

from 1.2% to 5.0% per island. The overall prevalence rate was 191 per 10,000, ranging from 87 to 442 per 10,000 per island. Of all patients, 46% was classified as MB, 40% as PB single lesion and 14% as PB 2-5 lesions. Children below 15 years represented 9% of the patients and those with WHO grade 2 disability 11%.

Of all patients, 68 (75%) were clustered, where clustering is defined as a group of at least two patients who either fall in each other's contact group or share the same contacts. In this study, contacts are defined as household contacts, immediate neighbours and next neighbours. Further analysis of patients and general population data is currently ongoing and will be presented.

On all islands, the leprosy patients were treated with MDT according to the national guidelines. To be able to study two different regimens for prophylactic treatment (blanket treatment and contact treatment) and to have a control group, the three small islands (Pelokan, Kembanglemari and Tampaan) were combined and served as one group (1252 inhabitants, 39 leprosy cases). The two bigger islands, Sapuka (2069 inhabitants, 26 leprosy cases) and Sailus (1449 inhabitants, 26 leprosy cases) each served as one group. Sailus served as control island, where only the patients were treated with MDT. On the group of three small islands 79% of the population (persons without leprosy; above 5 years and without contraindication) received prophylactic treatment with rifampicin. On Sapuka contacts of patients (household contacts, immediate neighbours and next neighbours), 17% of the population, received prophylactic treatment. During the delivery of the prophylactic treatment of both groups 73% took the medication direct (under supervision) and 27% indirect. This prophylactic treatment will be repeated after 4 to 5 months.

During screening (intravenous) blood and nasal-swabs were collected of everybody above five years. This (including the screening) will be repeated every year for the coming three years. This will enable us to follow-up the effects of the different regimens for prophylactic treatment on the incidence and transmission of leprosy.

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## Ep 400

### COMPARISON OF OCCURRENCE OF LEPROSY AMONG CONTACTS AND GENERAL POPULATION

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#### Objectives

1. To describe the demographic characteristics of leprosy cases detected from contacts and general population.
2. To study case yield in contacts and non-contacts.

#### Design

Comparative retrospective study. All the contacts who were registered from 1997 to 1999 and general population are taken into account.

#### Settings

All leprosy cases from contacts and general population are taken. Study has taken into account records available with Leprosy Control Unit, Philadelphia Leprosy Hospital, Salur of Andhra Pradesh.

#### Main indicators and outcome measures

Case yield between contacts and general population is compared.

#### Results

1. Case yield from contacts is : 2. Case yield from non contacts is : No. of cases among contacts = 0.57% No. of cases = 0.20%

Total no. of contacts Total population examined

#### Conclusion

Case yield from contacts is approximately three times higher than non-contacts. It validates the need for motivation and careful examination of all contacts and also proves the contacts are at a higher risk of developing disease.

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## CI 01

### KALA-AZAR (PKDL) IN LEPROSY ENDEMIC REGION

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Dharbanga district in Bihar, India is known to be endemic for Leprosy and Kala-Azar. Post Kala-Azar Dermal Leishmaniasis (PKDL) is also common in this region. Many people with PKDL present with multiple hypo-pigmented skin patches (flat or raised) resem-

bling leprosy skin lesions. The intensive health education campaign brings out many of these patients to leprosy clinics. Inexperienced staff can register these cases as leprosy. Here we present four cases of PKDL resembling MB leprosy. Careful clinical examination and skin smear examination and eliciting the cardinal signs of leprosy will help in correct diagnosis. Details will be presented.

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### CI 02

#### **BORDERLINE LEPROMATOUS LEPROSY WITH MOLLUSCUM CONTAGIOSUM - A CASE REPORT FROM NEPAL**

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A 55 years old male farmer presented with asymptomatic skin lesions over extremities of 5 years duration and multiple small papules over face and trunk of 10 months duration. Initially, 5 years back, patient had single hypo anesthetic skin lesions over left knee for which he took tab dapson 100 mg daily for 3 months, then stopped himself after seeing good response. 1 years back, patient again developed similar lesions over left knee and left forearm along with a few nodules over both earlobes. Then, 10 months back, patient developed multiple small and large papules over central part of face and trunk. General physical examination was within normal limit. The cutaneous examination showed that there were 2 well defined plaques

8.5" x 8" and 1.5" x 1" size over left knee and left forearm respectively. A few shiny nodules were also present over both earlobes. Multiple asymptomatic shiny skin coloured papules with central umbilication were noted over nasolabial folds, cheeks, chin, lips and trunk. A clinical diagnosis of borderline lepromatous leprosy with molluscum contagiosum was made. Slit skin smear from earlobes and lesions showed Bacteriological Index 1+. Histopathology from plaques and umbilicated papule showed features of leprosy and molluscum contagiosum respectively. We are presenting this case because of rare association of leprosy with molluscum contagiosum.

