SURVIVOR OF SCRUB TYPHUS INFECTION

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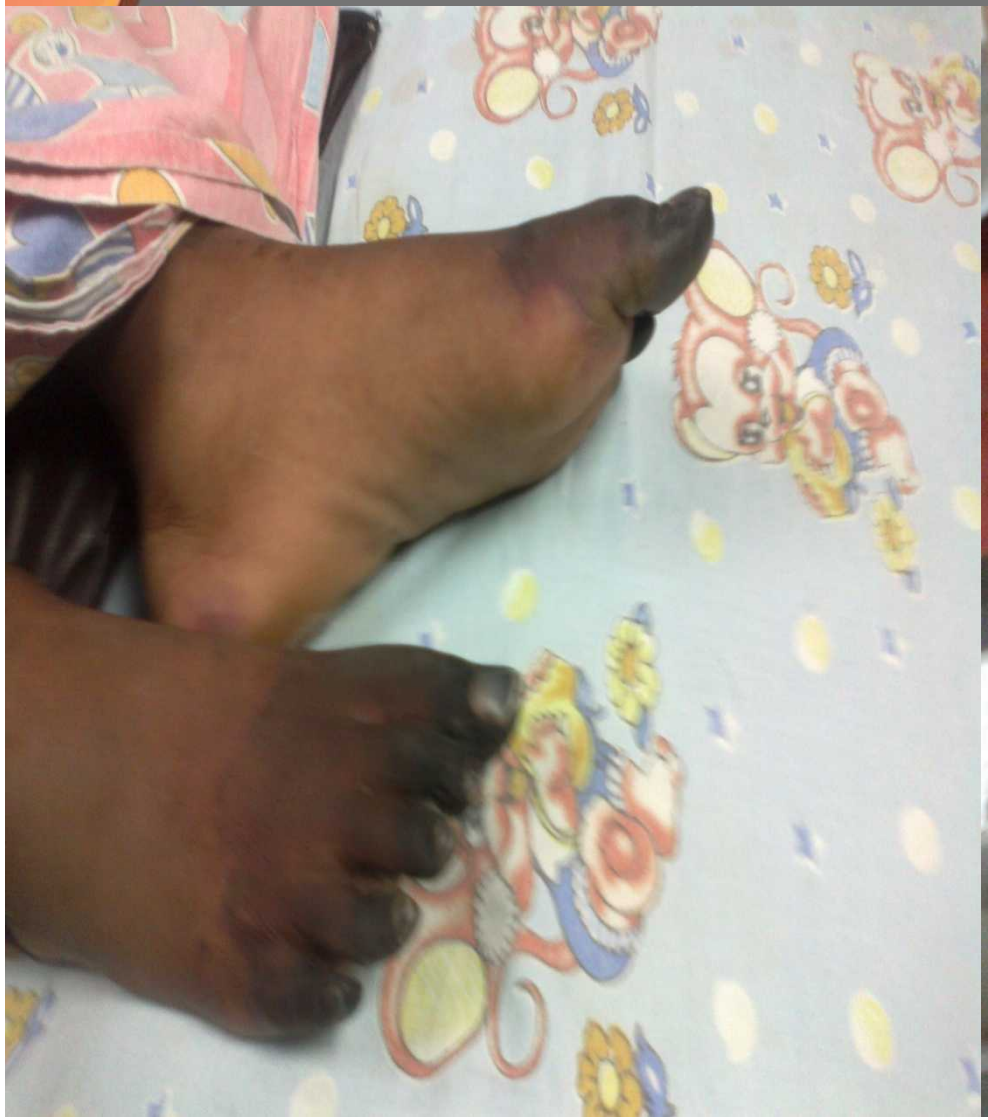
BRIEF HISTORY:

