

# 北區重症討論會

林口長庚 兒童醫學中心  
兒童急診加護科  
研究醫師：王昱  
夏紹軒主任/林建志醫師  
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## General data

- A 9-year-10-month-old boy.
- Growth:
- BW: 25kg(3rd-10th percentile)
- BH: 115cm(<3rd percentile)
- 旅遊史:no travel history
- 職業病史:none
- 資料來源:mother

## Chief Complaint

- Fever, urine retention and general edema for one day

## Present illness

- This 9-year-10-month-old boy is a case of
  - (1) Traumatic intracranial hemorrhage & subdural effusion post V-P shunt
  - (2) Hypoxic ischemic encephalopathy
  - (3) Cerebral palsy with ventilator dependent
  - (4) Epilepsy

## Present illness

- He was long term care at XX hospital for 5-6 years.
- This time, he suffered from decreasing urine output 3 days before admission.
- ICP was done for once and residual urine volume was about 120ml.
- General swelling was also observed.
- Under the impression of urinary tract infection, antibiotics with oral ciprofloxacin was given.

## Present illness

- Fever was observed 1 day before admission and urine analysis revealed pyuria.
- Besides, tachycardia and tachypnea were also observed.
- Under the impression of urosepsis, he was transferred to our PICU.

## Past History

- Epilepsy history with medication control
- 90/03-90/08 Traumatic intracranial hemorrhage post V-P shunt and remove of hematoma in 中山 Hospital and 北榮 Hospital
- 90/09/11-90/09/18 pneumonia.UGI bleeding, tracheostomy at CGMH
- 91/04/18-91/04/29 Acineto.baumannii pneumonia with respiratory distress
- 91/06/07-91/06/17 Pneumonia
- 91/07/01~91/07/02 admitted for neurologic survey
- 91/11/09~91/11/25 admitted for neurologic survey

## Personal history

- Birth Hx: G2P2A0, NSD, GA: 38 weeks, BBW: 3300 gm
- NB screen: normal
- Allergy: NKA

## Family history

- No hereditary disease or similar disease among household family members

T:35.3°C P:90/min R:20/min BP:104/34/mmHg

General Appearance: cerebral palsy

Appetite: fair; Activity: decrease

Consciousness: clear, E2 Vt M2

HEENT:

Sclerae: anicterus

Conjunctivae: not injected

Eardrum: intact and not injected,

Nose: no nasal flaring, not boggy nasal turbinates

Throat: not injected; no post-nasal dripping

Tonsil: not injected, no enlargement, no exudate

Oral cavity: no ulcer, no vesicle, Lips: no cyanosis

Scalp swelling

NECK:

supple, no lymphadenopathy

## CHEST:

Breath pattern: on ventilator support

No use of accessory muscle, no contraction of sternocleidomastoid muscle

No suprasternal retraction, no subcostal retraction

Breathing sound: bilateral clear and symmetric breathing sound, no crackle, no wheezing, no stridor, no rhonchi, no bronchial sound

## HEART:

Heart sound: regular heart beat, no murmur, No audible S3; No audible S

## ABDOMEN:

Tactile: soft and flat; no tenderness; no rebounding pain; no muscle guarding

Percussion: dullness

Bowel sound: normoactive

No palpable mass

Hepatosplenomegaly: no

BACK: No knocking pain over flank area

## EXTREMITIES:

Freely movable, Mild pitting edema

Peripheral pulse: symmetric

## SKIN:

No rash; no petechiae or ecchymosis; no vesicle; no desquamation

Intact without wound

## DEHYDRATION SIGN:

Skin turgor: normal; Skin touch: normal; Buccal mucosa/lips: moist;

Eyes: normal; Tears: present; Fontanelle: closed; CNS: consolable; Pulse rate: normal; Pulse quality: normal; Capillary refill: normal; Urine output: decreased

| 血液             |            | 2010/10/18 |
|----------------|------------|------------|
| WBC            | 1000/uL    | 19.4       |
| RBC            | million/uL | 3.01       |
| Hemoglobin     | g/dL       | 8.8        |
| Hematocrit     | %          | 24.8       |
| MCV            | fL         | 82.4       |
| MCH            | pg/Cell    | 29.2       |
| MCHC           | g/dL       | 35.5       |
| RDW            | %          | 14.1       |
| Platelets      | 1000/uL    | 22         |
| Meta-Myelocyte | %          | 2          |
| Segment        | %          | 39         |
| Band           | %          | 41         |
| Lymphocyte     | %          | 12         |
| Monocyte       | %          | 6          |

