Infection-ER combine meeting

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Presenter: R2 羅志威

2012/03/23

Case Information

- 59 y/o male
- 1st visit day 1 12:34
- 檢傷分級: 3級
- 主訴: 發燒畏寒
- GCS: E4V5M6
- TPR: 39.9oC 心跳105/分 呼吸: 18/分
- SpO2 96% BP 117/72 mmHg

ER course

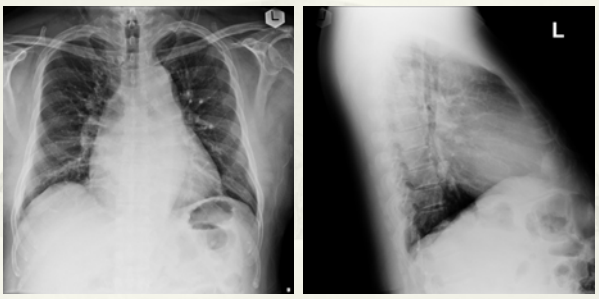
- 主訴: 咳嗽X 2天
- 現病史: 咳嗽, 白痰, 左側胸口會痛, 無吐or拉肚子
- TOCC:
  - 旅遊史: 無
  - 職業:建材業
  - 無接觸史
  - 無群聚史

ER course

- PE:
  - 意識: alert
  - 頭頸: no anemic, no icteric, no inject throat
  - 胸&心: Lt side coarse breathing sound with mild crackles, RHB, no murmur, no wheeze, no respiratory distress
  - 腹: soft, flat, no tender or guarding, normoactive BS
  - 四肢: freely movable, warm, no edema

ER course

- Impression: susp pneumoniae or acute bronchitis
- Plan: explain CXR
- Order(12:39)
  - CXR 2 view
  - Tinten 1# po st
  - Regrow 1# po st
  - Actein 1pack po st



ER course

- CXR findings:
  - No pneumoniae, borderline cardiomegaly
- Order(13:19)
  - Recheck vital signs
  - TPR: 37oC /101/18
  - SpO2 95%
  - BP 116/65 mmHg
- 紀錄(14:07):
  - Patient feel better, alert, coarse breathing sound, no crackle
- Order (14:07)
  - Tinten 1# po qid
  - Regrow 1# po bid
  - Actein 1pack po tid
  - MBD & OPD follow up

ER course

- 2nd visit
- 檢傷分級: 2級
- 主訴: 吃完急診藥後肢體無力
- GCS: E4V5M6
- 體溫: 36.4oC 心跳 91/分 呼吸: 18/分
- SpO2 97% BP 117/85mHg

ER course

- S: 右側無力 & numbness after discharge from ER (about 2PM), till now dysarthria noted also cough with fever, so visit ER
- "離院後覺得怪怪的, 一直冒冷汗, 因一直無改善, so再度就診 , 目前無喘或持續咳嗽"

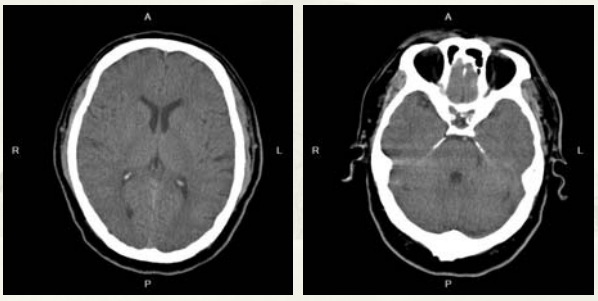
ER course

- PE:
  - 意識: alert, E4V5M6, slow response
  - 頭頸: no pale conjunctiva, no icteric sclera
  - 胸&心: clear BS, RHB
  - 腹: soft, flat, normoactive BS, no tender or peritoneal sign
  - 骨盆: stable
  - 四肢: freely movable, no edema
  - 背: unremarkable
  - NE: no focal signs