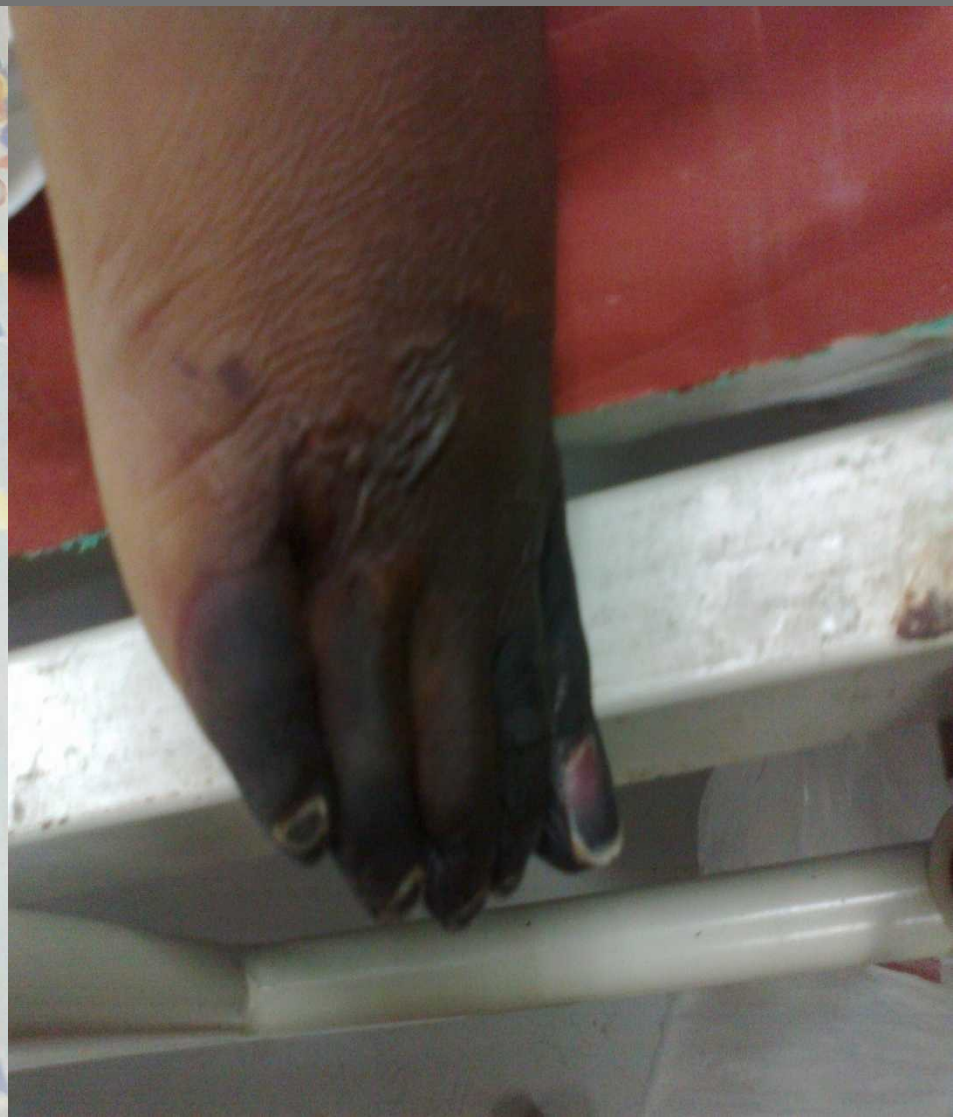
- 9Y/M, developmentally normal
- Fever x 1 week
- Facial puffiness
- 1 episode of GTCS followed by altered sensorium
- Shifted to ICU

