH 10/07/65; E1VTM1, pupil 3 mm RTLBE, Fentanyl iv 50 mcg/hr
- admit COVID ward

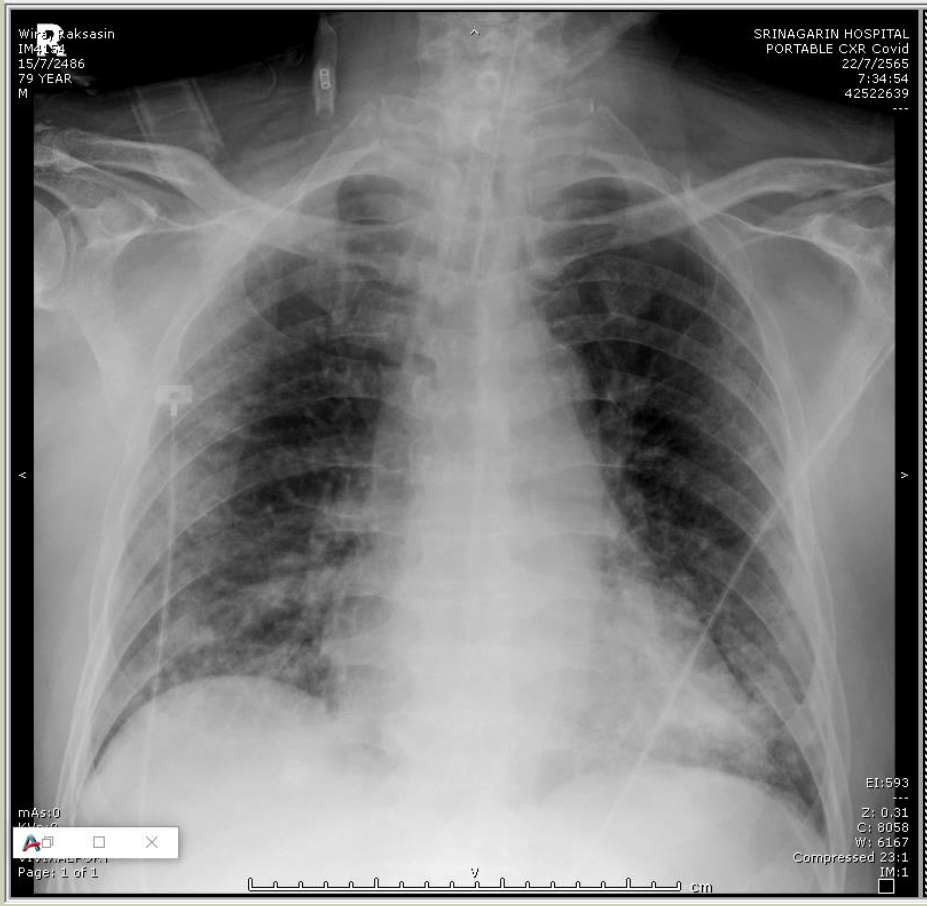
PAST HISTORY

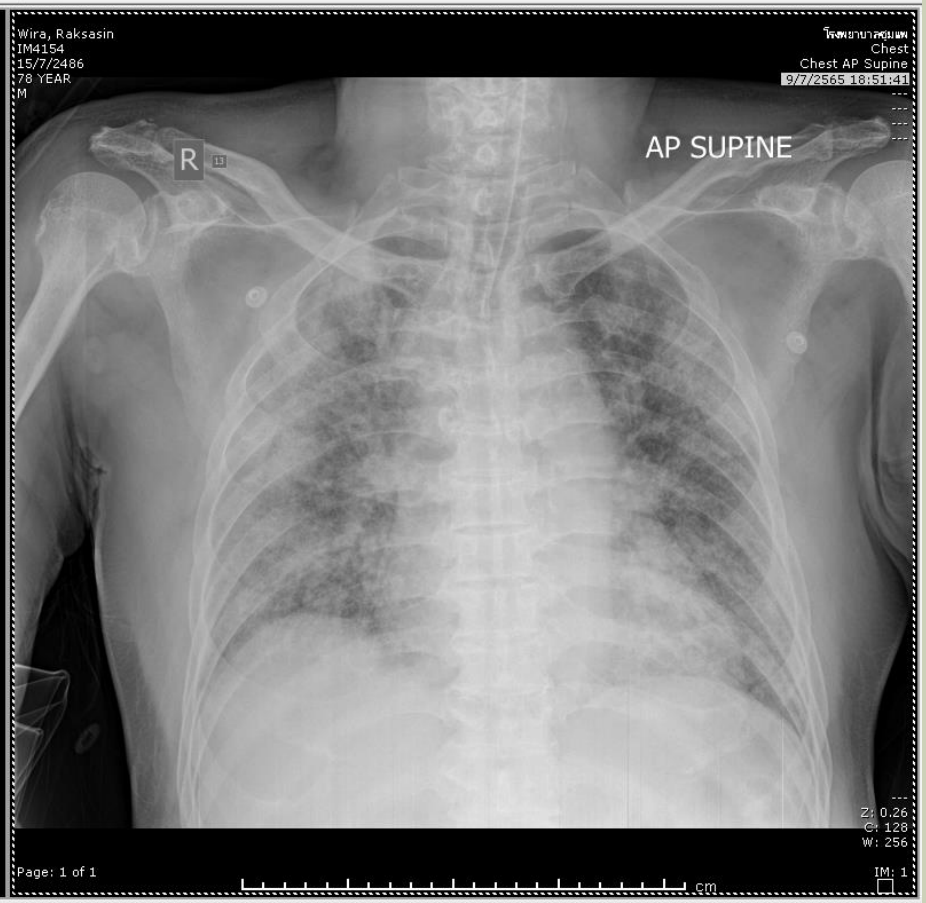
- Underlying diseases: hypertension, dyslipidemia
- Medication
  - ASA (81) 1x1 PO pc
  - Doxazosin (2) 1x1 PO hs
  - Losartan (50) 1x1 PO pc
  - Simvastatin (20) 1x1 PO hs
- COVID vaccination : AZ x 2 dose (last 8/64)
- Active smoking

IN-HOSPITAL COURSE

- on mechanical ventilator: lung protective strategy, prone position
- Ceftriaxone + Azithromycin 5 day off >> H/C - NG x2, Sputum CIS – NG
- Remdesivir 1 course + Dexamethasone + Tocilizumab 1 dose
- Sedation: fentanyl+propofol
- Decrease dyspnea, CXR decrease lung infiltration
- ค่อยๆ wean off PEEP และ propofol ได้