| 血液           |           | 2010/10/18 |
|--------------|-----------|------------|
| P.T          | sec       | 13         |
| Control P.T  | sec       | 10.7       |
| INR          |           | 1.2        |
| APTT         | sec       | 29.9       |
| Control aPTT | sec       | 26         |
| Fibrinogen   | mg/dL     | 718        |
| D-dimer      | FEU ng/mL | 4768       |
| FDP          | ug/mL     | 10-40      |

| 血液            |       | 2010/10/18 |
|---------------|-------|------------|
| Sugar         | mg/dL | 131        |
| BUN (B)       | mg/dL | 34.8       |
| Creatinine(B) | mg/dL | 0.54       |
| AST/GOT       | U/L   | 22         |
| ALT/GPT       | U/L   | 13         |
| Na(Sodium)    | mEq/L | 124        |
| K(Potassium)  | mEq/L | 2.6        |
| Ca(Calcium)   | mg/dL | 7.3        |
| Cl(Chloride)  | mEq/L | 86         |
| Inorganic P   | mg/dL | 2.4        |
| Mg(Magnesium) | mEq/L | 1.7        |
| CK            | U/L   | 16         |
| Albumin       | g/dL  | 2.11       |
| CRP           | mg/L  | 164.84     |
| Procalcitonin | ng/mL | 92.82      |

| 尿液           |       | 2010/10/18 |
|--------------|-------|------------|
| Color        |       | YELLOW     |
| Turbidity    |       | TURBID     |
| SP.Gravity   |       | 1.015      |
| pH           |       | 6          |
| Leukocyte    |       | 3+         |
| Nitrite      | mg/dL | Negative   |
| Protein      | mg/dL | 2+ (100)   |
| Glucose      | mg/dL | Negative   |
| Ketone       | mg/dL | Negative   |
| Urobilinogen | EU/dL | 0.1        |
| Bilirubin    | mg/dL | Negative   |
| Blood        |       | 3+         |
| Bacteria     |       | Positive   |
| RBC          | /uL   | 23         |
| WBC          | /uL   | > 500      |
| Epith-Cell   | /uL   | 2          |

## Impression

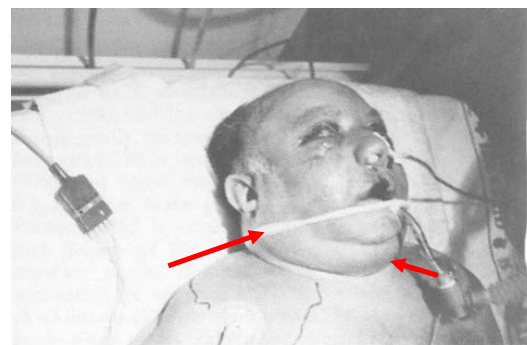
1. Urinary tract infection with urosepsis
2. Hypoalbuminemia
3. General edema, cause?  
R/O related to 2
4. Traumatic intracranial hemorrhage & subdural effusion post V-P shunt with long term ventilator support

## Initial Management

- Empirical antibiotics with Vancomycin and fortum
- Tracing urine culture, sputum culture and blood culture  
→ Urine culture showed E.coli ESBL strain  
Sputum culture: Kleb. Pneumoniae ESBL  
Blood culture: negative
- Change antibiotics to vancomycin + Tienem according to culture sensitivity

## Clinical course

- After antibiotics treatment, fever improved gradually.
- However, the generally edema was persisted.
- Hypoalbuminemia was corrected.  
10/18 2.11 → 10/22 2.41 → 10/26 3.06
- The generally edematous change was improved, however the upper chest wall and scalp swelling were still progressing.