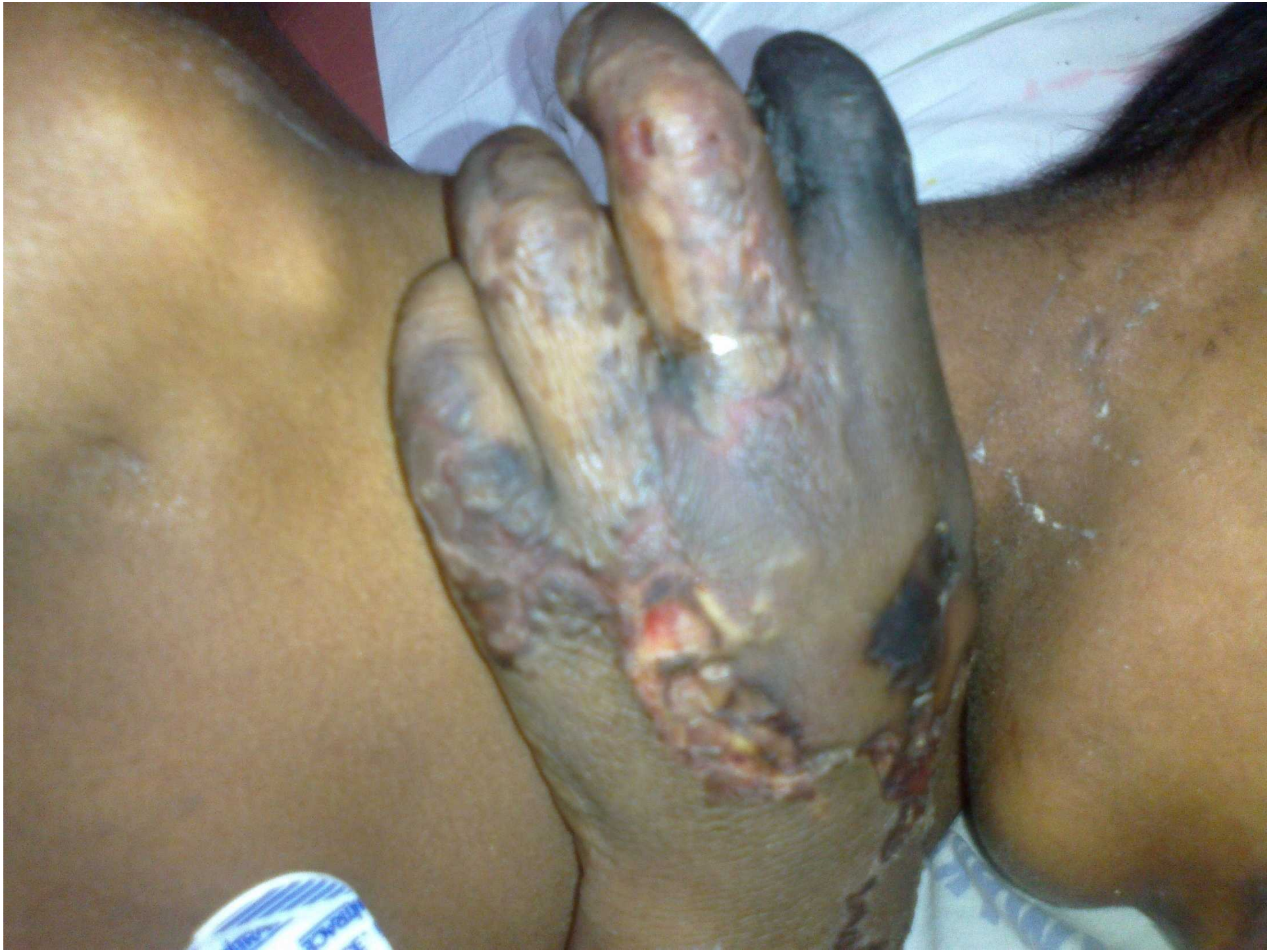
STORMY HOSPITAL COURSE

- 2 episodes of cardiac arrest – CPR
- Septic Shock- requiring high dose inotropes
- Sepsis
- Pulmonary Hemorrhage and ARDS
- Coagulopathy
- Acute Kidney Injury- PD
- Seizures, Dyselectrolytemia
- Bed sores