COVID19 PNEUMONIA





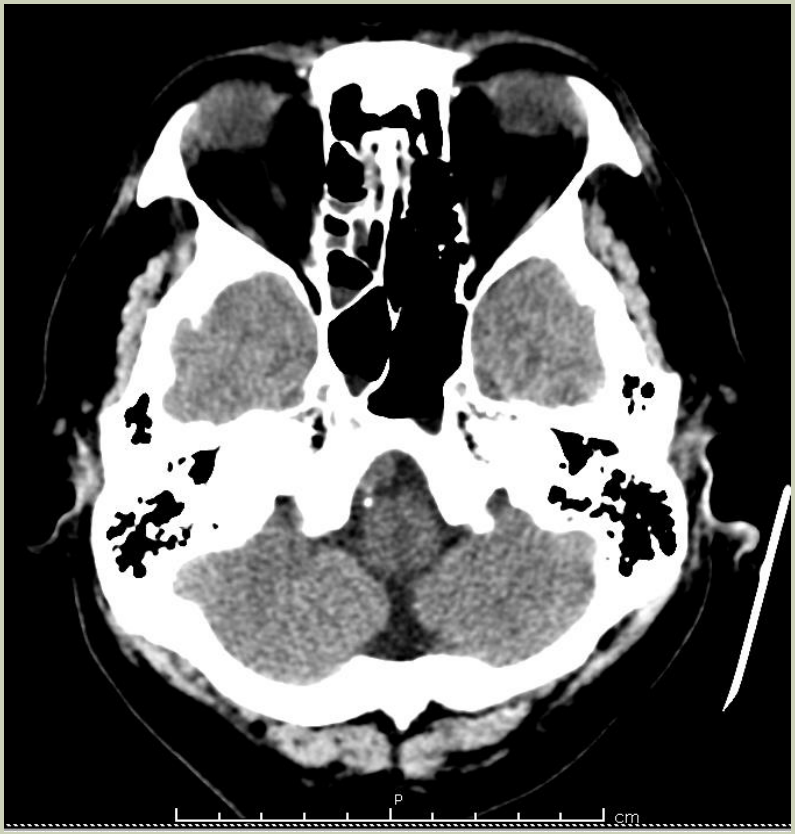
IN-HOSPITAL COURSE

- Wean off fentanyl for 3 days
- not gain consciousness
- E1VTM4, pupil Rt. 2 mm, Lt 1 mm SLTRL
- CT brain NC

NOT GAIN CONSCIOUSNESS

NOT GAIN CONSCIOUSNESS

NOT GAIN CONSCIOUSNESS



CT BRAIN NON-CONTRAST MEDIA

- **Large area of subacute cerebral infarction:** bilateral fronto-parieto-temporal lobes, petechial hemorrhage at right internal capsule and right frontal lobe.
- **SAH** along sulci of right Sylvian fissure and right fronto-parieto-temporal lobe.
- **Acute infarction** at left insular cortex, left frontal lobe and right occipital lobe
- **Brain herniation**: leftward subfalcine herniation 1.1 cm, right uncal herniation

LARGE AREA ISCHEMIC STROKE

- Consult Neurologist: DDx causes
  - 1) Covid association thrombosis
  - 2) Embolic cause (multiple site infarction)
  - 3) Artherosclerosis (HbA1c 6.7%, smoking)
- Consult Neurosurgeon for decompressive craniectomy
  - ครอบครัวปฏิเสธเนื่องจากไม่สามารถรับความเสี่ยงของการผ่าตัดได้
  - Suggestion: conservative treatment, control BP, not need repeated CT brain
- Consult ENT for tracheostomy
  - ครอบครัวปฏิเสธการทำ tracheostomy
- Consult Palliative Care for long-term care

PC ATTENDING

- 13th date of admission, 1st attending date (AD1)
- Vital signs: BP 140/68 mmHg, PR 60 bpm, RR 15 tpm, BT 36.7°C
- Thai male, on mechanical ventilator---well synchronized ventilation, no dyspnea, lot of respiratory secretion
- HEENT: not pale conjunctiva, anicteric sclera
- Lung: rhonchi both lungs
- Heart: regular rhythm, no murmur
- Abdomen: soft, no guarding, active bowel sound
- Extremity: no edema, pulse full and regular rhythm, CRT<2 sec
- Neurological: E1VTM3, pupil Rt 4 mm slightly RTL, Lf 2 mm RTL, no gag reflex, Barbinski sign---bilateral plantaflexion

INVESTIGATION

Blood chemistry

- BUN 26.7 mg/dl, Cr 0.83 mg/dl, eGFR 83.69
- Na 135 mEq/L, K 4.3 mEq/L, Cl 101 mEq/L, HCO3 29.5 mEq/L
- Ca 8.0 mg/dl, Mg 2.3 mg/dl, PO4 4.5 mg/dl

LFT

- AST 63 U/L, ALT 51 U/L, ALP 49 U/L
- TP 4.5 g/dl, **Alb 2.8 g/dl**, Glb 1.8 g/dl
- TB 0.5 mg/dl, DB 0.3 mg/dl

CBC

- Hb 10.8 g/dl, Hct 34.5%
- WBC 12150 cell/mcl, PMN 83.5%, L 6.3%, M 5.5%
- Plt 206000 cell/mcl

CURRENT MEDICATION

- Hydralazine 25 mg 2x4 po pc
- Doxazosin 2 mg 1x1 po pc
- Manidipine 20 mg 1x1 po pc
- Omeprazole 40 mg iv OD
- Paracetamol 500 mg 1 tab po q 6 hr
- Fentanyl iv 30 mcg/hr

SUFFERING SYMPTOMS: DYSPNEA

AD4

- RR 26-28 tpm, accessory muscle used, no fever, lot of secretion
- Off fentanyl iv drip
- Morphine (1:1) iv 0.3 ml/hr (7.2 mg/day)
- Morphine 1 mg iv prn q 2 hr for pain/dyspnea
- Suction secretion prn

