DETECTION AND TREATMENT OF REACTIONS IN LEPROSY

Dr. V. V. Pai
Director
Bombay Leprosy Project
India
Clinical manifestations of leprosy depend on host’s response to live M leprae or its antigens.

Reactions are one of the major factors contributing to the development of new disabilities in leprosy.
Apparently uneventful response to chemotherapy is marked by **clinically disturbing episodes** encountered in about 20-30% of patients and these phenomena are called **Reactions**.
Incidence of Type I Rn – higher institutional referral of cases
25% to 30% in a hospital / institute based studies
2% to 5% in field based studies
ENL reactions reported in 28.6% in LL cases Nepal, 47% in a hospital based study from India
Field studies from Bangladesh and Ethiopia lower incidence 2.1% and 12% in LL cases respectively
Methods

Generally reactions are classified as

- Reversal reaction / Type I.
- ENL / Type II.
Type I reaction is due to alteration of cell mediated immunity (characterized by inflammation of lesions, new crop of inflamed lesions, with / without neuritis) is commonly encountered in borderline leprosy especially of the Borderline Tuberculoid type.
Type II reaction is usually associated with immune complex reaction (debilitating, multisystem disorder characterized by fever, malaise and crops of painful erythematous cutaneous nodules and evanescent in character.

ENL also causes nerve impairment, arthritis, bone pain, orchitis, hepatitis and iritis) seen in Lepromatous Leprosy (BL and LL).
Poorly managed episodes can lead to irreversible changes as a result of neurological damage as well as certain non paralytic deformities.

Reactions can occur at any time either during the course of treatment or during the surveillance or at times before the treatment.

The Physicians and field staff should remain alert at all times for suspecting and detecting signs of reactions on the skin as well as in the nerves (tenderness) and possibly the patients at risk may be cautioned and educated about the signs of reaction.
Clinical features of reactions for detection can be divided as follows:

A) Cutaneous manifestations

B) Type II reactions in LL and BL, ENL, Erythema multiforme, Erythema necroticans, subcutaneous nodules and Lepromatous exacerbation

C) Type I reactions in Borderline and Tuberculoid leprosy
Risk factors

- Type I Rn
  - Borderline spectrum/ Female gender– hormonal pregnancy and delivery
  - multiple patches and nerves/facial patches
  - Initiation of treatment/previous episode

- Type II Rn
  - LL with infiltration– High BI >3/ Intercurrent infections/Trauma/Stress/Surgical intervention
Peripheral nerve damage is one of the worst consequences of reactional states in leprosy. The involvement of nerves by the primary infection as well as the immunologically mediated reversal reactions results in impairment of nerve function and severe disabilities.

*Silent Neuropathy*

Can be identified as sensory or motor impairment without obvious skin signs of leprosy (with or without obvious skin lesion or without any type 1 or type 2 reactions)
D) Other manifestations- Acute neuritis, Lymphadenitis, Arthritis, Edema of hands and feet, and Ocular lesions

E) Sequelae of reactions – Paralytic deformities, non paralytic deformities, extensive scarring

F) Identification of risk factors – Various factors like pregnancy, adolescence and puberty, inter-current infections, psychological stress and vaccination can influence the immune system pre disposing the patient to risk of reaction.
The use of steroid therapy in the management of reactions and neuritis in leprosy is now gaining importance in view of the possible nerve function impairment.

Standard steroid schedules using **Prednisolone** are useful in reducing the recurrences of reactions and to improve the nerve function.

Other anti inflammatory and immunosuppressive drugs include **Clofazimine**, **Thalidomide** and newer drugs like **Pentoxiphylline**, **Azathioprine**, **Cyclosporine** etc.
Treatment

- Principles of management
- Anti-leprosy treatment/ Treatment of reaction/ specific therapy
- Corticosteroids–Prednisolone, Clofazimine
- Additional measures and Other immunosuppressive drugs– Methotrexate, Cyclosporine, Azathioprine, Mycophenolate mofetil, others, Surgical decompression
- Thalidomide, Inliximab and others
Standard Steroid Schedule - WHO

![Steroid Schedule Graph](image)
PREDNISOLONE REGIMEN (60MG)

1) Total Dose: 4690mg
2) Total Duration: 28 weeks
### Review of Literature

<table>
<thead>
<tr>
<th></th>
<th>TOTAL STEROID GIVEN (gm)</th>
<th>DURATION (months)</th>
<th>Patients requiring additional steroids (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIPOD 1</td>
<td>1.96</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>TRIPOD 2</td>
<td>2.52</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>TRIPOD 3</td>
<td>2.52</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td>Rao et al High</td>
<td>3.50</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Rao et al Low</td>
<td>2.31</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Rao et al Short</td>
<td>2.94</td>
<td>3</td>
<td>46</td>
</tr>
<tr>
<td>Shetty et al WHO semi standardized regimen</td>
<td>1.69</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>BLP regimen (high)</td>
<td>4.69</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>BLP regimen (low)</td>
<td>3.08</td>
<td>5</td>
<td>48</td>
</tr>
</tbody>
</table>
Peripheral neuropathy leading to claw hand
MANAGEMENT WITH PREDNISOLONE
SM Early mobile claw hand under treatment with steroids and physiotherapy

06.06.13

05.09.13
RD/M/20yrs  Treated with steroids and physiotherapy
V. P. / F – 18yrs Treated with steroids and physiotherapy
Type – 1 Reaction

Before treatment

After treatment with steroids
Prednisolone 40 mg regimen

Initial
29.09.11

After treatment with steroid 25.11.11
MANAGEMENT WITH PREDNISOLONE AND CLOFAZIMINE
RR 16 Yr /F
BEFORE
27.02.09

AFTER
23.08.11
MS / 48 yrs Type I Reaction

Initial 28.07.08

After 9 Months (15.04.09) treatment with steroids and clofazimine
Before and after treatment in type I reaction with face lesion with only clofazimine
Prednisolone and clofazimine

Initial 01.08.11

After 15.02.12
Severe ulcerative reaction treated with Prednisolone and Clofazimine

Pre 3.8.2011

Post 25.11.2011
MANAGEMENT WITH THALIDOMIDE
Severe ulcerative ENL (Type II rection)
Before and After treatment with Thalidomide (healing of ulcerative and necrotic ulcers)
S/G, 15/F, Before and after treatment with only thalidomide (healing of ulcerative necrotic ulcers)
Type II Reaction

Before treatment
4.03.2009

After treatment with Thalidomide
09.08.2010
Reaction is an unpredictable event having a predilection for skin and nerves and associated with tissue damage when accompanied by systemic involvement.

Treatment with standard schedule of steroids viz Prednisolone is proved to be very effective and should be made available at field levels and clinic for all patients with reactions.

It cannot be therefore overemphasized the need of early detection and treatment of reactions to prevent nerve damage and its consequences like deformity associated with stigma.
THE GOOD PHYSICIAN KNOWS THE DISEASE
THE PATIENT HAS, THE GREAT PHYSICIAN
KNOWS THE PATIENT WHO HAS THE DISEASE

-SIR WILLIAM OSLER