

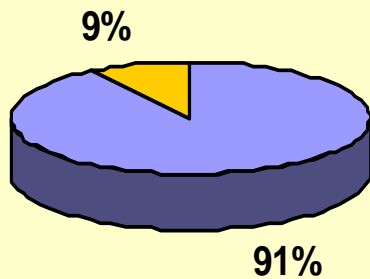
**PECULIARITY OF MYCOBACTERIAL
INFECTION IN PRIMARY
IMMUNODEFICIENCY PATIENTS**

(SINGLE CENTER STUDY)

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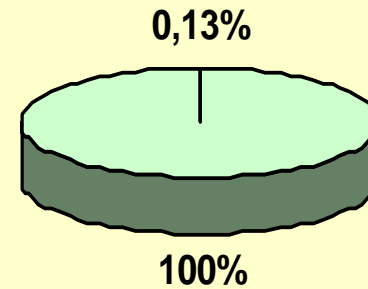
The overspread of Mycobacterial Infection in PID patients



■ PID patients ■ Mbt infected

32 Mbt infected patients among 319 of Russian Children's Clinical Hospital database

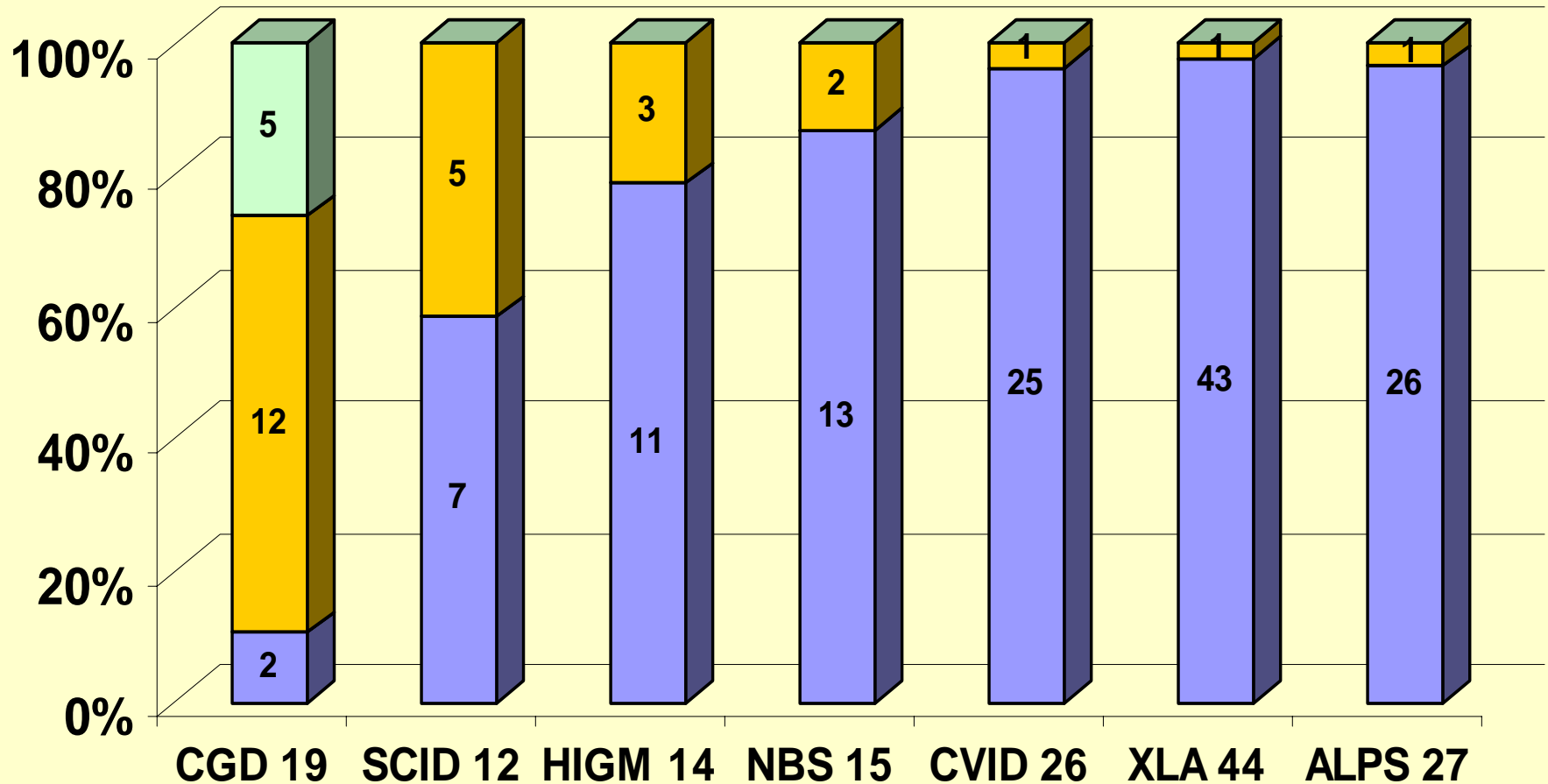
The overspread of Mycobacterial Infection in Russian population