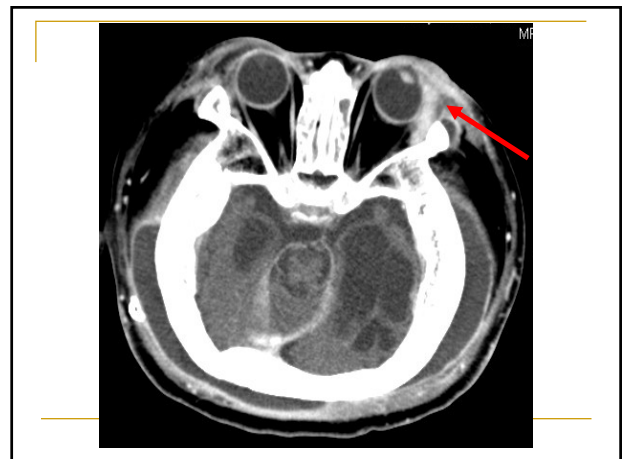
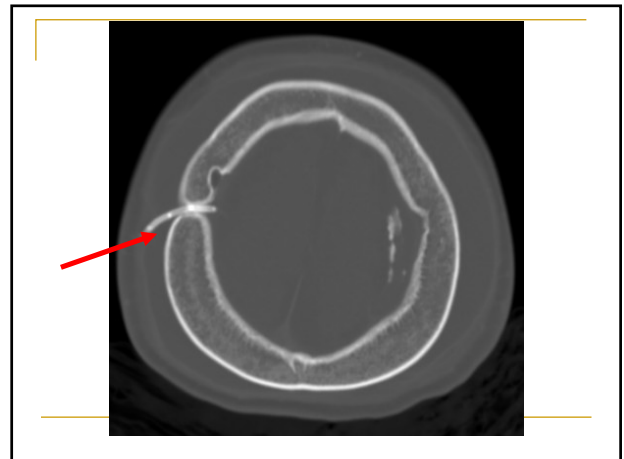
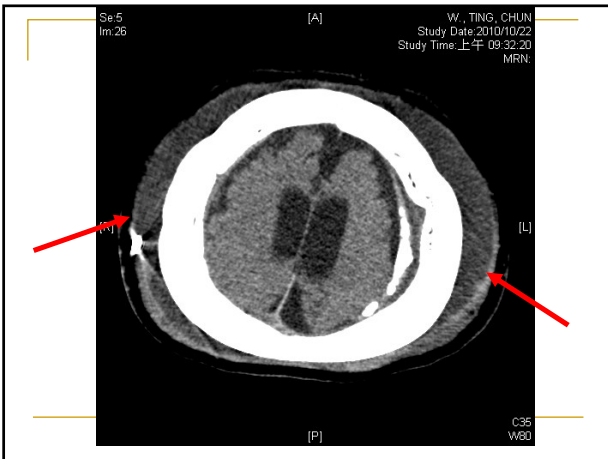
## Scalp swelling, cause?

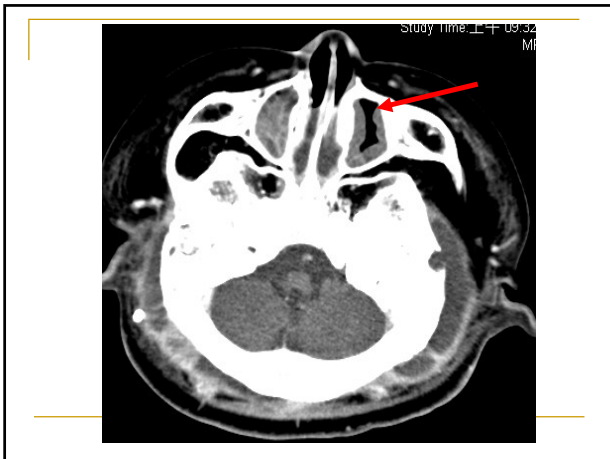
What do you think the possible diagnosis ?  
What will you do next?

## Differential diagnosis ?

- r/o VP shunt dysfunction (CSF leakage?)
- r/o SVC syndrome

→ Arrange CT including brain, neck and upper chest





## Brain and chest CT report

### Brain:

Diffused thickening layer of fluid collection about 13 mm in thickness under the scalp:

→ **subgaleal hematoma or fluid collection, CSF-leakage is also considered.**

### Chest:

Diffused ground-glass appearance of both lung fields, suggesting inflammatory process.

- Consult ophthalmologist
- Yellowish discharge was noted from bilateral eyes  
→ **preseptal cellulitis** was favored  
→ **corneal yellowish discharge culture:**

Coag(-) staphylococcus      Rare

|                              |   |
|------------------------------|---|
| Clindamycin                  | R |
| Erythromycin                 | R |
| Oxacillin                    | R |
| Penicillin                   | R |
| Sufamethoxazole-Trimethoprim | S |
| Teicoplanin                  | S |
| Vancomycin                   | S |

Suggestion: Antibiotics treatment

- Plasty doctor was consulted, and **scalp tapping was done**
- **pus-like fluid** was noted, and operation is suggested.