ER course

- Impression:
  - 1. susp acute stroke(<3hr)
  - 2. Acute bronchitis
- Plan: 啟動tPA

Brain CT



ER course

- 17: 12 Neurologist Note
  - Impression: r/o TIA
  - Plan:
    - ECD/ TCD
    - Bokey 3# po st + 1# qd
    - Nootropil 12g iv st + qd
    - Control BP < 220/120 and F/S <180
    - 暫留觀 待ECD/TCD再決定MBD 或admission
- 17:48轉EC20床

ER course

- EC Order (18:00)
  - Dx:
    - 1. r/o TIA
    - 2. acute bronchitis, r/o occult infection
  - F/S qd /AC
  - N/S 60ml/hr
  - Bokey 1# po qd
  - Nootropil 1btl iv qd
  - If BP>220/120,or F/S >180, inform doctor

Hb	16.6	gm/dl
WBC	12.9	x1000/ul
Differential count	**********	
Segmented Neutro.	72.0	%
Lymphocyte	7.5	%
Monocyte	6.0	%
Eosinophil	0.0	%
Basophil	0.5	%
Atypical lymphocyte	0.0	%
Band	13.5	%
Metamyelocyte	0.5	%
Myelocyte	0.0	%
Promyelocyte	0.0	%
Blast	0.0	%
Nucleated RBC	0.0	/100WBC
Platelet	103	x1000/ul

Glucose	144	mg/dL
GOT(AST)	37	U/L
BUN	25	mg/dL
Creatinine	1.6	mg/dL
Na	139	meq/L
K	3.9	meq/L
eGFR	44.46	
CRP	20.700	mg/dL
PT	14.0	second
Normal control	10.2	second
INR	1.37	Ratio
APTT	34.8	second
Normal control	32.8	second
APTT ratio	1.06	

ER course

- 17:55
  - U/A, B/C, Lactate
  - 續排ECD/TCD
- 19:00
  - Bedside ECHO
- 21: 35
  - CXR st

- 21:55
  - O2: canula 3~6L/min
  - Lasix 1amp iv st
  - U/C
  - Cefmetazole 1g iv q8h
  - Record I/O q8h

Sediment	**********	
RBC	8-15	/HPF
WBC	51-100	/HPF
Epithelial cell	3-5	/HPF
Cast	Granular	/LPF
.cast-amount	+	
Crystal	Not Found	/HPF
.Cry-amount	-	
Bacteria	++	
Others	Mucus	

Lactate	22.0	mg/dL

ER course (01/25)

- 00:25
  - O2 mask 6~10L/min
  - On monitor
  - 改IV lock
  - Cataflam 1# po st
  - Arrange Heart ECHO
- 01:20
  - Lasix 2amp iv st
- 03:40
  - O2 NRM 15L/min
  - On Foley
  - ABG (G3)
  - Lasix 4amp iv st
  - Millisrol 6L/min

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PH=7.316
PCO2=33.9 mmHg
PO2=367 mmHg
BE=-9 mmol/L
HCO3=17.3 mmol/L
TCO2=18 mmol/L
SO2=100 %
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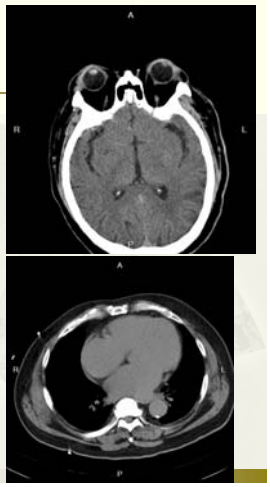
- 03:50
  - Brain CT without contrast
  - NaHCO3 3amp iv st
- 04:30
  - Reconsult Neurologist
  - Admission to NRICU
  - Clexane 60mg sc st
  - Tetraspan ½ btl st
  - On critical