AD6

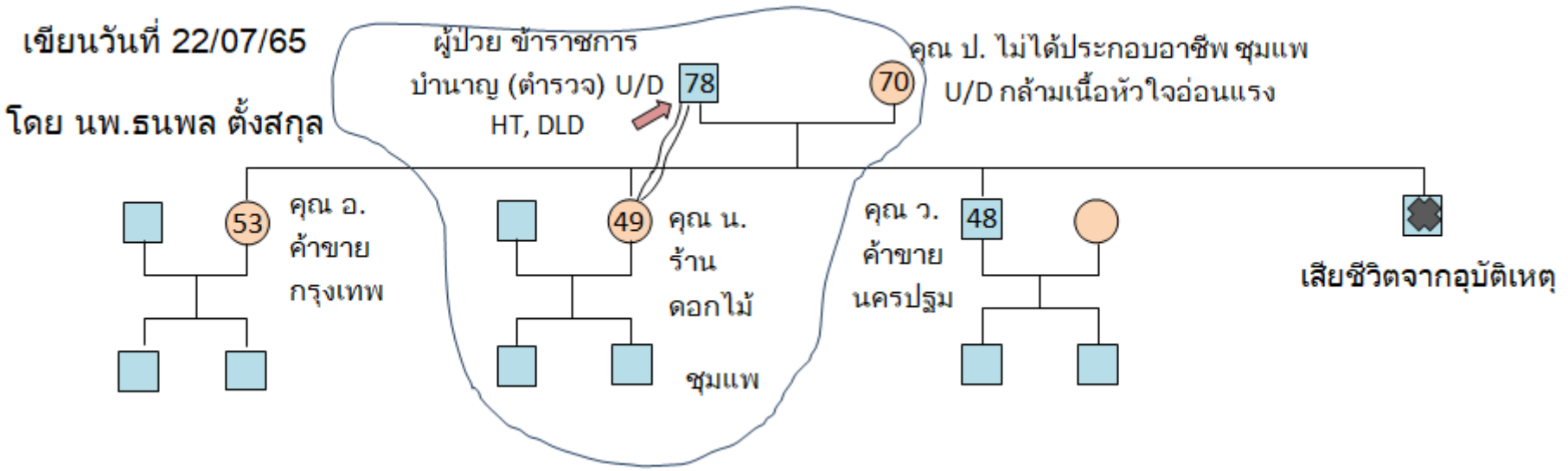
- RR 24-26 tpm, minimal accessory muscle used, used 3 rescue doses a day
- Morphine (1:1) iv 0.5 ml/hr
- Morphine 2 mg iv prn q 2 hr for pain/dyspnea
- RR 16-18 tpm, not used rescue dose

SUFFERING SYMPTOM: HICCUP

AD5

- Develop hiccup, 5 minute/episode
- Sometime, occurred during feeding, profuse secretion
- Disrupted ventilation
- Metoclopramide 10 mg iv prn for hiccup q 8hr (by primary team), ceased about 2 hr
- DDx causes:
  - Peripheral cause: **GER**, pneumonia (lot of secretion, but no fever)
  - Central causes: brainstem involvement of infarction or sequenlae
- Medical management for GER was tried
  - Metoclopramide 10 mg iv q 6 hr with prn q 2 hr for hiccup
  - Omeprazole 40 mg iv OD
  - Controlled with around-the-clock dose, used 1 rescue dose a day

PATIENT'S FAMILY



FAMILY PERCEPTION

- **Illness perception and patient's preference**
  - ผู้ป่วยมีโรคประจำตัว ความดันโลหิตสูง รักษาต่อเนื่องที่ รพ.ชุมแพ
  - หมดสติ นำส่งโรงพยาบาลชุมแพ ได้แสกนสมองแล้วแต่ไม่พบว่าผิดปกติ
  - ตรวจพบว่าเป็นโควิด วันที่ **10/7/65** ตรวจเอกซ์เรย์ปอดไม่ดีจึงส่งมาที่โรงพยาบาลศรีนครินทร์
  - ล่าสุดทราบว่ามีเลือดออกในสมอง สมองบวม แพทย์แนะนำให้ผ่าตัดสมองและเจาะคอ
  - ญาติปฏิเสธการผ่าตัดและเจาะคอเนื่องจากผู้ป่วยอายุมาก และผู้ป่วยเคยบอกว่าถ้าเจ็บป่วยอาการหนักรักษาแล้วไม่หาย ไม่อยากทำอะไรที่ทำให้ทุกข์ทรมาน
- **Hope and expectation**
  - อยากให้ผู้ป่วยได้รับการรักษาที่ดีที่สุด
  - อยากให้ผู้ป่วยอาการดีขึ้น กลับมาพูดได้ เดินได้

PROBLEM LIST

- Large area ischemic stroke with subfalcine and right uncal herniation
  - bilateral fronto-parieto-temporal lobes, left insular cortex, and right occipital lobe
- Post covid19 pneumonia
- Hiccup, suspected causes is GER
- False hope of patient's family

What is your care plan ?

WHAT WE HAD DONE

- Prognostication
  - Age: 78 years
  - Large area of cerebral infarction ---> NIHSS ~35 (not documented)
  - Need craniectomy
  - Consciousness: not improve after 3 days of sedation-free
- Trajectory of patient's illness
  - Death in hospital (by stroke itself, infection)
  - Survive with severe disability
- Possible choices of care and outcomes
- Family meeting for .....
  - 1) fixed family's hope
  - 2) set goal of care and care planning in advance

7-DAYS MORTALITY: PROMISE SCORE

Risk Factors for Stroke Unit Mortality	Points
Age	
60–69, y	+1
≥70, y	+2
Preexisting disability	
Modified Rankin Scale scores 1–5	+1
Stroke severity	
NIHSS 5–11	+2
NIHSS 12–23	+4
NIHSS ≥24	+5
Vascular diseases	
Diabetes mellitus	+1
Heart disease*	+1
Clinical stroke syndrome	
Posterior circulation stroke syndrome	+1
Stroke cause	
Nonlacunar	+1

7-days mortality: 21.7%

Stroke unit mortality (n)	2	23	34	65	113	281	413	351	228	51	6
Stroke unit survival (n)	5850	18211	15805	12347	8157	6784	4925	2837	975	184	11
Score points	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**≥10**

Gattringer et al, Stroke.2019;50:349-356

DECOMPRESSIVE CRANIECTOMY

Neurologic Functional Outcomes of Decompressive Hemicraniectomy Versus Conventional Treatment for Malignant Middle Cerebral Artery Infarction: A Systematic Review and Meta-Analysis

Yu-Ping Li[1,2], Meng-Zhuo Hou[2], Guang-Yu Lu[3,4], Natalia Ciccone[2], Xing-Dong Wang[1], Lun Dong[1], Chen Cheng[5], Heng-Zhu Zhang[1]

