

The background is a light blue gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The title text is centered in the middle of the slide.

# CUTANEOUS TUBERCULOSIS

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# TUBERCULOSIS

- M TUBERCULOSIS WAS FIRST DESCRIBED BY ROBERT KOCH IN 1882- “TUBERCLE BACILLUS”
- TERM “MYCOBACTERIUM” WAS GIVEN TO A LARGE GROUP OF BACTERIA PRODUCING MOULD LIKE PELLICLES WHEN GROWN ON LIQUID MEDIA IN 1896.
- M TUBERCULOSIS- AEROBIC, NON SPORE FORMING, NON MOTILE, FACULTATIVE, INTRACELLULAR, CURVED ROD LIKE, MEASURING 0.2-0.4MM
- ACID FAST BACILLUS – RED COLOR.
- M TUBERCULOSIS DIVIDES EVERY 15-20 MINS.

# CUTANEOUS TUBERCULOSIS

- CAN BE ACQUIRED ENDOGENOUSLY OR EXOGENOUSLY
- 1.5% OF EXTRAPULMONARY TB
- CAUSATIVE ORGANISMS- MYCOBACTERIUM TUBERCULOSIS, MYCOBACTERIUM BOVIS, BACILLE CALMETTE AND GUERIN VACCINE
- 70% DEVELOP DISEASE DESPITE BEING VACCINATED WITH BCG
- M:F=1.3:1
- MOST PATIENTS DEVELOP DISEASE WITHIN THE FIRST 3 DECADES OF LIFE

# TUBERCULIDS

- HYPERSENSITIVITY REACTIONS THAT TYPICALLY DEVELOP IN PATIENTS WITH MODERATE TO HIGH LEVELS OF IMMUNITY TO THE TUBERCLE BACILLUS.

## Presentation

### Classification system based on route of infection<sup>[17]</sup>

Exogenous route	Tuberculous chancre, LV, and TVC
Endogenous route	
Contiguous spread	Scrofuloderma, Orificial tuberculosis
Hematogenous spread	Acute miliary TB, metastatic tuberculous abscess (gummatous TB), tuberculids, and LV
Lymphatic spread	LV

### Classification system based on bacillary load<sup>[18]</sup>

Multibacillary	Tuberculous chancre, scrofuloderma, orificial TB, acute miliary TB, and gummatous TB
Paucibacillary	TVC, LV, and tuberculids

LV - Lupus vulgaris; TVC - Tuberculosis verrucosa cutis;  
TB - Tuberculosis

## True cutaneous tuberculosis

## Tuberculid

### Primary

TB chancre  
Miliary TB

Lichen scrofulosorum  
Papulonecrotic tuberculid  
Erythema induratum

### Secondary

Scrofuloderma  
Lupus vulgaris  
Tuberculosis verrucosa cutis  
Tubercular gumma (metastatic abscess)  
Orificial tuberculosis

### Others

Erythema nodosum

## Classification of Cutaneous Tuberculosis According to Mode of Infection

### Direct inoculation

Tuberculosis verrucosa cutis

Primary inoculation tuberculosis (tuberculous chancre)

### Contiguous spread

Tuberculosis cutis orificialis

Scrofuloderma

*Lupus vulgaris*

### Hematogenous spread

Acute cutaneous miliary tuberculosis

Metastatic tuberculous abscesses (tuberculous gumma)

Lupus vulgaris

### Tuberculids

Papulonecrotic tuberculid

Erythema induratum of Bazin

*Lichen scrofulosorum*



# TUBERCULOSIS VERRUCOSA CUTIS (PROSECTOR'S WART)

- ERUPTION OF SMALL, RED PAPULES AND NODULES ON THE SKIN, 2-4 WEEKS AFTER INOCULATION, IN A PREVIOUSLY INFECTED AND IMMUNOCOMPETENT HOST
- OCCURS IN **PREVIOUSLY SENSITIZED HOST**
- ENTRY POINT IS USUALLY THE SITE OF TRAUMA, WOUND OR PUNCTURE IN THE SKIN. MOST FREQUENT SITE ARE THE HANDS
- DIAGNOSIS- POSITIVE BIOPSY AND CULTURE OF AFB
- MANTOUX MAY BE POSITIVE



# TBVC



# TUBERCULOUS CHANCRE

- DIRECT INFECTION OF THE SKIN OR MUCOUS MEMBRANES FROM AN OUTSIDE SOURCE OF MYCOBACTERIA
- THE CHANCRES ARE FIRM SHALLOW ULCERS WITH A GRANULAR BASE.
- APPEARS ABOUT 2-4 WEEKS AFTER MYCOBACTERIA ENTER THROUGH BROKEN SKIN. A FIRM, PAINLESS, REDDISH-BROWN, SLOW GROWING PAPULE OR NODULE ARISES, WHICH MAY DEVELOP INTO AN ULCER
- IT DEVELOPS IN INDIVIDUALS **NOT PREVIOUSLY SENSITIZED** TO THE MYCOBACTERIUM, OCCURRING MOST OFTEN IN CHILDREN IN ENDEMIC AREAS OF LOW VACCINATION COVERAGE