ER course

- Neurologist Note(day 2 04:40)
  - E4VAM6
  - CN 7: R central palsy
  - CN 8-9: dysarthria(+)
  - Muscle power: 右: 4+; 左 5
  - Babinski sign: 右↑/ 左↓
  - NIHSS: 9分
- Impression: susp Left MCA infarction, stroke evolution
- Plan:
  - Tetra span 0.5 btle iv st
  - Clexane 60mg im st +q12h
  - 轉 NR02

NR course

- Note summary:
  - HTN, CHF病史
  - 因URI症狀來ER, 回家後下午2點多 acute onset right side limbs weakness, 於是被帶回急診。
  - EKG showed Af, Septic shock & progressive右肢體無力,4am多重做CT no ICH; 因左側MCA infarct, sepsis related住入NR

NR course

- Impression
  - Left MCA infract
  - Shock related
- Plan
  - Treat as septic shock
  - Septic workup
  - Antibiotics used
  - Arrange Heart and Abd ECHO
  - Supportive care

NR course

- Order(day2 05:24)
  - 輸液: N/S 40ml/hr; Tetra span 1btl iv qd
  - 抗生素: Curam 600mg iv q8h
  - Bokey 1# po qd +Clexane 60mg im q12h
  - Pantoloc 1amp q12h
  - Kerlone 0.5# po qd

WBC	10.4	x1000/ul
Differential count	**********	
Segmented Neutro.	46.0	%
Lymphocyte	6.0	%
Monocyte	6.5	%
Eosinophil	0.0	%
Basophil	0.0	%
Atypical lymphocyte	0.0	%
Band	30.0	%
Metamyelocyte	9.5	%
Myelocyte	2.0	%
Promyelocyte	0.0	%
Blast	0.0	%
Nucleated RBC	0.5	/100WBC
Platelet	48	x1000/ul
D-dimer(ELISA)	>5000	ng/mL
Lactate	118.8	mg/dL
GOT(AST)	1557	U/L
T-Bilirubin	1.9	mg/dL

HBeAg	330.100	COI
Anti-HBe	2.000	IU/L
Anti-HCV	0.04	S/CO

ESR	5	mm/hr

- Order(09:14)
  - 抗生素:改Fortum 2g iv q8h, Clincin 600mg q8h

NR course

- Heart ECHO(day 2)
  - EF: 41%
  - Rhythm : normal sinus rhythm
  - Cardiac chamber/aorta: normal wall thickness
  - Wall motion:global hypokinesis
  - Aortic valve: sclerosing change
  - Pericardial effusion: none
  - Thrumbus: none
  - Others: IVC 3.07cm

NR course

- Comment:
  - Poor LV contractility, global hypokinesis
  - RA and RV dilatation, normal wall thickness
  - Mitral valve vegetation over posterior leaflet with moderate MR
  - Moderate TR with TRPG 20mmHg
  - IVC 3.07cm estimater RA pressure >20mmHg: pulmonary hypertension

- Order(day 2 16:13)
  - 抗生素加上Penicillin G 3MU q4h(Fortum, clincin)

MICU course

- Order(程Dr. service)
  - 抗生素:
    - Aq PCN 3MU iv q6h
    - Meropenum 1g iv q12h
    - Teicoplanin 600mg iv q12h X3次 then qod
  - Other Mx
    - Dopamine run 32ml/hr
    - Dobutamin run 25ml/hr
    - Solu Tison (2amp in N/S 100ml run 5ml/hr)

MICU course

- Order(day 3)
  - 抗生素:
    - Aq PCN 4MU q8h
    - Clindamycin 900mg q8h iv
    - Teicoplanin 600mg iv qod iv
  - Others
    - Dobutamin (1mg/ml) run 25 ml/hr
    - Levophed(4amp in 250D5W) run 10ml/hr
    - Hydrocortisone (200mg in N/S 100ml) run 4ml/hr

MICU course

- OPH consultation:
  - Impression:
    - infective endocarditis with Roth spot(OD) and SCH(OU)
    - Cataract (OU)
    - Conjunctival chemosis(OU)
    - Hypertensive retinopathy Grade I (OU)
- Abd ECHO:
  - Fatty liver