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### CI 72

#### **LEPROSY SKIN LESION ON SCALP**

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Leprosy skin lesions are not generally observed in some parts of the body (axilla, scalp). Are these sites really spared by the disease? A male of 45 years was registered with a skin lesion (patch) on the right cheek extending to the scalp. He developed new lesions and lepra reaction during fourth month of MDT Pauci Bacillary regimen. He was treated with steroids and MDT Multi Bacillary regimen was started. Patient responded well. Leprosy skin lesions can occur in scalp, through unusual.

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### CI 113

#### **EWANS SYNDROME IN A LEPROSY PATIENT - A CASE REPORT OF AN UNUSUAL ENCOUNTER**

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A 35 year old female treated Borderline Lepromatous Leprosy patient - RFT after 2 years of MDT - was referred to our Hospital with H/O epistaxis from Lt. Nas-tril associated with foul smelling discharge and Lt. sided headache of 2 months duration. There was Lt. Maxillary Ethmoid and Frontal sinus tenderness, sero-sanguinous discharge from Lt. middle meatus and a mild diffuse ooze of blood from a congested Lt. Little s Area.

Radiological examination of the sinuses showed haziness in the Lt. maxillary ethmoid and frontal sinuses. Haematological investigations revealed marked anaemia, and thrombocytopenia. The patient had clinically and bacteriologically inactive, Hansen s Disease.

Antibiotics, antihistamines and topical nasal decongestants controlled the epistaxis and relieved the sinusitis headache, while simultaneous treatment with oral corticosteroids resulted in an increase of the platelets level to 1,45,000/cu.mm. Anterior Rhinoscopy and Nasal Endoscopy were done but there was no specific bleeding point or local lesion seen. Haemoglobin level improved to 6.8 Gr %. With a provisional diagnosis of Anaemia, ITP and Lt. Pansinusitis (treated) the patient was discharged on tapering dose of steroids and haematinics.

After 3 months the patient came with C/O epistaxis again from Lt. Nostril as well as bleeding from gums.

A thorough haematological workup and evaluation was done at CMC Hospital, Vellore and the patient was diagnosed to have EWANS SYNDROME, i.e. (AIHA + ITP). She has since been treated with high dose steroids, H 1 receptor antagonists and haematinics and advised to undergo Splenectomy.

Lepromatous Leprosy may cause epistaxis due to ulceration of nasal cartilage and even present as the first symptom of the disease. We present this case of a treated leprosy patient with epistaxis unrelated to the disease. Bleeding disorders in leprosy may pose a diagnostic and therapeutic challenge as in this case.

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### CI 158

#### CHILDHOOD LEPROSY IN CHANDIGARH - A CLINICO HISTOPATHOLOGICAL CORRELATION

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Chandigarh

**INTRODUCTION :** Clinical features of leprosy may sometimes be confusing in children. Sensory testing is difficult in them and slit skin smears (SSS) are usually negative. Histopathology may be unrewarding in early tuberculoid and indeterminate leprosy and there may be a marked disparity between the clinical and histopathological features.

**OBJECTIVE :** This study was carried out to define the histological spectrum of leprosy in children and to correlate it with the clinical spectrum.

**RESULTS :** From January 1990 to July 1999, we diagnosed 1360 new cases of leprosy. Of these, 61 (4.5%) were children in the age group of 0-14 years. A clinical diagnosis of I was made in 4 (6.6%) children, BT in 48(78.7%), BL in 5(8.2%), LL in 3(4.9%) and pure neuritic in 1(1.6%) child. Clinically there was no child with TT or BB disease. A clinico histopathological correlation could be established in only 36 (59.0%) cases. Positive correlation was found in 2 (50%) cases with I, 28 (58.3%) with BT, 5 (100%) with BL and 1 (33.3%) case with LL leprosy. Three (6.3%) cases clinically diagnosed as BT leprosy were TT on histopathology and 1 (2.1%) case was I. One (33.3%) case of LL was BL and 1(33.3%) was histoid leprosy on histopathology. Non specific features were seen in 19(31.1%) cases - 2(50%) with I, 16 (33.3%) with BT and 1(100%) case of pure neuritic leprosy in which skin biopsy was

taken from the area of sensory loss. Lepra stain was positive for AFB in 7 (11.5%) skin biopsies - 5 with BL and 2 with LL leprosy.

