RICKETTSIAL INFECTION IN A CHILD

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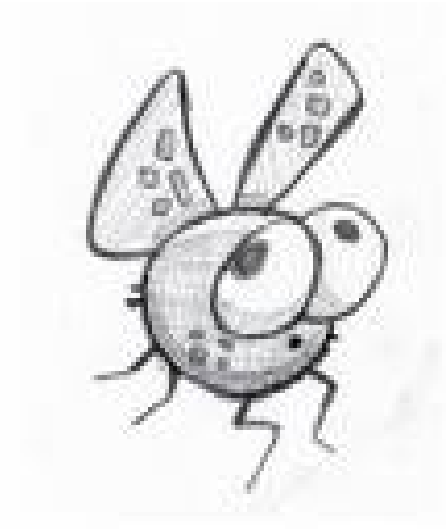


DEPT. OF PEDIATRIC INTENSIVE CARE

KANCHI KAMAKOTI CHILDS TRUST HOSPITAL

HISTORY:

6 yrs old male admitted with:

- Fever – 1 week
- Abdominal distension and periorbital edema – 2 days

In the ER:

- Alert, GCS- 15/15
- Hemodynamically stable
- Good perfusion
- No bleeds
- Inguinal lymphadenopathy
- Ascites, hepatomegaly
- Rest of systems: within normal limits

INITIAL INVESTIGATIONS:

- Thrombocytopenia
- Normal hematocrit
- Raised liver enzymes(SGOT/SGPT-271/208)
- Normal Coagulation(PT-14/14,PTT-34/30)
- Normal renal parameters
- CXR- B/L pleural effusion

INITIALLY TREATED WITH:

- Maintenance IV fluids
- IV antibiotics

Shifted to ICU

- In view suboptimal pulses (requiring fluid boluses) and worsening respiratory distress

DIAGNOSTIC DILEMMA:

Unusual features:

- Persisting high grade fever spikes
- Warm peripheries with good perfusion
- Normal hematocrit
- Normal coagulation profile
- No edema, absence of capillary leak
- Lymphadenopathy +

???????? DENGUE

Contd….

Other causes of fever considered:

- Started antimalarials
- EBV serology investigated
- Rickettsial infection considered- but no h/o travel to forest area.

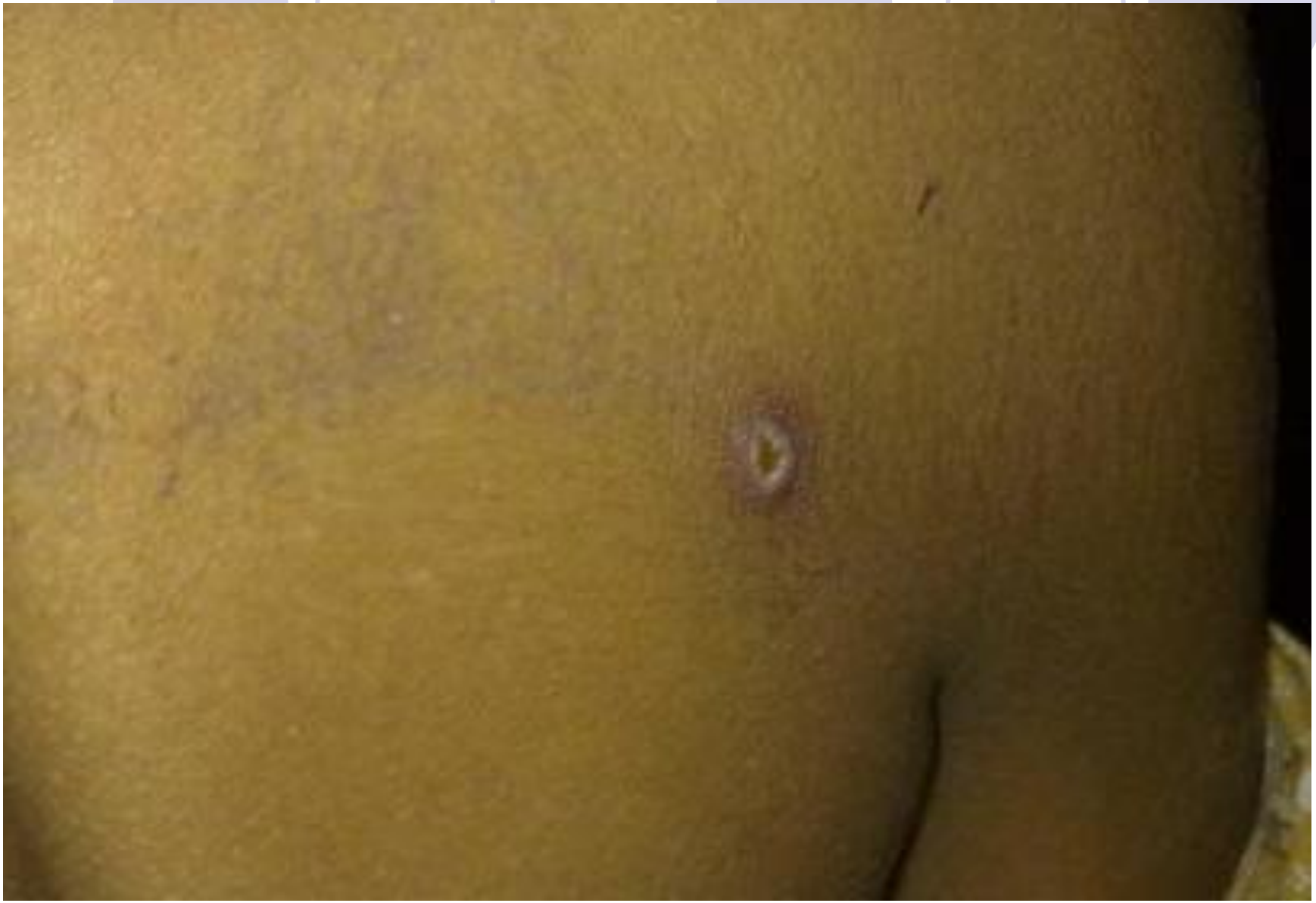
IN THE ICU:

- Mechanically ventilated
- Inotropic support
- IV antibiotics, antimalarials
- Received blood products

ON RE-EXAMINATION:

- Eschar on right scapular region

- Hence started on Doxycycline
- Scrub Typhus serology(ELISA)



ADDITIONAL INVESTIGATIONS:

- EBV VCA serology- negative
- SCRUB TYPHUS IgM- POSITIVE

Further course:

- Gradually weaned off ventilator & inotropic support
- Completed antibiotic course and 7 days doxycycline
- Fever settled
- Discharged home.

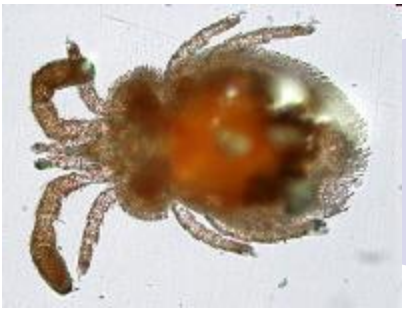
RICKETTSIAL INFECTION:

- Genus *Rickettsia*, family Rickettsiaceae, and order Rickettsiales.
- Obligate intracellular gram-negative coccobacilli that multiply within eukaryotic cells.

HISTORY:

- Scrub typhus was first described in China in 313 AD.
- During World War II, 18,000 cases in Allied troops. It was the second most common infection reported in US troops in Vietnam.
- Napoleon’s retreat from Moscow was forced by rickettsial disease breaking out among his troops.
- Lenin (during Russian Revolution) - “either socialism will defeat the louse or the louse will defeat the socialism”
- Scrub -type of vegetation that harbors the vector, ‘typhus’- cloudy state of consciousness

PATHOPHYSIOLOGY:



- Transmitted to humans by the larval form of trombiculid mites (ie, chiggers) that live and breed in the soil and scrub vegetation. Both the reservoir & vector passes *O tsutsugamushi* transovarially.
- Chigger- 1/500th inch. Not visible to the naked eye.
- Adhere to,invade endothelial lining of the vasculature within the various organs affected. Multiply, accumulate,lysing the host cell.
- Increased vascular permeability $\longrightarrow$ edema, $\downarrow$blood volume, hypoalbuminemia, $\downarrow$osmotic pressure, hypotension
- DIC rare.