Dav 4 blood culture

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PRELIMINARY BLOOD CULTURE REPORT:
Aerobic:          SALKXK7J          +
Anerobic:         SNLJ39GS          +
Two bottles of bottle set were positive cultured and final report
pending.
Microscopic finding:    Gram (+) coccus in chain
FINAL BLOOD CULTURE REPORT:
Organism:
1.Streptococcus dysgalactiae ssp equisimilis
/////
Antibiotic/Culture:ST14 Streptococcus dysgalactiae ssp equisimilis
  AM    CC    CMZ   CTX   CZ    E     FEP   LVX   P     VA
  S     R     S     S     S     R     S     S     S     S
AM:Am(Ampicillin ) CC:CC(Clindamycin) CMZ:CMZ(Cefmetazole )
CTX:CTX(Cefotaxime)  CZ:CZ(Cefazolin ) E:E(Erythromycin  )
FEP:FEP(Cefepime) LVX:LVX(Levofloxacin) P:P(Penicillin)
VA:VA(Vancomycin )
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PRELIMINARY BLOOD CULTURE REPORT:
Aerobic:          SALKK7CB          +
Anerobic:         SNLJ39D2          +
Two bottles of bottle set were positive cultured and final report
pending.
Microscopic finding:    Gram (+) coccus in chain
FINAL BLOOD CULTURE REPORT:
Organism:
1.Streptococcus dysgalactiae ssp equisimilis
/////
Antibiotic/Culture:ST14 Streptococcus dysgalactiae ssp equisimilis
  AM    CC    CMZ   CTX   CZ    E     FEP   LVX   P     VA
  S     R     S     S     S     R     S     S     S     S
AM:Am(Ampicillin ) CC:CC(Clindamycin) CMZ:CMZ(Cefmetazole )
CTX:CTX(Cefotaxime)  CZ:CZ(Cefazolin ) E:E(Erythromycin  )
FEP:FEP(Cefepime) LVX:LVX(Levofloxacin) P:P(Penicillin)
VA:VA(Vancomycin )
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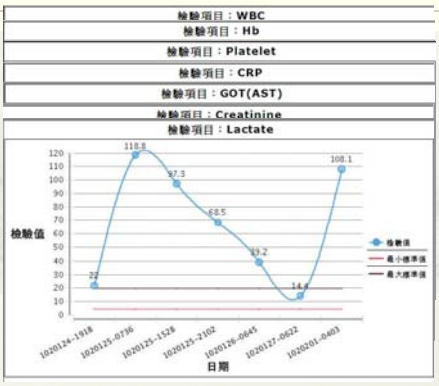
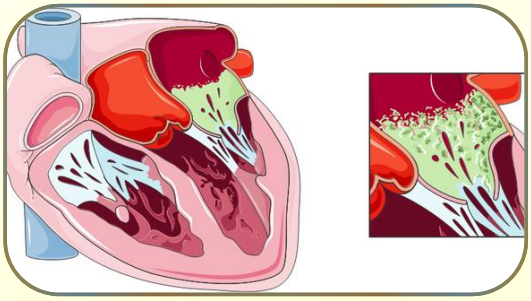
MICU course

- CVS consultation:
  - 開完刀可能organ failure更嚴重, 可能會出現ICH, chronic renal failure, 至少開刀前conscious要恢復, 不過開完刀conscious會變更差
- Nephrologist consultation:
  - Suggest H/D qd due to fluid overload



- Day 6
  - Try DC dormicum to monitor conscious
- Day 7
  - Acute cyanosis noted, ECG monitor showed Vf, s/p DC shock and CPCR 100min後 家屬放棄急救