**CONCLUSIONS :** Our findings reiterate that clinical diagnosis still remains the mainstay for the detection of leprosy in children, but in certain situations, histopathology may help.

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### CI 194

#### A PRACTICAL FIELD WORKERS' CLASSIFICATION OF LEPROSY

*Rashmi Sarkar & R.V.Koranne, Chandigarh*

A simplified yet a practical classification of leprosy, keeping existing laboratory facilities in consideration has so far eluded the leprologist all over the world. For the field workers, the primary basis of the classification will have to be clinico-bacteriological. Moreover, many workers including ourselves have observed a considerable disparity between clinical and histological features in the same study-group, more so in macular lesions of leprosy. In a recent study carried out by Koranne et al, as many as 20 out of 50 (40%) patients showed disparity using Ridley-Jopling system of classification. Similarly, Sarkar et al, in another study also found discordance in 12 out of 19 (63.16%) patients having macular lesions. Hence, the need for a simplified classification in field areas as suggested below :

A. Indeterminate leprosy : This term should be retained for ill-defined hypopigmented or erythematous macular lesions heralding the onset of leprosy lesions.

B. Non-lepromatous leprosy : Maculo-anaesthetic and polyneuritic leprosy patients are not uncommon in India and thus should be separately listed as such .

C. Dimorphous leprosy : This term clearly delineates the duality of the morphological features of the borderline group. Authors propose the term borderline should be substituted with dimorphous leprosy.

D. Lepromatous leprosy

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### CI 206

#### A FATAL CASE OF ERYTHEMA NECROTICANS

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A 45-year old male presented with recurrent fever and ulcers over extremities and abdomen since 1 year and bloody diarrhea and vomiting since 1 months.. He had had nodular lesions over face 25 years ago for which he had taken dapson monotherapy for 1 year. Examination revealed pallor and pedal edema. There were nodules over the ears with collapse of the nasal bridge. Multiple ulcers were seen over forearms, thighs and legs. The ulnar and lateral popliteal nerves were thickened and tender. There was sensory loss over ulnar border of both hands and lower 1/3 of legs and feet with bilateral ulnar clawing. Slit smear examination showed, B I 4+ and MI 0. Skin biopsy was consistent with ENL. Hb was 6.8 G/dl, platelet count 96,000 cells / mm<sup>3</sup> and albumin level 1.2 G/dl. Urine showed 10-12WBC/hpf. C/S of pus from ulcers, urine and blood grew coagulase negative staphylococci sensitive to vancomycin and gentamicin. HIV test was negative. Stool showed occult blood.

During hospital admission, patient continued to have vomiting and loose motions.

Despite IV fluids, parenteral antibiotics, steroids, anti emetics patient expired after 12 days, the cause of death being septicaemia probably secondary to coagulase negative staphylococci. The past history of high dose clofazimine therapy for 7 months could have contributed to the small bowel dysfunction.

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### CI 258

#### AN UNUSUAL CASE OF PRIMARY HISTOID LEPROSY

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Histoid leprosy, a special clinical manifestation of lepromatous leprosy, is characterized by the presence of isolated nodules. The number of nodules seen in the case reported is as many as 1948. This report described its clinical features, bacteriological findings, pathologic changes and response to the treatment.

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### CI 288

#### LEPROSY SERVICE TO INMATES OF PRISON

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The Leprosy Mission Hospital, Namdnagari Delhi is conducting regular surveys for the inmates of the prison of all the jails of Tihar since 1995. Out of 37,748 inmates examined since the beginning of the survey 196 new cases were detected. Out of 196 new cases 56 were MB and the deformity rate is 6.63%. In addition to the new cases, 13 leprosy affected persons with various deformities were detected.