Pus culture:

■ Prevotella sp      Rare      -

|                        |     |
|------------------------|-----|
| ■ Clindamycin          | . S |
| ■ Metronidazole        | . S |
| ■ Penicillin           | . S |
| ■ Piperacillin         | . S |
| ■ Ampicillin-sulbactam | . S |

## Plasty operation

- Operation was arranged on 10/22
- OP Finding:  
Very enlarged edematous scalp and face fluctuation(+)  
Much **chocolate like abscess** drain out the temporal fascia  
NG sump drain tube was inset

**Craniofacial necrotizing fasciitis was impressed.**

**Abscess culture: Prevotella**

## Hospital course

- After debridement, we kept normal saline irrigation.
- Neurosurgeon was consulted for VP shunt location.  
→ operation is suggested  
→ the ventricular tip is adhesion within brain  
→ partially remove the catheter

- Due to less pus drained from the drainage tube, it was extracted and removed after antibiotics treatment about 2 weeks.
- Because of the condition is stable, he was discharged.

## Final diagnosis

1. Craniofacial necrotizing fasciitis, suspected due to preseptal cellulitis with sinusitis
2. Urinary tract infection with urosepsis
3. Traumatic intracranial hemorrhage & subdural effusion post V-P shunt with long term ventilator support

- Discussion

Necrotizing fasciitis-overview  
Craniofacial necrotizing fasciitis

## Necrotizing fasciitis

- Necrotizing fasciitis is a deep seated infection of the subcutaneous tissue that results in progressive destruction of fascia and fat.
- There are two clinical types.

- Type I necrotizing fasciitis (immunocompromised)
  1. mixed infection caused by aerobic and anaerobic bacteria
  2. after surgical procedures and in patients with diabetes and peripheral vascular disease

- Type II necrotizing fasciitis monomicrobial infection by GAS/MRSA

## Clinical manifestation

- Type I:
  - Feet (in diabetics), head and neck, and perineum
  - Surgical or wound location
- Type II
  - Blunt trauma, varicella (chickenpox), injection drug use, a penetrating injury such as laceration, surgical procedures, childbirth, burns.

## Pathogens

- Type I  
Staphylococcus aureus, Streptococci, enterococci, E. Coli, Prevotella and Porphyomonas species, Bacteroides fragilis group, Clostridium species
- Type II  
Group A streptococcus  
MRSA

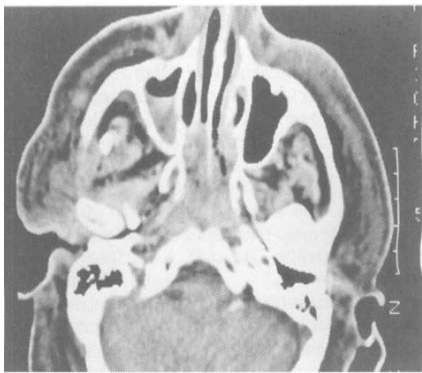
## Craniofacial necrotizing fasciitis

- Craniofacial necrotizing fasciitis is a rare entity which has been related mainly to
  1. Dental infection
  2. Orbital disease
  3. Trauma
  4. peritonsillar abscess

- The diagnosis of CNF is clinical.
- It's frequently mistaken for facial cellulitis or oedema.
- As the disease progresses, the skin may show **bluish patches and blisters** due to the thrombosis of its vessels leading to skin necrosis.
- Crepitance is also common.
- Other features: Lethargy, hyperpyrexia, tachypnea, tachycardia, septic shock.

## Examination

- If the diagnosis is not clear or if some assessment is needed for the surgical debridement a **CT scan** is the imaging modality of choice.



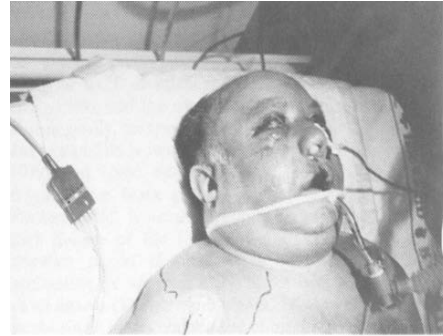
## Pathogens

- CNF are usually polymicrobial infections.
- The most common pathogens:  
*Streptococcus spp.*, *Staphylococcus aureus* and anaerobes
- *Bacteroides melaninogenicus* seems to be the most frequent anaerobe in CNF.

## Management

- Early diagnosis
- Immediate intravenous therapy with broad-spectrum antibiotics
- Aggressive surgical debridement with extensive excision of the necrotic tissues

*The Journal of Laryngology and Otology*  
April 1998, Vol. 112, pp. 371-372



## Take home message

- Necrotizing fasciitis is a rare condition which usually affects the **trunk, perineum and limbs**.
- **Head and neck involvement** is **very uncommon** and in most cases it is secondary to **orbital or dental infection**.
- **Early diagnosis and aggressive management** with antibiotics, surgical procedures and life-support measures was decisive factors for the improved outcome of the patient.

## The end

Thank you for your attention!