Discussion



Infective Endocarditis

Streptococcus dysgalactiae

- Toxonomic statuts:
  - S. dysgalactiae subsp. equisimilis: all b-hemolytic large colony–forming groups C and L streptococci and **human group G streptococci**
  - 造成的疾病類似*S. pyogens*

Proteins with highly similar sequences	Genes or homologues described in: SDSE	SDSD	GAS	GBS
Fibronectin binding proteins	X	X	X	
Plasminogen) binding proteins	X	X	X	X
Glyceraldehyde-3-phosphate dehydrogenase	X	X	X	X
Streptococcal surface enolase	X		X	X
Protein S (vitronectin) binding protein	X	X	X	X
Laminin binding protein	X		X	X
Streptolysin O	X		X	
Streptolysin S	X		X	
Superantigens (SpeA, Spec, SpeG, SpeM, Ssa, and Smez)	X		X	
Dysgalactiicin	X			
M protein	X	(X)*	X	
Capsule	X	X	X	X
C5a peptidase	X		X	X
Protein G	X			
Streptokinase	X	X	X	

Human Infections Due to *Streptococcus dysgalactiae* Subspecies *equisimilis* , Clin Infect Dis. (2009) 49 (5):766-772.

Streptococcus dysgalactiae

- 目前penicillin或其他β-lactam agents幾乎都有效
- 因有部份susceptability下降，可考慮加上aminoglycoside
- Aggressive infection:
  - 加上clindamycin
- 對macrolide / quinolone類藥物抗藥性升高

Human Infections Due to *Streptococcus dysgalactiae* Subspecies *equisimilis* , Clin Infect Dis. (2009) 49 (5):766-772.

Infective endocarditis

Table 150-2 Clinical Features of Infective Endocarditis

Symptoms	%	Signs	%
Fever	80	Fever	90
Chills	40	Heart murmur	85
Weakness	40	New murmur	3–5
Dyspnea	40	Changing murmur	5–10
Anorexia	25	Skin manifestations	18–50
Cough	25	Osler nodes	10–23
Malaise	25	Splinter hemorrhages	15
Skin lesions	20	Petechiae	20–40
Nausea/vomiting	20	Janeway lesions	<10
Headache	20	Splenomegaly	20–57
Stroke	20	Embolic phenomena	>50
Chest pain	15	Septic complications	20
Abdominal pain	15	Mycotic aneurysm	20
Mental status change	10–15	Renal failure	10
Back pain	10	Retinal lesions	2–10

Table 150-1 Microbiology of Infective Endocarditis (IE)

	Native Valve IE (% cases)		Intracardiac Device IE (% cases)		
	Nonaddict	IV Drug Addict		Prosthetic Valve IE	Other Devices*
Staphylococcus aureus	28	68	S. aureus	23	35
Coagulase-negative Staphylococcus	9	3	Coagulase-negative Staphylococcus	17	26
Viridans group streptococci	21	10	Viridans group streptococci	12	8
Other streptococci	14	3	Streptococcus bovis	10	7
Enterococcus species	11	4	Enterococcus species	12	6
HACEK	2	0	HACEK	2	1
Fungus	1	1	Fungus	4	1
Polymicrobial	1	3	Polymicrobial	1	0
Others	4	5	Others	7	6
Culture negative	9	3	Culture negative	12	10

Abbreviation: HACEK = *Haemophilus, Actinobacillus, Cardiobacterium, Eikenella,* and *Kingella* group.

*Including pacemakers and implantable cardioverter defibrillators.