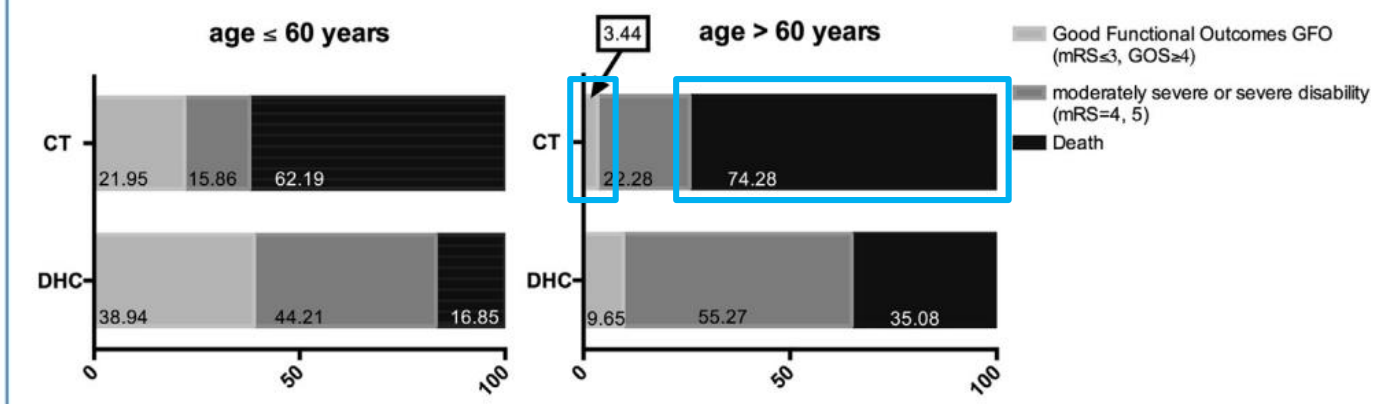


Figure 10. Neurologic functional outcome of different age groups (≤60 years vs. >60 years) comparing decompressive hemicraniectomy (DHC) with conventional treatment (CT) at 12-month follow-up. mRS, modified Rankin scale; GOS, Glasgow Outcome Scale.

Yu-Ping Li et al. World Neurosurg. (2017) 99:709-725.

1ST TIME OF FAMILY MEETING

- On AD4, via video call
- Participants: Patient's wife, daughters and son

<u>Family's viewpoint</u>:

- **Previous health status:** ผู้ป่วยเป็นคนแข็งแรง ใส่ใจสุขภาพและร่างกายตนเองอยู่เสมอ
- **Patient's image:** นักสู้— "คิดว่าครั้งนี้พ่อก็อยากสู้"
- **Patient's preference:** เคยสั่งเสียไว้ว่าถ้าเจ็บป่วยหนักไม่ต้องการให้ทำอะไรให้ทุกข์ทรมาน ไม่เจาะคอ ไม่ผ่าตัด ให้เป็นไปตามธรรมชาติ ไม่ต้องการให้เป็นภาระของครอบครัวที่ต้องมาดูแล
- **Current status:** ผู้ป่วยยังไม่รู้สึกตัว เพราะสมองบวมมาก แต่อาการอย่างอื่นยังดี ไม่มีไข้ ความดันโลหิตก็ยังดี
- **Family's expectation:** ผู้ป่วยน่าจะฟื้นกลับมาได้ อย่างน้อยก็สื่อสารได้ แม้จะติดเตียงก็ไม่เป็นไร

1ST TIME OF FAMILY MEETING

PC team sharing

- **Current situation:** ผู้ป่วยเป็นปอดอักเสบจากเชื้อโรคโควิด ต่อมามีสมองขาดเลือดเป็นบริเวณกว้าง ทำให้ผู้ป่วยไม่รู้สึกตัวและต้องใส่ท่อช่วยหายใจไว้ ทีมรักษาพยายามเต็มที่ เราหวังว่าผู้ป่วยจะดีขึ้นบ้างแต่ไม่เป็นดังนั้น
- **Best scenario:** สามารถหายใจเองและขับเสมหะเองได้ ถอดท่อช่วยหายใจออกได้ แต่ยังติดเตียงและอยู่ในภาวะพึ่งพาอย่างมาก
- **Worse scenario:** ไม่สามารถหย่าเครื่องช่วยหายใจได้ มีการติดเชื้อในโรงพยาบาลซ้ำซ้อน เสียชีวิตจากการติดเชื้อในโรงพยาบาล
- **Most possible scenario:** น่าจะไม่สามารถขับเสมหะเองได้และอาจต้องเจาะคอ ไม่รู้สึกตัวและไม่สามารถตอบสนองอย่างจำเพาะเจาะจงได้
- **Focus on patient's preference:** การทำหัตถการรุกรานสูงหรือการยื้อผู้ป่วยอาจไม่ตรงตามความต้องการของผู้ป่วย

1ST TIME OF FAMILY MEETING

- **Family opinion:** ผู้ป่วยเป็นนักสู้ เราน่าจะต้องสู้ต่อ *“เราทำอะไรมากกว่านี้ไม่ได้แล้วหรือ”*
- **Conclusion:** ครอบครัวและทีมรักษาอาจยังเข้าใจสถานการณ์ต่างกัน ทำให้เรายังวางแผนร่วมกันไม่ได้
- **Management:** นัด **Family meeting** อีกครั้ง **AD6**

Family expectation
Is it relevant ?

PROBLEM AND STRATEGY

- Team discussion
- Problems
  - Mismatch of family perception and reality; fragmented information, unimaginable condition
  - Stage of grief: bargaining +/- anger
  - Communication barriers; hi-tech, low touch
- Strategy
  - Narrowing physical gap: on-site meeting
  - Emotional addressing with empathic response
  - Show reality and reorientation: whole picture
  - Straightly truth telling: prognosis and possible choices of care

2ND TIME OF FAMILY MEETING

On AD6, on-site meeting

- **Formal greeting and self-introduction**
- **“Special” family time: a short private family time**

Formal meeting

- **Family feeling:** “ดีใจที่ได้เจอ” “เสียใจที่ไม่เป็นอย่างที่คิด”
- **Patient’s image:** “รูปหล่อ” ให้ความสำคัญกับรูปลักษณ์และความสมบูรณ์ของร่างกาย รักครอบครัว
- **Family perception:** “แย่กว่าที่คิดไว้” “ตอบสนองน้อยมาก”
- **Reorientation: shown CT brain, explained function of brain correlated with patient’s symptoms and prognosis**
- **Patient’s wish:** “ถ้าป่วยหนักหรือต้องเข้าสู่ภาวะพึ่งพา ขอรับการดูแลให้ไม่ทรมาน ขอตายตามธรรมชาติ ไม่ผ่าตัด ไม่เจาะคอ

2ND TIME OF FAMILY MEETING

Sharing choice of care/possible outcome

- 1) continue MV + full treatment (even futile): recurrent nosocomial infection, little chance of MV weaning successfully
- 2) continue MV + withhold some futile treatment: recurrent infection, allowed natural dead, little chance of MV weaning successfully
- 3) withdrawn LST: uncertainty of outcome
  - i) sudden death
  - ii) longer period before death
  - iii) survive with severe disability

2ND TIME OF FAMILY MEETING

Formal meeting (ต่อ)

- Can you accept your beloved one's wish?: Yes
- Which one is the most compatible with your beloved one's wish?: chose 3)
- Could we accept risk and disadvantage of that strategy?: accept, even uncertain