ACRAL GANGRENE







CAUSE

- Positive scrub typhus IgM - Vasculitis
- Vascular steal phenomenon

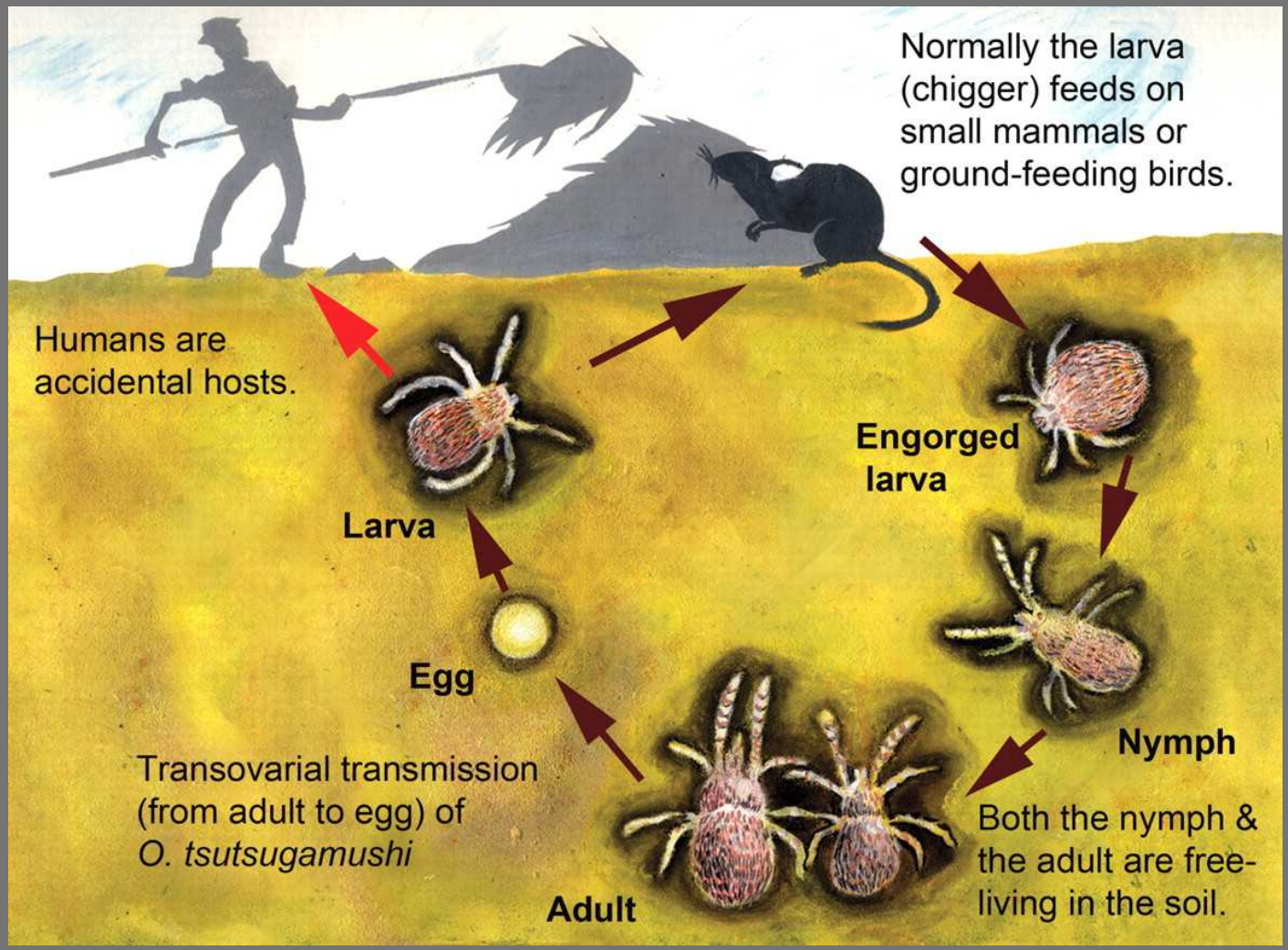
CONTD…

- Treated with aspirin and low molecular heparin
- Shifted to Stanley Medical College for amputation and further rehabilitation