Clinical features from Harrison

Table 124–2 Clinical and Laboratory Features of Infective Endocarditis

Feature	Frequency, %
Fever	80–90
Chills and sweats	40–75
Anorexia, weight loss, malaise	25–50
Myalgias, arthralgias	15–30
Back pain	7–15
Heart murmur	80–85
New/worsened regurgitant murmur	20–50
Arterial emboli	20–50
Splenomegaly	15–50
Clubbing	10–20
Neurologic manifestations	20–40
Peripheral manifestations (Osler's nodes, subungual hemorrhages, Janeway lesions, Roth's spots)	2–15
Petechiae	10–40
Laboratory manifestations	
Anemia	70–90
Leukocytosis	20–30
Microscopic hematuria	30–50
Elevated erythrocyte sedimentation rate	60–90
Elevated C-reactive protein level	>90
Rheumatoid factor	50
Circulating immune complexes	65–100
Decreased serum complement	5–40

Table 150-3 Definitions of Major and Minor Criteria Used in the Duke Criteria*

Major criteria
Positive blood culture for IE
Typical microorganism consistent with IE from two separate blood cultures* as noted below:
Streptococcus bovis, *Viridans streptococci*, HACEK group
or
Community-acquired *Staphylococcus aureus* or enterococci in the absence of a primary focus
or
Microorganisms consistent with IE from persistently positive blood cultures defined as:
At least two positive cultures of blood samples drawn >12 h apart
or
All of three or a majority of four or more separate blood cultures (with first and last sample drawn at least 1 h apart)
Single positive blood culture for *Coxiella burnetii* or antiphase I immunoglobulin G antibody titer of >1:800
Evidence of echocardiographic involvement
Positive ECG for IE defined as:
Oscillating intracardiac mass on valve or supporting structures, in the path of regurgitant jets, or on implanted material in the absence of an alternative anatomic explanation
or
Abscess
or
New partial dehiscence of prosthetic valve
New valvular regurgitation (worsening or changing of preexisting murmur not sufficient)
Minor criteria
Predisposition: predisposing heart condition or injection drug use
Fever: temperature >38°C (100.4°F)
Vascular phenomena: major arterial emboli, septic pulmonary infarcts, conjunctival hemorrhages, and Janeway lesions
Immunologic phenomena: glomerulonephritis, Osler nodes, Roth spots, and rheumatoid fever
Microbiologic evidence: positive blood culture but does not meet a major criterion as noted in Table 150-4* or serologic evidence of active infection with organism consistent with IE
Echocardiographic minor findings were eliminated in the Modified Duke Criteria

Streptococci		
Penicillin-susceptible streptococci, *S. gallolyticus*	• Penicillin G (2–3 mU IV q4h for 4 weeks) • Ceftriaxone (2 g/d IV as a single dose for 4 weeks) • Vancomycin[c] (15 mg/kg IV q12h for 4 weeks) • Penicillin G (2–3 mU IV q4h) or ceftriaxone (2 g IV qd) for 2 weeks *plus* Gentamicin[d] (3 mg/kg qd IV or IM, as a single dose[e] or divided into equal doses q8h for 2 weeks)	— Can use ceftriaxone in patients with nonimmediate penicillin allergy Use vancomycin in patients with severe or immediate β-lactam allergy Avoid 2-week regimen when risk of aminoglycoside toxicity is increased and in prosthetic valv complicated endocarditis
Relatively penicillin-resistant[f] streptococci	• Penicillin G (4 mU IV q4h) or ceftriaxone (2 g IV qd) for 4 weeks *plus* Gentamicin[d] (3 mg/kg qd IV or IM, as a single dose[e] or divided into equal doses q8h for 2 weeks) • Vancomycin[c] as noted above for 4 weeks	Penicillin alone at this dose for 6 weeks or with gentamicin during initial 2 weeks preferred for prosthetic valve endocarditis caused by streptococci with penicillin MICs of ≤0.1 μg/mL —
Moderately penicillin-resistant[g] streptococci, nutritionally variant organisms, or *Gemella morbillorum*	• Penicillin G (4–5 mU IV q4h) or ceftriaxone (2 g IV qd) for 6 weeks *plus* Gentamicin[d] (3 mg/kg qd IV or IM as a single dose[e] or divided into equal doses q8h for 6 weeks) • Vancomycin[c] as noted above for 4 weeks	Preferred for prosthetic valve endocarditis caused by streptococci with penicillin MICs of >0.1 —