LIFE SUSTAINING EQUIPMENT WITHDRAWAL

AD9

- Transfer to palliative care ward
- Suction secretion in ETT and oral cavity
- Withdrawal of ETT
- Morphine 2 mg iv, midazolam 1 mg iv, on O2 cannula 3 LPM
- Morphine (1:1) iv 0.8 ml/hr
- Morphine 3 mg iv/sc prn q 2 hr for dyspnea/pain
- Midazolam 1 mg iv/sc prn q 2 hr for dyspnea/agitation
- Buscopan 20 mg iv/sc q 6hr
- NPO
- Surrounded by family members
- Advised symptom controlling and emotional support

AFTER PC WARD ADMISSION

AD14

- increase dyspnea, profuse respiratory secretion
- Increase morphine (1:1) iv 1 ml/hr
- Add 1%atropine eyedrop 4 drop SL q 4 hr

AFTER PC WARD ADMISSION

AD15

- 6 day after LST withdrawal
- poor responding, controlled dyspnea
- **3rd time of family meeting**
  - Discussed on patient situation and prognosis
  - Family accept prognosis, agreed with ICP continuing
- Off NG tube
- Off morphine drip เดิม
- Morphine 25 mg + Buscopan 120 mg + NSS up to 24 ml sc drip 1 ml/hr

AT THE END

- Well symptom control: no dyspnea, no seizure
- Dead in peace on AD25 (16 days after LST withdrawal)
- Family coped well in acute phase (at 1st week after)
- Plan: follow-up bereavement after 1 and 6 months

What We Learned

I LEARNED …..

- Although impaired consciousness, patient with SBI **may experience suffering symptoms**; pain, dyspnea, hiccup eg.
- Patient focusing: family and medical team, may need **reorientation**
- **Uncertain prognosis**--->difficult advance planning for medical team and family
- **Uncertain prognosis**--->emotional burden for all stakeholders
- Need overall evaluation and **shared decision making**

ISCHEMIC STROKE WITH COVID19

ISCHEMIC STROKE WITH COVID19

- Types : **acute ischemic stroke 87.4%**, ICH 11.6%, TIA 0.1%, cerebral venous thrombosis 0.5%
- Incidence of AIS: 0.9 – 1.5% of covid19 patients
- Characteristics
  - **Higher NIHSS** at 24 h in covid19
  - Large vessel occlusion or **multiple infarction** (42.5%)
- Likelihood of association between stroke and COVID-19:
  - Principal cause of stroke 24%
  - Contributing/triggering factor 36%
  - Likely not contributing to stroke 40%

ISCHEMIC STROKE WITH COVID19

Risk factors

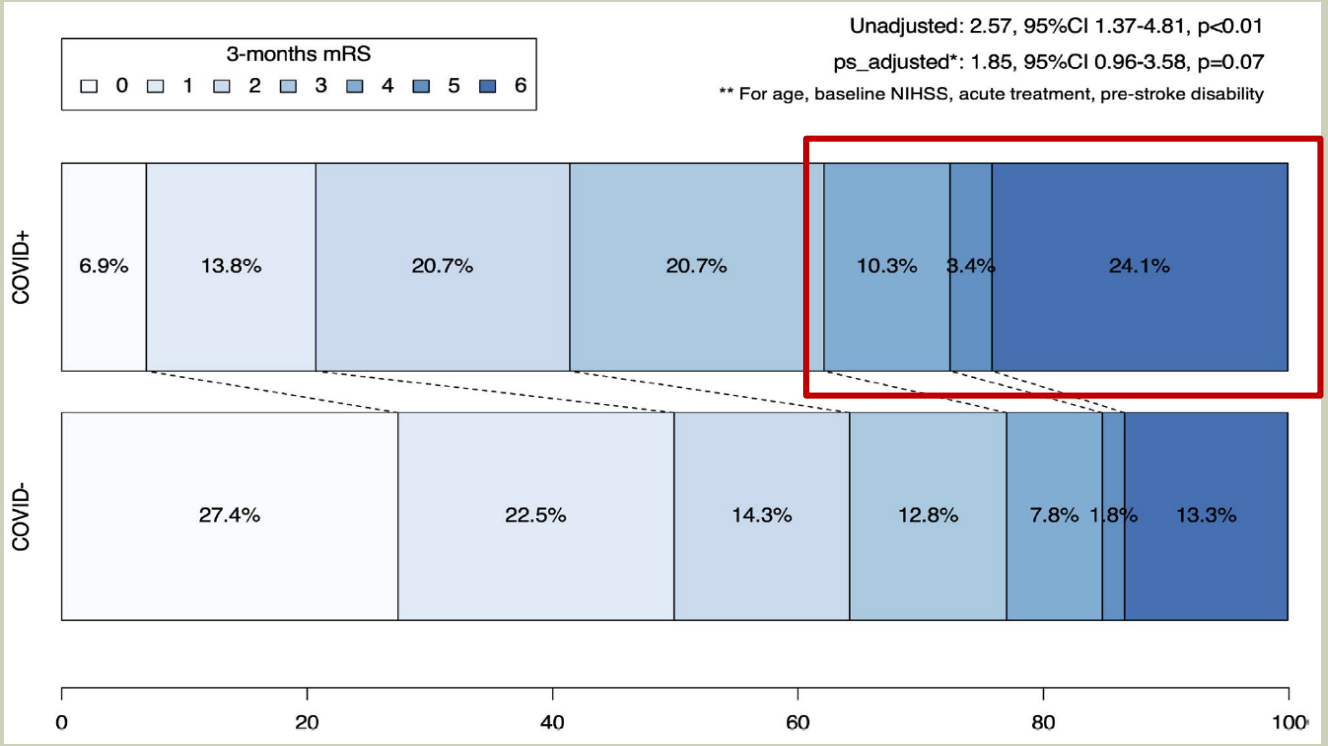
- HT (OR 7.35; 1.94-27.87)
- DM (OR 5.56; 3.34-9.24)
- CAD (OR 3.12; 1.61-6.02)
- Severe covid19 infection (OR 5.10; 2.72-9.54)

Etiology

- Cardioembolism 21.9% (16.5-28.4)
- Large artery arthrosclerosis 10.6% (6.5-16.8)
- Cryptogenic stroke 44.7%(27.1-63.9)

SHORT-TERM OUTCOME

- Higher risk of in-hospital mortality (OR 5.21; 3.43-7.90)
- Lesser home discharged in Covid19
- More proportion of post-stroke dependency in covid19



PALLIATIVE CARE IN ISCHEMIC STROKE

ISCHEMIC STROKE

- Prognosis
- Prognostic factors for mortality
- Prognostic factors for functional dependency
- Phase of care
  - Acute
  - Subacute and chronic
  - End-of-life

PROGNOSIS

Long-Term Survival and Function After Stroke

A Longitudinal Observational Study From the Swedish Stroke Register

Stefan Sennfält, MD; Bo Norrving, MD, PhD; Jesper Petersson, MD, PhD; Teresa Ullberg, MD, PhD