■ Russian population ■ Mbt infected

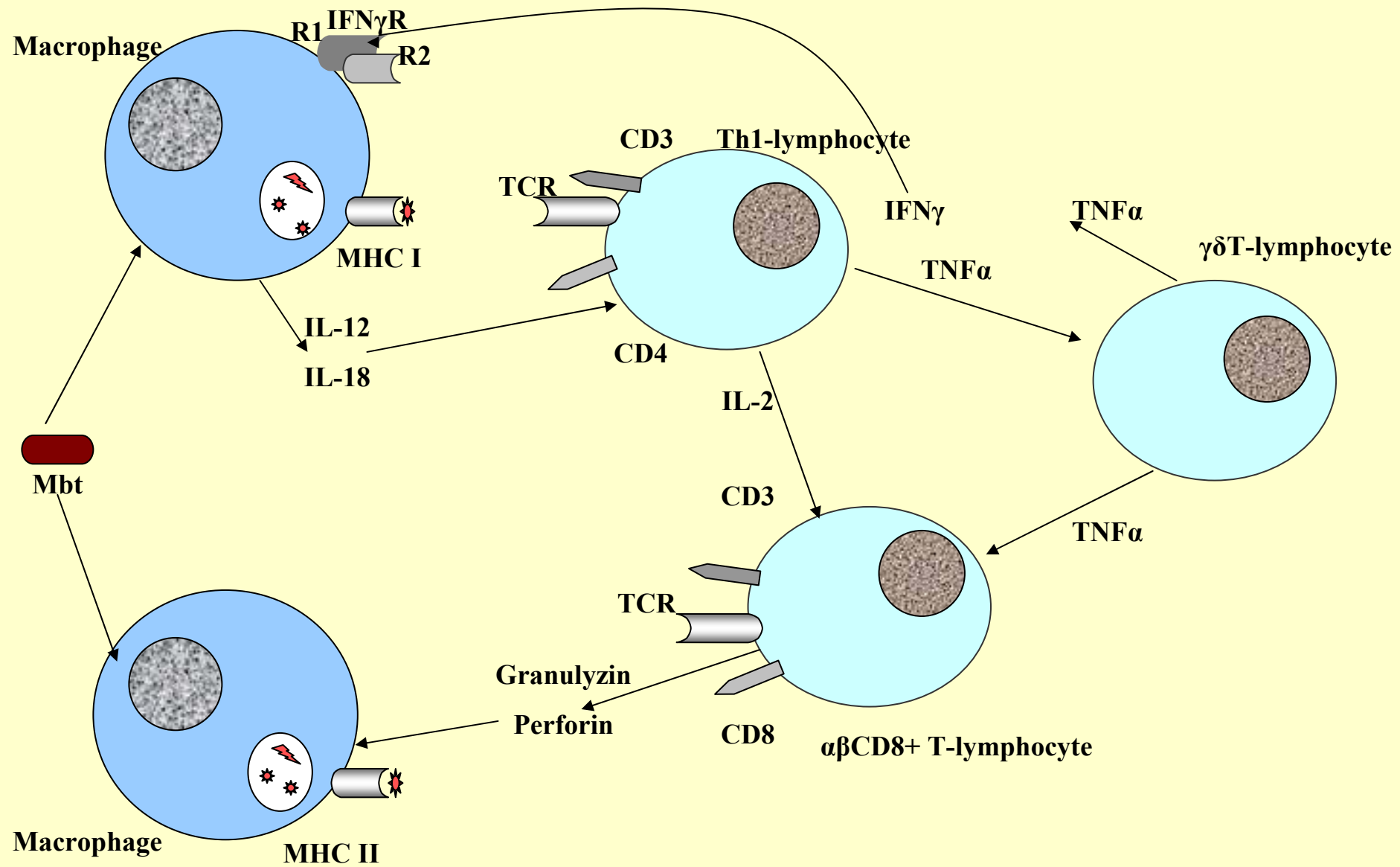
134 infected persons in 100 000 according to WHO data