The survey clearly indicates that the inmates of prisons should be screened regularly for leprosy in all the prisons of India. This also brought out that the health professionals of the prisons should be given orientation in leprosy.

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### CI 304

#### INFECTION CONTROL IN A LEPROSY REFERRAL CENTRE

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Green Pastures Hospital (GPH) is functioning as a leprosy referral centre for the western region of Nepal. It has been serving leprosy patients since 1957 and started providing services for spinal cord injuries and other neurodisabilities in 1997.

The majority of cases are admitted only for ulcer care. Other disabilities such as spinal cord injuries are admitted occasionally with big pressure sores. Two beds are reserved for special care in rare cases such as exfoliative dermatitis and AIDS. As a matter of fact, the hospital as referral centre has to handle infected ulcers and other infectious diseases but also at the same time has to offer surgical procedures which require strict infection control such as reconstructive surgery for leprosy patients and flaps for big ulcers.

Periodically, the guidelines for hospital infection prevention and control have been revised. A recent review has recommended some new changes in the hospital regarding waste disposal. A new low cost incinerator has become a safe access for waste disposal. Universal precaution has been applied in the working situation. Different types of wastes are collected in different coloured bins. Plastic lining is used to collect infected material. Empty bottles of Betadine are used to collect sharps and needles.

Staff handling food, laundry and cleaning services are given orientation about infection control. Stool tests

are taken every 4 months from the kitchen staff. In case of diarrhoea, an immediate stool check up is done. Staff at risk are recommended for hepatitis B vaccinations. A register is maintained to record any accidental needle prick and AZT (Azidothymidine) is always available in Green Pastures Hospital at the senior medical officer's recommendation for HIV post exposure prophylaxis.

We conclude that effective and comprehensive infection control can be achieved in a leprosy referral centre, partly with simple measures and low costs but also requiring interventions on a higher cost level such as vaccinations, post exposure prophylaxis and a well functioning incinerator.

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### CI 340

#### OCURRENCE OF PLANE XANTHOMA IN LEPROSY

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Active cases of leprosy is one of rare diseases in recent South Korea. Plane xanthoma is also another rare condition of the skin, which characteristically involves eyelids, neck, trunk and shoulders as macular or patchy lesions and may be associated with myeloma, monoclonal gammopathy, lymphoma and leukemia.

For the past two decades, authors have seen two cases of plane xanthomas among the 13 cases of multibacillary leprosy patients. One case was a man in his forties and the other a woman in her fifties. The xanthomas developed during the course of the treatment of the active leprosy lesions. In the latter case the xanthomas, except for the eyelids lesions, resolved when the treatment of the leprosy completed. Both of the two patients did not show high elevation of the blood cholesterol or triglycerides. Considering the rarity of the two diseases and the key roles of histiocytes in both conditions, the occurrence of plane xanthomas in multibacillary leprosy patients may have a causal relation rather than coincidental development.

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### CI 350

#### OCURRENCE OF LATE LEPROSY REACTION IN LEPROSY PATIENTS : SUBSIDES FOR IMPLEMENTATION OF A SPECIFIC CARE PROGRAMME

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Leprosy would be an ordinary disease; however, it is not due to its reactive episodes with risk of disability maintaining the stigma related to the leprosy. These reactions and the potential loss of the neural function may happen before, during and after treatment, through a multidrug therapy (MDT). Release from treatment results from the large number of doses and regularity of their intake necessary for the patient leaves the coefficients of prevalence.

The aim of this study was to evaluate the magnitude of late reactions and the operational subjects referring to the attendance quality. Charts of the 149 patients that received discharge for leprosy from 1994 to 1999, from CSE Jaragua - UFU, were revised using the Record of Inquiry of Alterations. After Cure of the Ministry of Health, 34 (23%) of these patients presented late reaction, 11.76% were paucibacillary (PB) and 88.23% were multibacillary (MB). An average of 3 reactive episodes for borderline patient and 4 episodes for lepromatous patient occurred. One hundred percent of PB patients presented reversal reaction (RR). While among MB 50% presented RR, 40% erythema nodosum leprosum (ENL), 7% isolated neuritis and 3% mixed reaction. In 91% of the cases, the first reactive episode happened in the first year after treatment. There was a positive correlation among mean of BI at diagnosis and the number of reactional episodes during treatment and after release. 97% of patients with late reaction used prednisone and 32% thalidomide, meaning 22% and 8% from the total, respectively. Grade of disability 2 and 3 happened in MB patients of the economically active age. It is discussed the need of implementing specific care program for that new group of patients with warranty of treatment, personnel training for simplified monitoring of neuritis and handling of the adverse effects of corticosteroids therapeutics, seeking the prevention of disabilities.