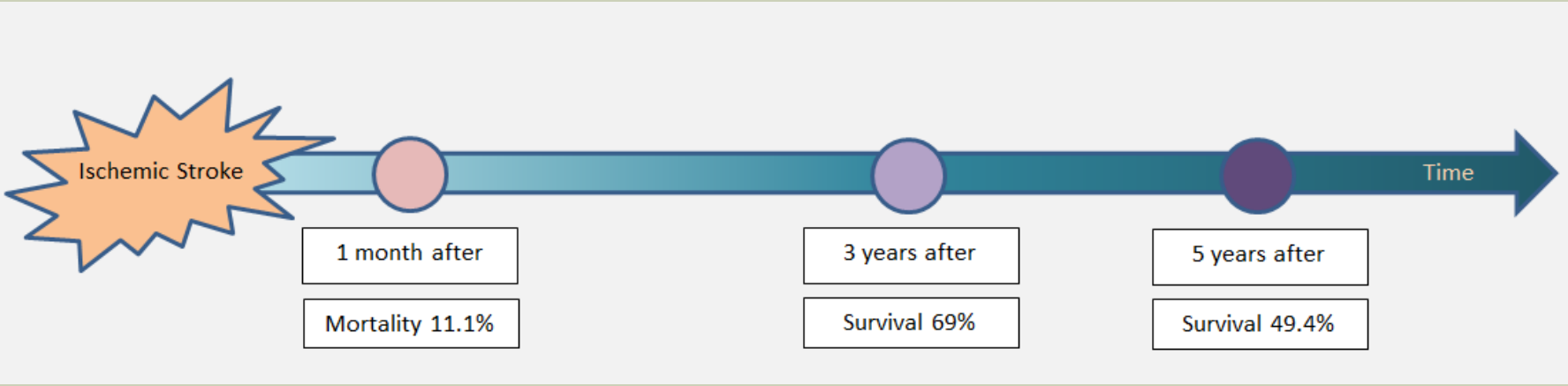
- *Stroke; 2019*, Cohort study, compare with general population,
- Follow up 4 sessions 3, 12 months then 3, 5 years after stroke
- N=22929, IS > ICH: 87.5% vs 12.5%

Survival, causes of death and recurrence up to 3 years after stroke: A population-based study

Joseph Aked[1,2] | Hossein Delavaran[1,3] | Arne G. Lindgren[1,4]

- European Journal of Neurology; 2021, Prospective cohort study
- Sweden, Start at 2015-2016, follow-up time 3 years
- N=400 IS 84% >ICH 15% >Undetermined 1%

SURVIVAL AND MORTALITY



- Cause of death: Cerebrovascular disease is leading cause of death (40%)
- 3-year cardiovascular mortality is 20% (CVD+IHD)
- Difficulty of prognostication

PROGNOSTIC FACTORS FOR MORTALITY

- Age: elderly
- Comorbidities: DM, multiple/severe comorbidities
- Severity of stroke: high NIHSS score
- Level of consciousness at admission: drowsiness, comatose
- Pre-stroke functional dependency
- Culprit cerebrovascular lesion

PROGNOSTIC FACTORS FOR FUNCTIONAL DEPENDENCY

- Age (OR 1.08)
- DM (OR 1.64)
- Gender: female (OR 1.36)
- Level of consciousness at admission:
  - drowsy (OR 3.8)
  - comatose (OR 6.94))

LARGE CEREBRAL INFARCTION

Clinical Article

The Prognostic Factors That Influence Long-Term Survival in Acute Large Cerebral Infarction

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- *Journal of Korean Neurosurgery Society; 2011*
- N=178
- Large ischemic stroke: ≥1 division of MCA and/or ACA or PCA
- Mean survival time 41.7 +/- 2.8 months
- 69.7% moderate - severe functional impairment after 1 month of onset (mRS >/= 4)

LARGE CEREBRAL INFARCTION

- 5-year mortality: 38.6%
- Cause of death
  - **78.7% infection causes** (74.5% pneumonia)
  - 8.5% cerebral infarction itself
- Prognostic factor for long-term survival
  - Age
  - Post-stroke function
  - ACA/PCA involvement

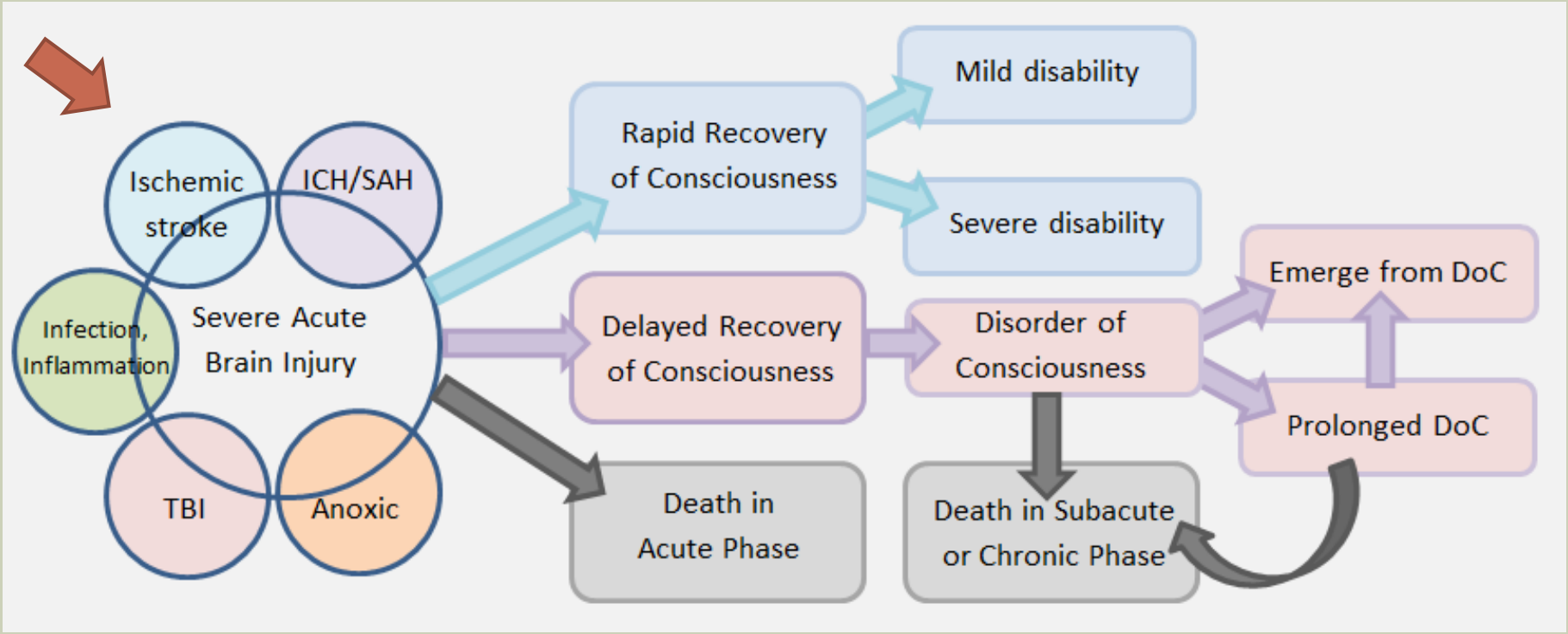
Factor	Mean Survival Time (month)	P-value
Age (year) <70 vs ≥70	58.9 +/- 3.2 vs 29.7 +/- 3.4	p<0.001
mRS ≤3 vs ≥4	58.6 +/- 2.6 vs 33.9 +/- 3.3	p<0.001
MCA alone vs ACA/PCA involvement	24.0 +/- 17.7 vs 11.6 +/- 8.6	p=0.021