Surgical indications

- Absolute indication
  - 因valve dysfunction 引起之CHF
  - AR/MR加上LV/LA 壓力上升造成血行動力改變
  - Fungus或抗藥菌株感染
  - 出現心臟組織感染擴散的併發症

ACC/AHA Guideline Summary: Surgery for native valve endocarditis (NVE)

Class I - There is evidence and/or general agreement that surgery is indicated in patients with NVE with one of the following:

- Valve stenosis or regurgitation leading to heart failure.
- Aortic or mitral regurgitation with hemodynamic evidence of elevated left ventricular end-diastolic or atrial pressures such as premature closure of the mitral valve with aortic regurgitation, rapid decelerating mitral regurgitation signal by continuous wave Doppler (v-wave cutoff sign), or moderate to severe pulmonary hypertension.
- IE due to fungal or other highly resistant organisms.
- Complications such as heart block, annular or aortic abscess, or destructive penetrating lesions such as fistula from the sinus of Valsalva to the right or left atrium or right ventricle, mitral leaflet perforation with IE of the aortic valve, or infection in annulus fibrosis.

Class IIa - The weight of evidence or opinion is in favor of the usefulness of surgery in patients with NVE who develop the following:

- Recurrent emboli and persistent vegetations despite appropriate antibiotic therapy.

Class IIb - The weight of evidence or opinion is less well established for the usefulness of surgery in patients with NVE who develop the following:

- Mobile vegetations larger than 10 mm with or without emboli.

Data from: Bonow RO, Carabello BA, Chatterjee K, et al. ACC/AHA 2006 guidelines for the management of patients withvalvular heart disease. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines(Writing committee to revise the 1998 guidelines for the management ofpatients with valvular heart disease). J Am Coll Cardiol 2006; 48:e1.

Referrence: Surgery of native valve endocarditis, UpToDate
https://sslvpn.ntu.edu.tw/contents/.DanaInfo=www.uptodate.com+surgery-for-native-valve-endocarditis?source=search_result&search=surgery+endocarditis&selectedTitle=1~150

Surgery indications/timing

from Harrison

Tables 124–5 Indications for Cardiac Surgical Intervention in Patients with Endocarditis

Surgery required for optimal outcome
Moderate to severe congestive heart failure due to valve dysfunction
Partially dehisced unstable prosthetic valve
Persistent bacteremia despite optimal antimicrobial therapy
Lack of effective microbicidal therapy (e.g., fungal or *Brucella* endocarditis)
S. aureus prosthetic valve endocarditis with an intracardiac complication
Relapse of prosthetic valve endocarditis after optimal antimicrobial therapy
Surgery to be strongly considered for improved outcome*
Perivalvular extension of infection
Poorly responsive *S. aureus* endocarditis involving the aortic or mitral valve
Large (>10-mm diameter) hypermobile vegetations with increased risk of embolism
Persistent unexplained fever (≥10 days) in culture-negative native valve endocarditis
Poorly responsive or relapsed endocarditis due to highly antibiotic-resistant enterococci or gram-negative bacilli

Tables 124–6 Timing of Cardiac Surgical Intervention in Patients with Endocarditis

	Indication for Surgical Intervention	
Timing	**Strong Supporting Evidence**	**Conflicting Evidence, but Majority of Opinions Favor Surgery**
Emergent (same day)	Acute aortic regurgitation plus preclosure of mitral valve Sinus of Valsalva abscess ruptured into right heart Rupture into pericardial sac	
Urgent (within 1–2 days)	Valve obstruction by vegetation Unstable (dehisced) prosthesis Acute aortic or mitral regurgitation with heart failure (New York Heart Association class III or IV) Septal perforation Perivalvular extension of infection with/without new electrocardiographic conduction system changes Lack of effective antibiotic therapy	Major embolus plus persisting large vegetation (>10 mm in diameter)
Elective (earlier usually preferred)	Progressive paravalvular prosthetic regurgitation Valve dysfunction plus persisting infection after ≥7–10 days of antimicrobial therapy Fungal (mold) endocarditis	Staphylococcal PVE Early PVE (≤2 months after valve surgery) Fungal endocarditis (Candida spp.) Antibiotic-resistant organisms

