PRACTICAL MALARIA & TETANUS

MALARIA CASE REPORT

An 18 years old male university student visited the Health Unit complaining of unexplained high fever for 2 – 3 days.

- On physical examination, he had flu-like symptoms. His body temperature is about 38.2º.
- However, after a complete history taking, he revealed history of traveling to Nigeria for a camping a week before.
- He was anxious about malaria infection and this agreed with the comments of the physician-in-charge.
- A complete blood count on this patient was performed. The result showed picture accepted for presentation of malarial parasite in red blood cell.
- He was diagnosed for vivax malarial infection and referred to the nearby hospital for proper treatment.

If you were an epidemiologist, How to investigate this problem?

MALARIA SURVEY

Definition: field study in endemic areas to find out the magnitude of malaria problems and ecological factors related to endemcity (host-agent-environment)

1. Planning:
   - Mapping the area, water channels and collections, cultivated lands, houses, climate.
   - Population characteristics, age, sex, occupation, education, socioeconomic status, habits.
   - Sample size.

2. Preparation:
   - Team of work, equipment, microscope, slides, transportation.
   - Investigation: facilitators, clinical and laboratory.

3. Implementation and interpretation:
   - Vector Study: types of mosquito, aquatic stages, density, species, life span, choice of host resting habits, breeding habits, resistance to insecticides.

MALARIOMETRIC INDICES

<table>
<thead>
<tr>
<th>HUMAN</th>
<th>VECOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Splenic</td>
<td>Gametocyte</td>
</tr>
<tr>
<td>NON SPECIFIC</td>
<td>the percentage of those having gametocytes in their blood.</td>
</tr>
</tbody>
</table>

| SPECIFIC |
| the percentage of children betwwn 2-9 years showing enlargement of spleen, exclude other causes of splenomegaly (bilharziasis, leishmaniasis) |
| <10%: low endemcity |
| 10-25%: moderate |
| 25-50%: hyperendemic. |

TETANUS

- At 4 o’clock in the after noon of April 20, 2009 a young married women 25 years old had an accident by her car. She was left bleeding in the road for 2 hours until the ambulance came & took her to the hospital.
- The doctor examined her & the wound in the back of her head was dressed then she was dismissed from the hospital.
- After a week she exhibited all the symptoms of tetanus; had rigid neck & muscle spasm especially in her face. She was referred to the fever hospital.

Causative agent: Clostridium tetani, a gram positive anaerobic spore forming organisms.

Reservoir: The natural habitat of the organisms are in the soil contaminated by excreta of herbivorous animals e.g. horses, cattle, sheep and goats and sometimes man.

Incubation period: Usually three to 21 days. Cases with shorter incubation period tend to have severe disease.

CONTROL:

Contacts
Investigation of contacts and source of infection to determine the circumstances of injury

Case:
Early case finding
Notification to local health office
Isolation: No need for isolation but the patient should be hospitalized for management.
Release after cure.

Treatment:

- Specific: TIG 1M in dose of 3000 - 6000 IU.
  [IF TIG is not available, ATS (equine) in a single large dose given IM preceded by hypersensitivity test.]
- Metronidazole I.V in large doses should be given 7-14 days.
- The wound should be debrided widely and excised if possible.
- Provide an adequate airway and to control muscle spasm.
MODE OF TRANSMISSION

1. Infection of wounds:
   • By spores introduced to the punctured wounds contaminated with soil, street dust or animal faeces through laceration, burns, or trivial unnoticed wounds.
   • Presence of necrotic tissues and or foreign bodies favor anaerobic organisms to produce toxins.
   • Intravenous drug use is an independent risk factor for tetanus in the absence of acute injuries.

2. Post operative surgical tetanus:
   • Using contaminated instruments or defectively sterilized catgut or dust containing spores may contaminate wounds.

3. Puerperal sepsis: Using contaminated instruments in labour or abortion.

4. Tetanus neonatorum:
   Spores infect the umbilical stump by contaminated hands with soil or contaminated instruments for cutting the cord (scissor or knife) or using contaminated dressing.

PROPHYLAXIS IN WOUND MANAGEMENT

• Tetanus prophylaxis in wounded person is based on:
  1. Careful assessment of the wound weather clean or contaminated,
  2. The immunization status of the person.

MANAGEMENT OF WOUND:

Cleaning of wound, surgical debridement if required and proper dose of antibiotics (penicillin).

<table>
<thead>
<tr>
<th>COMpletely Immunized</th>
<th>Non Immunized/Incomplete vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor &amp; uncont wounds</td>
<td>major &amp; contaminated wounds</td>
</tr>
<tr>
<td>require a booster dose of toxoid if more than 10 years have passed since last dose was given.</td>
<td>single booster injection of tetanus toxoid should be given in the day of injury for those who not received tetanus toxoid since 5 years.</td>
</tr>
<tr>
<td>Require a dose of toxoid as soon as possible and require TIG or ATS in case of contaminated major wound, separate syringes and separate sites must be used.</td>
<td></td>
</tr>
</tbody>
</table>

CASE OF TETANUS NEONATORUM

On Tuesday 2005, a boy was born in a country in rural area. His umbilical cord was cut with a knife and the stump was dressed with olive oil. After a week the baby could not feed and suckle. There was episodes of convulsion and stiffness. His mother took him to the doctor and the doctor referred him to the fever hospital.

MODE OF TRANSMISSION:

Tetanus spores infect umbilical stump

ELIMINATION OF TETANUS NEONATORUM:

✓ High vaccine coverage of pregnant women and women in childbearing age
✓ Aseptic and antiseptic measures during delivery
✓ Identification and implementation of corrective action in high risk areas

PREVENTION OF TETANUS NEONATORUM

• Health education of mother about the importance of vaccination during pregnancy.
• Sanitation of the place of deliveries, sterilization of all instrument used in deliveries.
• Using sterilized catgut in ligation of the cord.
• Using sterile dressing in covering the stump.
• Vaccination of mothers by tetanus toxoid during pregnancy.

Life Cycle of the Malaria Parasite