DRAW TO CONCLUSION

- Ischemic stroke patients decrease survival, in compare to general population
- Large ischemic stroke
  - High mortality: at 1st month and 5 years after onset
  - High functional impairment: 69% mRS ≥ 4 at 1st month after onset
- Factors of functional impairment:
  - elderly (>70 years)
  - culprit pathology
  - Level of consciousness on admission
  - post-stroke function

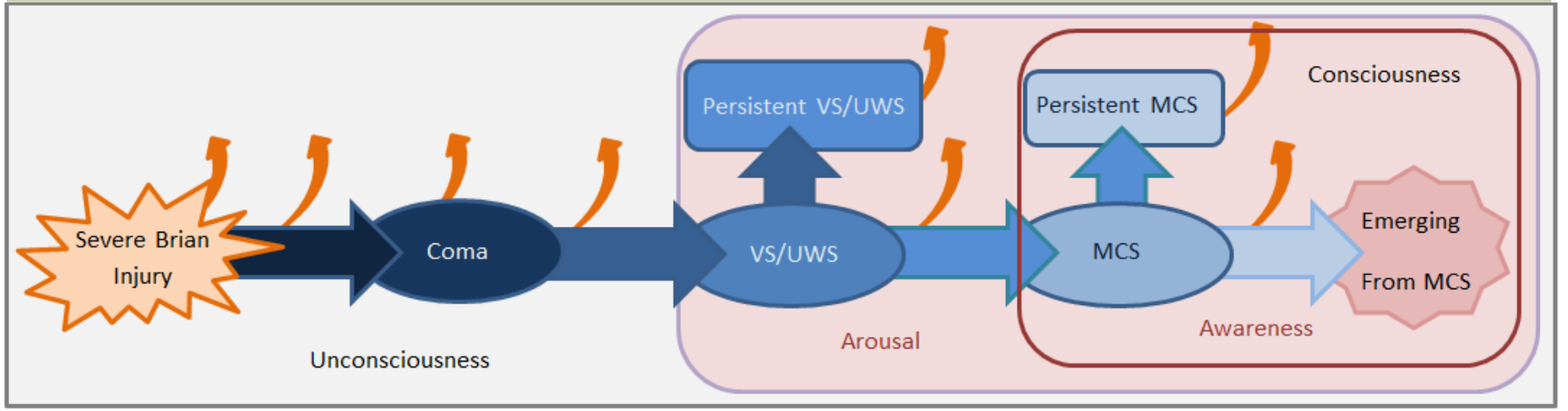
SEVERE ACUTE BRAIN INJURY

- Acute neurological catastrophe
- The 4th trajectory: sudden death after WH/WD-LST or survive with various disabilities



DISORDER OF CONSCIOUSNESS

- Consciousness = Arousal + Awareness (to self & environment)
- DoC = VS/UWS + MCS
- VS: Vegetative State
- UWS: Unresponsive Wakefulness Syndrome
- MCS: Minimally Consciousness State
- Emerging from MCS: purposeful language and object use
- Timing: early and prolonged (≥28 days)



MORTALITY & CONSCIOUSNESS RECOVERY

Mortality

- 1/3 die in 1st year
- 1/2 die in 2nd year
- Risk factors: elderly, more severe of unconsciousness

Recovery of consciousness

Percentage of Recovery of Consciousness at 1 year			
Etiology	VS at 1 month	VS at 3 month	VS at 6 month
TBI	52%	35%	16%
Non-TBI	15%	7%	0%

ROLE OF PALLIATIVE CARE

- Identify & management distressing symptoms
- Psychosocial support
- Accurate prognostication
- Communication on sensitive issues

- Phase of care
  - Acute (SABI, coma)
  - Subacute and chronic (DoC)
  - End-of-Life

SYMPTOM MANAGEMENT

- Unable to communicate--->less recognition of symptom
- If potential source of discomfort present + observe discomfort → management is reasonable

<u>Acute phase</u>

- Pain
- Myoclonus
- Paroxysmal Sympathetic Hyperactivity

<u>Subacute and chronic phase</u>

- Fatigue
- Depression
- Chronic pain
- Paroxysmal Sympathetic Hyperactivity

PAIN

- Brain injury limits self-report and behavior
- Physiological response (HR, BP) may be useful but not specific
- Validated tools: BPS, CPOT
- Acute phase:
  - Need to observe neurological sign
  - Non sedative drugs are preferred
  - Opioid: use short-acting drug---fentanyl
- Subacute and chronic phase:
  - Coma or VS patients theoretically do not suffer from pain
  - MCS patients may experience pain
  - Neuropathic pain

MYOCLONUS

- Abrupt irregular muscle contraction
- Can occur in acute and chronic phase
- If persist--->poor prognosis
- Medication
  - Benzodiazepine
  - Valproic acid
  - Levitiracetam

PAROXYSMAL SYMPATHETIC HYPERACTIVITY

- Syndrome of simultaneous sympathetic overactivity in severe brain insult survivors
  - Hypertension, Tachycardia
  - Hyperthermia
  - Tachypnea
  - Dystonia/posturing
  - Diaphoresis
- Occur in any phase of disease, more common in early VS
- Can last for weeks to several months before burn out
- Indicate poor prognosis
- Need to R/O other conditions; pain, infection, encephalitis, withdrawal syndrome
- No universal effective medication, may need combination

MEDICATION FOR PSH

Medication	Dose and Detail
Opioid	
Morphine	For most features (particularly hypertension, tachycardia, and allodynia) For treatment: 1–10 mg iv, higher doses (up to 20mg) in severe cases intravenous infusion for prevention.
Fentanyl	For most features (particularly hypertension, tachycardia, and allodynia) 10–30 mcg/h, fentanyl patch, tapered gradually after 1 week
Anesthetic	
Propofol	For most features and refractory symptoms Prevention: intravenous infusion <4 mg/kg/h Treatment: 10–20 mg intravenous injection
Beta-adrenergic blocker	
Propranolol	For hypertension, tachycardia, diaphoresis, and perhaps reduce dystonia Caution: high dose may cause hypotension or bradycardia Dose: 20–60mg per 4–6 h orally
Alpha2-agonist	
Clonidine	For hypertension and tachycardia. Prevention: 100 mcg per 8–12 hr oral or intravenous infusion <200 mcg/day for epidural or intestinal administration
Demedetomidine	For hypertension, tachycardia, dystonia, pain, and anxiety Prevention and treatment: intravenous infusion, 0.2–0.7 mcg/kg/h