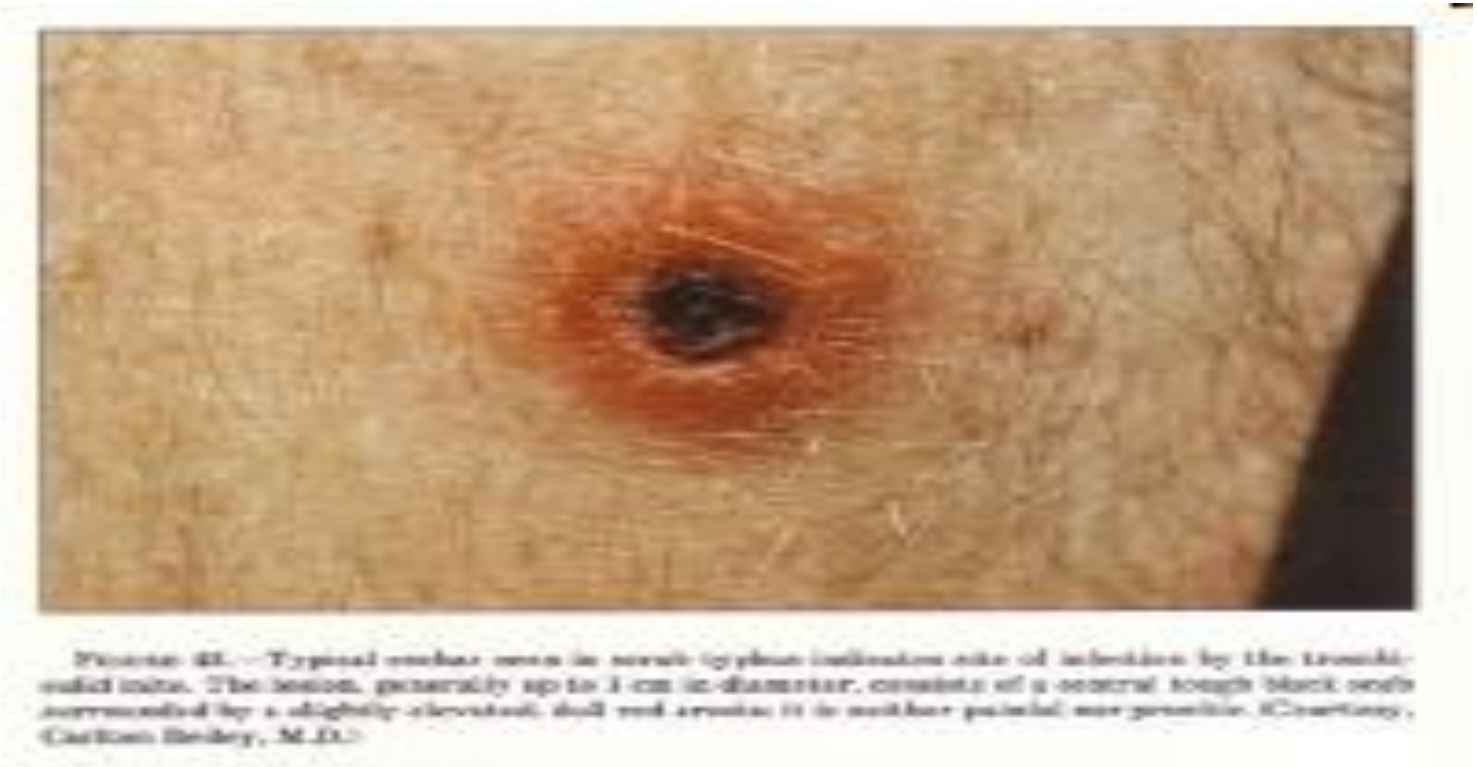
CLINICAL PRESENTATION:

- Topograghy: Rural south and southeast Asia. India- documented from J&K, Himachal Pradesh, Uttaranchal, Rajasthan,Assam, West Bengal, Maharashtra, Kerala and Tamil Nadu
- H/o tick bite or exposure, recent travel to endemic areas, similar illness in family members, coworkers, or family pets (especially dogs).
- Incubation period -1-2 weeks.

Contd….

- Generalized lymphadenopathy (80%) fever, headache, rash (truncal).
- Inoculation eschar -50%
- Hepatosplenomegaly, ocular pain, conjunctival injection
- Less common -deafness, tinnitus, myocarditis, atypical pneumonia, DIC , meningoencephalitis, ARDS.
- Untreated- fatality of 30-50%

Typical ESCHAR:



Investigations:

- Normal to low leucocyte count with marked left shift,
- Thrombocytopenia, hyponatremia
- ↑hepatic transaminases
- 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.

TREATMENT:

- Doxycycline or Tetracycline X 7 days
- Azithromycin shown to have comparable efficacy when compared to doxycycline in a small trial.
- Rifampicin and azithromycin used successfully in areas where scrub typhus is resistant to the conventional therapy.

PREVENTION:

- Endemic areas- protective clothing & insect repellents.
- Short-term vector reduction using environmental insecticides and vegetation control.
- Chemoprophylaxis-doxycycline in high-risk groups (eg, military personnel). Weekly Doses started before exposure & continued 6 weeks after exposure.
- No vaccine for scrub typhus is available.

Take Home message:

- Thorough physical examination is a MUST.
- All shocks with thrombocytopenia are not Dengue.

THANK YOU!!!!!!