Surgical risk in this patient

- Population: IE + cerebral infarction
- 目前是否需要開刀仍有爭議, 因為
  - cardiopulmonary bypass & anticoagulants
  - → 可能反而引發出血或讓腦部缺血更嚴重
- 開刀時機:
  - Infarction: >2 wk
  - Hemorrhage: >4wk
  - 因嚴重HF換valve: 考慮兩週內實行
- 其他考量:
  - 大vegetation(>2cm)且stroke範圍小(<2cm)要趕快開
  - →這些pt bypass 風險較小, 拖久會增加recurrent emboli危險,

Referrence: Surgery of native valve endocarditis, UpToDate
https://sslvpn.ntu.edu.tw/contents/.DanaInfo=www.uptodate.com+surgery-for-native-valve-endocarditis?source=search_result&search=surgery+endocarditis&selectedTitle=1~150

AHA guideline:

Prevention of infective endocarditis 2007

- 只建議在以下患者

Table 2. Primary Reasons for Revision of the IE Prophylaxis Guidelines

IE is much more likely to result from frequent exposure to random bacteremias associated with daily activities than from bacteremia caused by a dental, GI tract, or GU tract procedure.

Prophylaxis may prevent an exceedingly small number of cases of IE, if any, in individuals who undergo a dental, GI tract, or GU tract procedure.

The risk of antibiotic-associated adverse events exceeds the benefit, if any, from prophylactic antibiotic therapy.

Maintenance of optimal oral health and hygiene may reduce the incidence of bacteremia from daily activities and is more important than prophylactic antibiotics for a dental procedure to reduce the risk of IE.

Table 3. Cardiac Conditions Associated With the Highest Risk of Adverse Outcome From Endocarditis for Which Prophylaxis With Dental Procedures Is Reasonable

Prosthetic cardiac valve or prosthetic material used for cardiac valve repair

Previous IE

Congenital heart disease (CHD)*

- Unrepaired cyanotic CHD, including palliative shunts and conduits
- Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first 6 months after the procedure†
- Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialization)

Cardiac transplantation recipients who develop cardiac valvulopathy

*Except for the conditions listed above, antibiotic prophylaxis is no longer recommended for any other form of CHD.

†Prophylaxis is reasonable because endothelialization of prosthetic material occurs within 6 months after the procedure.

Reference: Prevention of Infective Endocarditis : Guidelines From the American Heart Association, *Circulation. 2007;116:1736-1754*

Dental procedure Prophylaxis

Table 5. Regimens for a Dental Procedure

Situation	Agent	Regimen: Single Dose 30 to 60 min Before Procedure	
		Adults	Children
Oral	Amoxicillin	2 g	50 mg/kg
Unable to take oral medication	Ampicillin	2 g IM or IV	50 mg/kg IM or IV
	OR		
	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
Allergic to penicillins or ampicillin—oral	Cephalexin*†	2 g	50 mg/kg
	OR		
	Clindamycin	600 mg	20 mg/kg
	OR		
	Azithromycin or clarithromycin	500 mg	15 mg/kg
Allergic to penicillins or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone†	1 g IM or IV	50 mg/kg IM or IV
	OR		
	Clindamycin	600 mg IM or IV	20 mg/kg IM or IV

IM indicates intramuscular; IV, intravenous.
*Or other first- or second-generation oral cephalosporin in equivalent adult or pediatric dosage.
†Cephalosporins should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillins or ampicillin.

Reference: Prevention of Infective Endocarditis : Guidelines From the American Heart Association, *Circulation. 2007;116:1736-1754*

Thanks for your attention!