Distribution of Mbt infection among PID patients



■ Not infected by Mbt ■ Infected by Mbt ■ Multifocal Mbt infection

MYCOBACTERIA'S INTERACTION WITH IMMUNE SYSTEM



M.K. 2 y.o. - Chronic Granulomatous Disease

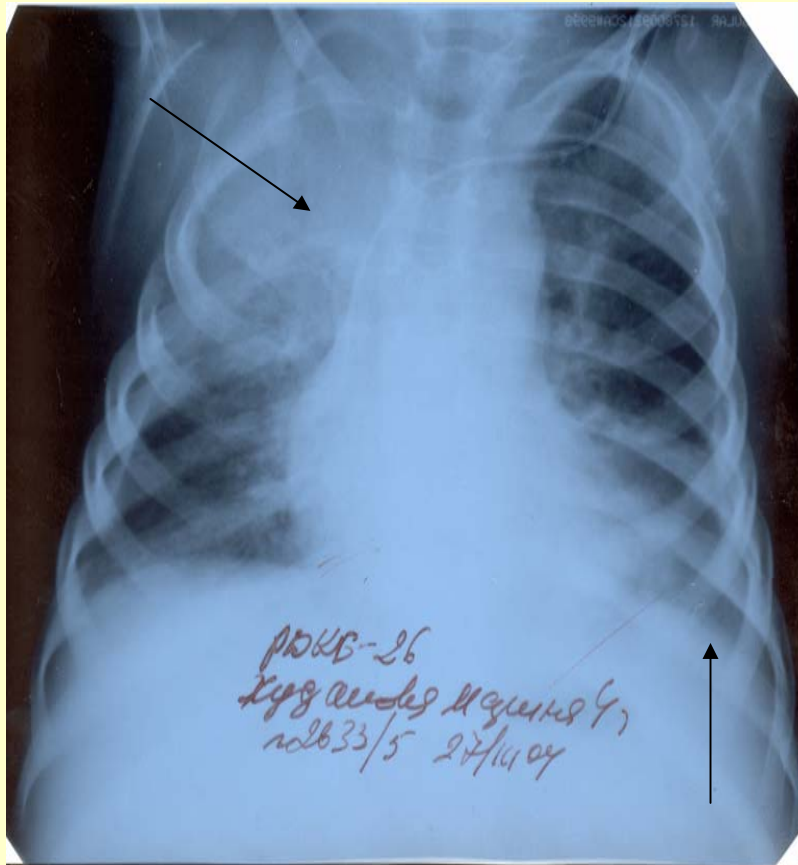
Disseminated mycobacterial infection, soft tissues mycobacteriosis



- 2 months – V BCG;
- 5 months left axillary lymphadenitis;
- 1 year – pneumonia, recurrent purulent skin infection;
- 2 years – left foot abscess with fast spread over the whole leg →
- → **Admission to Russian Children’s Clinical Hospital** – evaluation of CGD and Multifocal mycobacterial infection of lungs and soft tissues;
- Cytological cofirmation (Ziehl-Neelsen positive staining, Acid-fast bacteria revealed twice in the inflammatory discharge);
- Histological findings of soft tissues mycobacteriosis “spread necrosis with multiple Langhane giant cells”
- Admission of long term specific tritherapy with good clinical effect.