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**CI 351****ASSOCIATION OF LATERAL AMYOTROPHIC SCLEROSIS AND LEPROSY PERIPHERAL NEUROPATHY - CASE REPORT**

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**Background :** Peripheral neuropathy leading to sequela is the most important complication of leprosy. The radial, ulnar, median, common peroneal and posterior tibial nerves are the most peripheral nerves commonly involved in leprosy. Clinical manifestations of such involvement include anesthesia, paresthesia and paralysis, and the most commonly found disabilities are clawing of the fingers and weakness of pinch, loss of opposition of the thumb, clawing of toes, and foot drop.

**Case report :** A 60-year-old male had a diagnosis of borderline-tuberculoid leprosy in 1993, and was treated with rifampin, dapsone and clofazimine for two years, according to the policy of the Brazilian Ministry of Health at the time. The patient was discharged in 1995, and in 1998 sought medical help complaining of plantar anesthesia and impaired dorsiflexion of his right foot. Lost eversion of the foot was observed. These manifestations were associated to reverse reaction, and it was initiated prednisone 60-80 mg/day during one year without any improvement of his manifestations. Furthermore, atrophy of his right hamstring and tight were noted. Neurological evaluation suggested that the patient had another neuropathy or myopathy associated with the leprosy-related neuropathy. Electroneuromyography revealed: 1) sequela of chronic asymmetric sensitive-motor neuropathy of mild to moderate severity; 2) diffuse preganglionic lesion on the lower limbs, mostly on the right one. A diagnosis of lateral amyotrophic sclerosis was suspected.

**Discussion :** Reverse reactions are reported to occur up to five years after discharge in 30 percent of the patients with leprosy treated with multidrug therapy. These patients usually improve substantially when treated with corticosteroids for three to six months. In the case reported here the absence of improvement under corticosteroid therapy and the presence of atrophy of muscles usually not involved in leprosy suggested another diagnosis, which was confirmed by the electroneuromyography. Neurological involvement in patients with leprosy is not always leprosy-related; differential diagnoses should be investigated, particularly in patients with unusual manifestations and who do not respond to corticosteroids therapy.

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**CI 353****APLASTIC ANEMIA AND MULTI DRUG THERAPY IN A PATIENT WITH LEPROMATOUS LEPROSY : REPORT OF A CASE STUDY**

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**Background :** Multidrug therapy (MDT) with rifampin, dapsone and clofazimine has had a major impact for the treatment of leprosy. Several adverse effects have been associated with MDT, including hematological toxicity characterized by hemolytic anemia, agranulocytosis, and thrombocytopenia. Aplastic anemia has been rarely associated with the use of dapsone, but not with rifampin and clofazimine.

**Case report :** A 23-year-old male was seen by a physician in a health center presenting diffuse infiltration, nodules and papules on the face, including the earlobes, upper and lower limbs, and partial loss of the eyelashes and eyebrows. Countless acid-fast bacilli were seen on slit-skin smear, with a bacterial index of 5.25. Diagnosis of lepromatous leprosy was made and MDT was initiated in September 1999. Before the second monthly dose of rifampin the patient had a blood cell count that showed: hematocrit 31.9%; white blood cell (WBC) count 3700 cells per mm<sup>3</sup> (1% band forms, 48% neutrophils, 39% lymphocytes, 10% monocytes, 2% eosinophils), platelets 272000 per mm<sup>3</sup>. No further blood tests were carried out until June 2000, when he was admitted to the hospital with severe nose bleeding. At the time he had a hematocrit of 8.3% WBC count of 1300 per mm<sup>3</sup> (28% neutrophils), and 5000 platelets per mm<sup>3</sup>. A blood marrow smear revealed hypocellularity of the granulocytic and erythrocytic series, and absence of megakaryocytic cells. Several platelet and packed red cell concentrate transfusions have been required. Bone marrow transplantation has been proposed but has not been carried out because no compatible donors have been found.