GENUS

- Rickettsia rickettsii(Rocky Mountain spotted fever), R. conorii (Mediterranean spotted fever),
- R. africae(African tick bite fever), R. akari (rickettsialpox), R. sibirica (North Asian tick typhus and lymphangitis-associated rickettsiosis),
- R. australis (Queensland tick typhus)
- R. japonica (Japanese spotted fever)
- R. honei (Flinders Island spotted fever)
- R. prowazekii (epidemic typhus), R. typhi (murine typhus)
- Several emerging unnamed diseases (R. massiliae, R. aeschlimannii, R. monacensis, R. helvetica, and R. amblyommii).

LIFE CYCLE OF A LEPTOTROMBIDIUM MITE.



PATHOLOGY

- Rickettsiae - saliva of infected ticks and mites or feces of infected fleas and lice
- Spread via lymphatic vessels to the regional lymph nodes & hematogenously to endothelium throughout the body

PATHOPHYSIOLOGY

- Increased microvascular permeability resulting from discontinuities in interendothelial adherens junctions, the effects of TNFa, IFN , IL-1ß, and VEGF, and COX-2 dependent production of PGE2 and PGI2.
- Endothelial injury-

1. Toxic reactive oxygen species
2. Damage to the cell membrane upon rickettsial exit
3. Cytotoxic T lymphocyte-induced apoptosis of infected endothelial cells

PATHOLOGY

- Focal or disseminated vasculitis similar to PAN
- Perivascular infiltration of leukocytes.

INVESTIGATIONS

- Weil felix test- screening test.
- Confirmatory- indirect immunoperoxidase test and immunofluorescent assay.
- 4-fold increase in antibody titers between acute and convalescent serum specimens
- Probable case- single high titer with classic clinical features.
- *IFA:*gold standard. It is not available in India.

INFORMATION

- Weil Felix Test – King's institute, Chennai
- Scub typhus serology at KKCTH, Apollo Hospital, Chennai and CMC Vellore

FUTURE ADVANCES

- Blocking the pathogenic mechanisms

1. Rickettsia-induced oxidative stress
2. Modulation of the pathologic effects of the immune response such as T regulatory cell mediated immunosuppression.

PREDICTORS OF POOR PROGNOSIS

- Age = 60 years
- Absence of eschar
- WBC counts > 10, 000/mm^3
- Hemoglobin = 10 g/dL
- Albumin = 3.0 g/dL
- Serum creatinine > 1.4 mg/dL
- CRP > 10 mg/dL

Clinical and laboratory findings associated with severe scrub typhus
Dong-Min Kim et al. *BMC Infect Dis.* 2010; 10: **108**

PREDICTORS OF MORTALITY

- Metabolic Acidosis
- ARDS
- Altered sensorium ± Shock

Scrub typhus- an unrecognised threat in South India- clinical profile & predictors of mortality: Chrispal et al .Tropical Doctor 2010 ;40:129-33

EMPIRICAL TREATMENT

- "Greater use of Doxycycline appears justified for patients with undiagnosed fever in settings where rickettsial diseases are endemic"

Contribution of rickettsiosis in Srilankan patients with fever who responded to empirical doxycycline treatment, Premaratna et al. Trans Royal Soc of Tropical medicine and hygiene; 2010 ;104 (5): 368-70 .

TAKE HOME MESSAGE

- Scrub typhus can involve any system
- Absence of ESCHAR does not rule out infection
- Clinical suspicion – start treatment

B.Z. Toons

by Brian Zalkowski

Well, good night, sleep tight, and don't let the bed bugs bite.