Benzodiazepine Caution: sedation, hypotension, and respiratory depression	
Diazepam	For agitation (first choice), hypertension, tachycardia, and dystonia and spasticity Treatment: 1–10 mg intravenous injection
Lorazepam	For agitation, hypertension, tachycardia, and posturing Treatment: 1–4 mg intravenous injection
Midazolam	For agitation, hypertension, tachycardia, and posturing Treatment: 1–2 mg intravenous injection
Clonazepam	For agitation, hypertension, tachycardia, and posturing Prevention: 0.5–8.0 mg/day, oral

Neuromodulator	
Bromocriptine	For hyperpyrexia and sweating (second-line drug) Prevention: 1–25 mg/12 h, oral, max 40 mg/day Caution side effects: hypotension, confusion, dyskinesia, and nausea
Gabapentine	For spasticity, hyperpyrexia, and allodynia, reduces the frequency of paroxysm Prevention: 100 mg/8 h orally, max 4,800 mg/day
Baclofen	For spasticity (decreases the frequency and severity), dystonia, clonus, post-traumatic pain Prevention: 5mg/8 h, 80 mg/day, oral or intrathecal injection Major side effects: sedation and withdrawal syndrome (fever, rigidity, dystonia, or seizures
Peripheral acting muscle relaxants	
Dantrolene	For posturing and muscular spasms, ameliorate malignant hyperthermia Dose: 0.5–2 mg/kg/6–12 h iv, max 10 mg/kg/day Caution: hepatotoxicity respiratory depression

FATIGUE

- Finding secondary causes and correcting it
- Monafidil:
  - lower doses (50–200 mg, once daily in the morning) for fatigue and concentration difficulties
  - higher doses (up to 600 mg/day) for excessive sleepiness
  - reduce dose by 50% in severe hepatic impairment
  - not for renal impairment
  - Caution: bipolar disorder, preexisting psychosis, ischemic or structural heart disease
- Methylphenidate:
  - 10–20 mg orally in the morning and at noon

DEPRESSION

- SSRI
  - Fluoxetine: 20-40 mg/day, orally pc in morning
  - Sertraline: start 50 mg/day, titrate to 100-150 mg/day, orally pc in morning or hs
- Not delayed the use medication
- Psychotherapy

PSYCHOSOCIAL ISSUE

- Psychological distress ---> psychiatric disorders (anxiety depression, PTSD)
- Acute phase:
  - sudden incidence
  - surrogate decision maker
- Subacute phase:
  - making decision
  - adaptation to changing life

PSYCHOSOCIAL ISSUE

- Chronic phase:
  - physical/psychological/financial dependence
  - caregiver burden
- End-of-life:
  - (anticipatory) grief
  - living without patients
  - loss of gain

PSYCHOSOCIAL SUPPORT

- Emotional support: empathic response
- Reframe of the possible hope
- Identify problems: disease, psychological, social, spiritual
- Finding out resources (internal and external); his/herself, family, social organization
- Good control of disease and symptoms: manageable sense
- Psychiatrist consultation: need of medication or psychological intervention

SENSITIVE COMMUNICATION

- Family as patient's surrogate

<u>Sensitive Issues</u>

- Do/Not do procedure: life-saving operation, tracheostomy, NG/PEG feeding tube
- Prognosis & Anticipatory symptoms: deterioration declaration, end-of-life, Uncertainty of prognosis
- Withholding/Withdrawal LST

- Emotional distress: patient's illness, family chaos, bearing the whole responsibility

HOW TO DEAL

- **Series of conversation** over the time, dynamic change
- Straightly **truth telling**
- Emotional address with empathic response
- Imaginary guidance the **whole picture**
- **Best-Worst-Most likely** case scenario
- All-or-Nothing approach VS Time-limited trial (with explicit plan of assessment)

HOW TO DEAL

- Patient's preference
  - Advance care planning---rare
  - **"Bring patient's voice into the room"**
  - Patient focusing, not family or surrogate interest
- Shared decision-making
- Goal of care ---> plan A (+/- B)

END-OF-LIFE

SPICT

- Surprise question: positive
- General criteria
  - PPS<50%
  - Multiple life-threatening comorbidities
  - Unresponsive/progressive/Unwilling-to-treat disease
  - Weight loss>10% in 6 months
- Specific criteria for neurological disease: ≥ 2/4
  - **Progressive deterioration** in physical and/or cognitive function despite optimal therapy
  - **Symptom** which are complex and difficult to control
  - **Speech problems**; increasing difficulty communicating; progressive **dysphagia**
  - **Recurrent aspiration** pneumonia; breathless or respiratory failure

END-OF-LIFE

Criteria for Admission in Hospice

- **Inability** to maintain hydration and caloric intake + 1/6 of following
  - Poor **functional status**; PPS<40%
  - **Weight loss**; >10% in past 6 months or >7.5% in past 3 months
  - **Serum albumin** < 2.5 g/dl
  - Not-response-to-intervention **pulmonary aspiration**
  - Sequential caloric count documenting **inadequate caloric/fluid intake**
  - **Dysphagia** preventing patient from adequate food and fluid intake to sustain life and dose not receive artificial nutrition and hydration

END-OF-LIFE CARE

- **Anticipate** what will happen, plan for it in advance
- **Symptom management**: regular dose of analgesic and sedation; morphine + midazolam/clonazepam
- Avoid medical futility
- Some intervention may considered as time-limited trial
- Nutrition and fluid
  - Dilemma: discuss with surrogate
  - Thirsty: mouth care, regular ice chip
  - 1 L of saline SC infusion may be tolerate
- **Withholding or withdrawn LST** when clinical evidence show no improvement
- Proactive consistent communication
- Hospital ethic committee may be need
- Psychosocial support for **bereavement care**

CONCLUSION

- **Uncertain prognosis** of severe ischemic stroke
- Impairment of consciousness causes **difficulty in symptom evaluation**; carefulness, validated tools
- It is reasonable and ethical **to treat pain and other suffering symptoms** in DoC patients
- **Psychosocial support** is crucial for maintaining care for patients and their family
- **Good communication**, series of conversation with empathy, is very important
- Limited time trial may be a way to compromise, but futility should be avoided in **EoL** period

Thank You for Your Attention

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