M.K. 4 y.o. – Chronic Granulomatous Disease

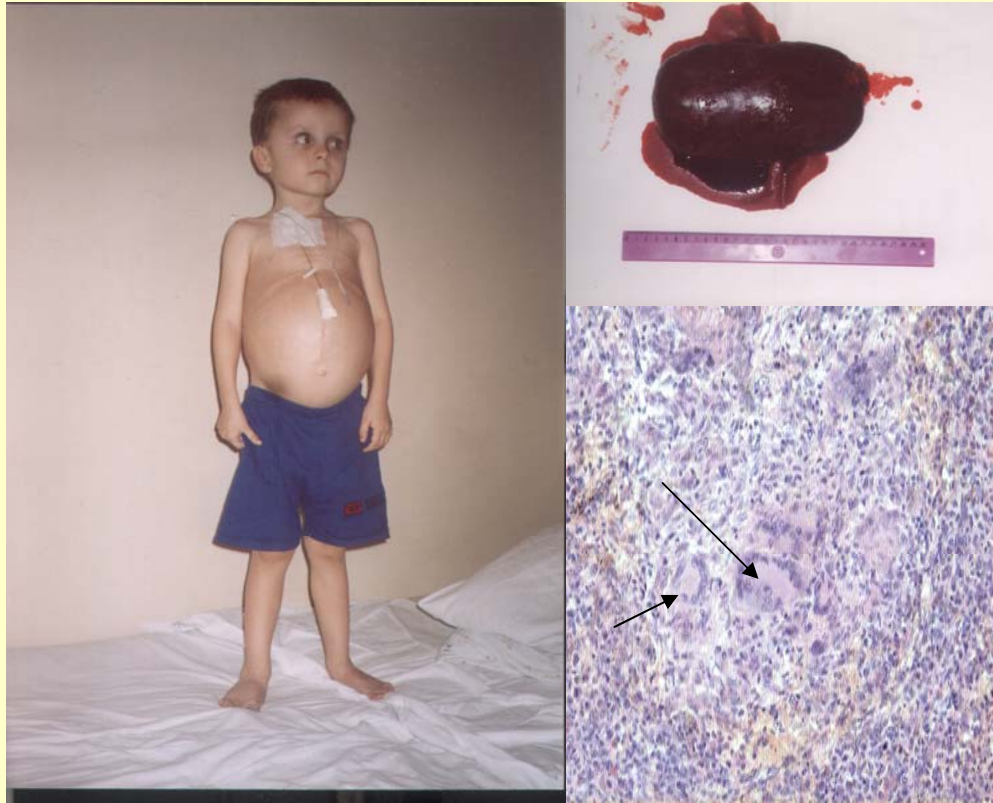
Disseminated mycobacterial infection, mycobacterial osteomyelitis



- 4 days of life – V BCG;
- 1 month – omphalitis, skin infection, stomatitis;
- 1y 8mo – suspicious for intestinal obstruction - laparotomy revealed multiple nodules over peritoneum with histological confirmation of granulomatous inflammation;
- 1y10mo – soft tissues abscess, lymphadenitis with histological signs of tuberculosis;
- 2 y – Multifocal tuberculosis of lymph nodes, lungs, pleura, peritoneum, liver, spleen. CGD diagnosis suspected;
- 4 y - **Admission to Russian Children's Clinical Hospital**, evaluation of the above diagnoses;
- Deterioration of mycobacteriosis – osteomyelitis, spondylitis;
- PCR Mbt tuberculosis positive;
- Admission of the specific pentathery + granulocytes transfusion with partial clinical effect.

Y.S. 4 y.o. - Chronic Granulomatous Disease

Disseminated mycobacterial infection, spleen mycobacteriosis



- 4th day of life – V BCG;
- 1 month – debut of skin and gastrointestinal infections;
- 1 year – goat milk consumption;
- 2 year – left axillary lymph node ulceration with caseous discharge, hepatosplenomegalia;
- 4 years **admission to Russian Children’s Clinical Hospital** – evaluation of CGD and Multifocal mycobacterial infection of lymph nodes, liver and spleen;
- PCR Mbt bovis wild strain positive;
- January 2004 - Splenectomy, mesenteric lymph node and liver biopsy revealed histologic findings of mycobacteriosis.
- Specific quadri therapy + granulocyte transfusion with good clinical effect.

V.R. 1 y.o. – Severe Combined Immunodeficiency T- B- Disseminated mycobacterial infection, Skin mycobacteriosis



- 4th day of life – V BCG;
- 3 months – debut of recurrent infections and failure to thrive, permanent lymphopenia;
- 6 months – appearance of nodular elements over the skin surface;
- 9 months – ulceration of BCG site and fistulas formation above skin nodules with acid-fast positive staining with further scarification
- **Admission to Russian Children's Clinical Hospital** – evaluation of SCID and BCG-osis;
- 11 months – HLA matched sibling bone marrow transplantation;
- Histological findings of skin mycobacteriosis, admission of specific quadri-penta therapy with good clinical effect.

THE REASONS OF HIGH SUSCEPTIBILITY TO MYCOBACTERIAL INFECTION:

- **Specific defects of antimycobacterial immunity presented in patients with Mendelian susceptibility – deficiency of IFN γ , IFN γ R, IL-12, IL-12R and signaling molecules STAT, JAK;**
- **Defects of T-cell function in SCID, HIGM, Nijmegen syndrome patients;**
- **Phagocytes defects (CGD, Hyper IgE syndrome).**

PECULIARITY OF MYCOBACTERIAL INFECTION IN PID PATIENTS:

- **Caused by atypical mycobacteria;**
- **Atypical and multiple sites of infection;**
- **Severity and long term of infection;**
- **Low efficacy for standard specific therapy.**