**Discussion :** Aplastic anemia is a rare adverse effect of MDT, that has been related to dapsone. Earlier detection of bone marrow toxicity might have occurred by close monitoring of blood cell count during MDT. Whether earlier detection would have changed the outcome of this patient is debatable given that dapsone-related aplastic anemia is a rare effect, and it is unknown if it is dose-dependent or an idiosyncrasy. If the latter is true, early withdrawal of dapsone would have not prevented the occurrence of aplastic anemia.

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### CI 357

#### AUXILIARY CLINICAL LABORATORY-MARKERS IN THE MONITORING OF ERYTHEMA NODOSUM LEPROSUM

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Many of the complications of leprosy are due to leprosy reactions. Erythema nodosum leprosum (ENL) demonstrates the effects of marked immunocomplex formation.

**OBJECTIVES :** 1) To evaluate the frequency of clinical-laboratory alterations in a sample of ENL patients, and 2) to enumerate the laboratory tests that are important for the monitoring of leprosy reactions.

**CASES AND METHODS :** A survey and retrospective analysis of the medical records of patients seen at the Leprosy Outpatient Clinic of the University Hospital, Faculty of Medicine of Ribeirao Preto, were performed. The clinical-laboratory investigation of patients with an ENL type reaction had been recorded in 24 medical records.

**RESULTS :** Of these 24 patients, 50% were males. Among the patients evaluated, 80.9% presented elevation of C-reactive protein. The mucoprotein level was normal in 8 patients and the alpha-acid glycoprotein level was elevated in all of them. Evaluation of hepatic enzymes showed some type of alteration in 58.3% of subjects: gamma-GT was elevated in 47.6%, GPT in 25% and GOT in 20.8%. A reduction in serum albumin levels was observed in

30.76% of patients and a reduction of total protein was observed in 12.5%. Leucocytosis was observed in 50% of the patients and anemia in 62.5%, with 4 patients presenting levels of less than 7.0 mg/dl. Fever was present in 54.2%, arthritis in 33.4%, hepatomegaly in

12.5%, splenomegaly in 8.4%, adenomegaly in 16.7%, and clear signs of neuritis were observed in 16.7%.

**CONCLUSIONS :** Our results confirmed the relevance of multisystemic evaluation, revealing a high percentage of patients with increased serum C-reactive protein levels and suggesting the use of this determination as a parameter for the monitoring of leprosy reaction. The alteration of hepatic enzymes, especially the canalicular ones, should be emphasized, together with the hematologic disorders, which should be investigated in ENL episodes.

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### CI 359

#### LUCIO'S PHENOMENON : REPORT OF BRAZILIAN CASES

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A necrotizing skin lesion associated with diffuse non-nodular leprosy was described by Lucio and Alvarado in 1842. After the histopathological alterations were recognized, this reaction was called Lucio's phenomenon by Latapi and Zamora, in 1948. This is considered to be a type of leprosy reaction associated with necrosis of arterioles, whose endothelium is massively invaded by *M. leprae*. Lucio-Latapi Leprosy and Lucio's phenomenon, which correspond to the level of high susceptibility to the bacillus, are common in Mexico and Central America but infrequent in other parts of the world. In Brazil, despite the prevalence of the disease, few reports of Lucio's phenomenon are available. We report here a clinical description and the evolution of four cases of Lucio's phenomenon observed in our service: four patients (three males and one female) with lepromatous leprosy characterized by a discrete rythematosinfiltrative process diffusely involving the face and extensive areas of the tegument, with absence of nodules, associated with coalescent purpuric lesions forming plaques and ulcers covered with necrotic tissue, which ascendingly and progressively spread from the distal to the proximal end of the upper and lower limbs. Histopathology revealed focal necrosis of the epidermis, in the superficial and deep dermis, a morphonuclear inflammatory infiltrate rich in foamy histiocytes grouped around skin adnexa, nerve fillets and blood vessels. There was necrosis of sweat glands as well as thrombosis of small arteries with a focal deposit of fibrinoid material on the wall. Large numbers of BAAR bacilli were present, forming globes in the histiocytes and endothelial cells. This set of histopathological alterations is comparable to vasculitis of the Lucio's phenomenon on type in the diffuse non-nodular clinical picture of leprosy.

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### CI 361

#### DIFFUSE LEPROMATOUS LEPROSY (LUCIO'S LEPROSY)