# TUBERCULOUS CHANCRE



# LUPUS VULGARIS

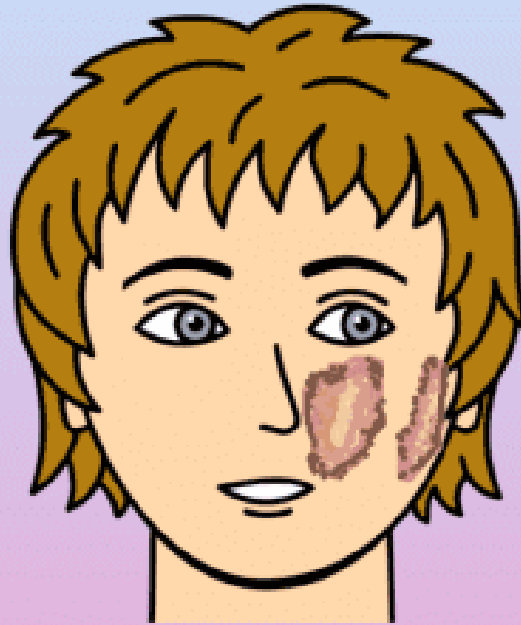
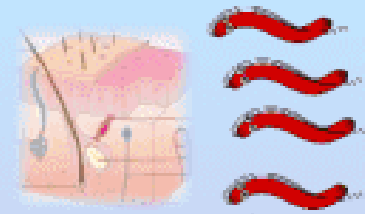
- MOST COMMON FORM OF CUTANEOUS TB IN ADULTS
- STARTS AS PAINLESS REDDISH BROWN NODULES, SLOWLY ENLARGES TO BECOME IRREGULAR PAINFUL PLAQUES
- MOST OFTEN ON THE FACE AROUND NOSE, EYELIDS, LIPS, CHEEKS, EARS AND NECK
- PERSISTENT AND PROGRESSIVE FORM OF CUTANEOUS TB, CAUSED BY **HEMATOGENOUS, LYMPHATIC, OR CONTIGUOUS SPREAD FROM ELSEWHERE IN THE BODY.**
- CAN APPEAR AT THE SITE OF BCG VACCINATION
- DUE TO INADEQUATELY TREATED PRE- EXISTING TUBERCULOSIS
- DIASCOPY- “CHARACTERISTIC APPLE- JELLY NODULE”

# LUPUS VULGARIS

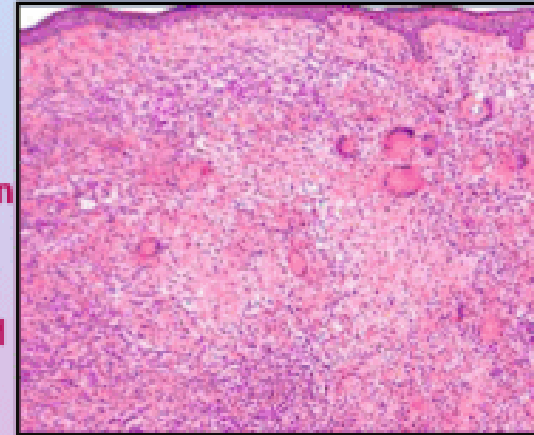
- BIOPSY- TUBERCULOID GRANULOMA WITH FEW BACILLI; MANTOUX- POSITIVE
- CAUSES SIGNIFICANT DESTRUCTION AND DISFIGUREMENT
- SQUAMOUS CELL CARCINOMA CAN DEVELOP, 25-30 YEARS LATER IN ~10% OF PATIENTS

# Lupus Vulgaris

Common form of cutaneous reinfection with *Mycobacterium tuberculosis*

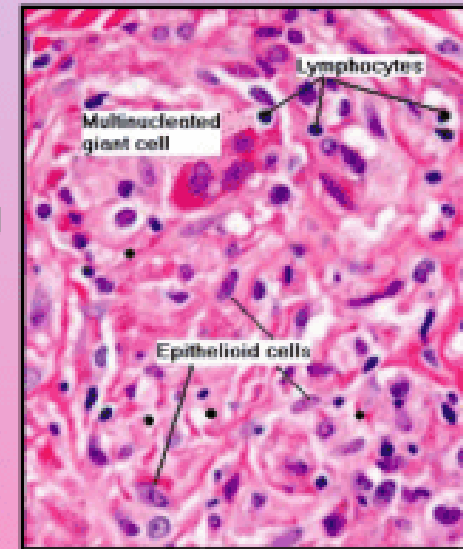


Soft reddish brown nodules which enlarge to form irregularly shaped plaques

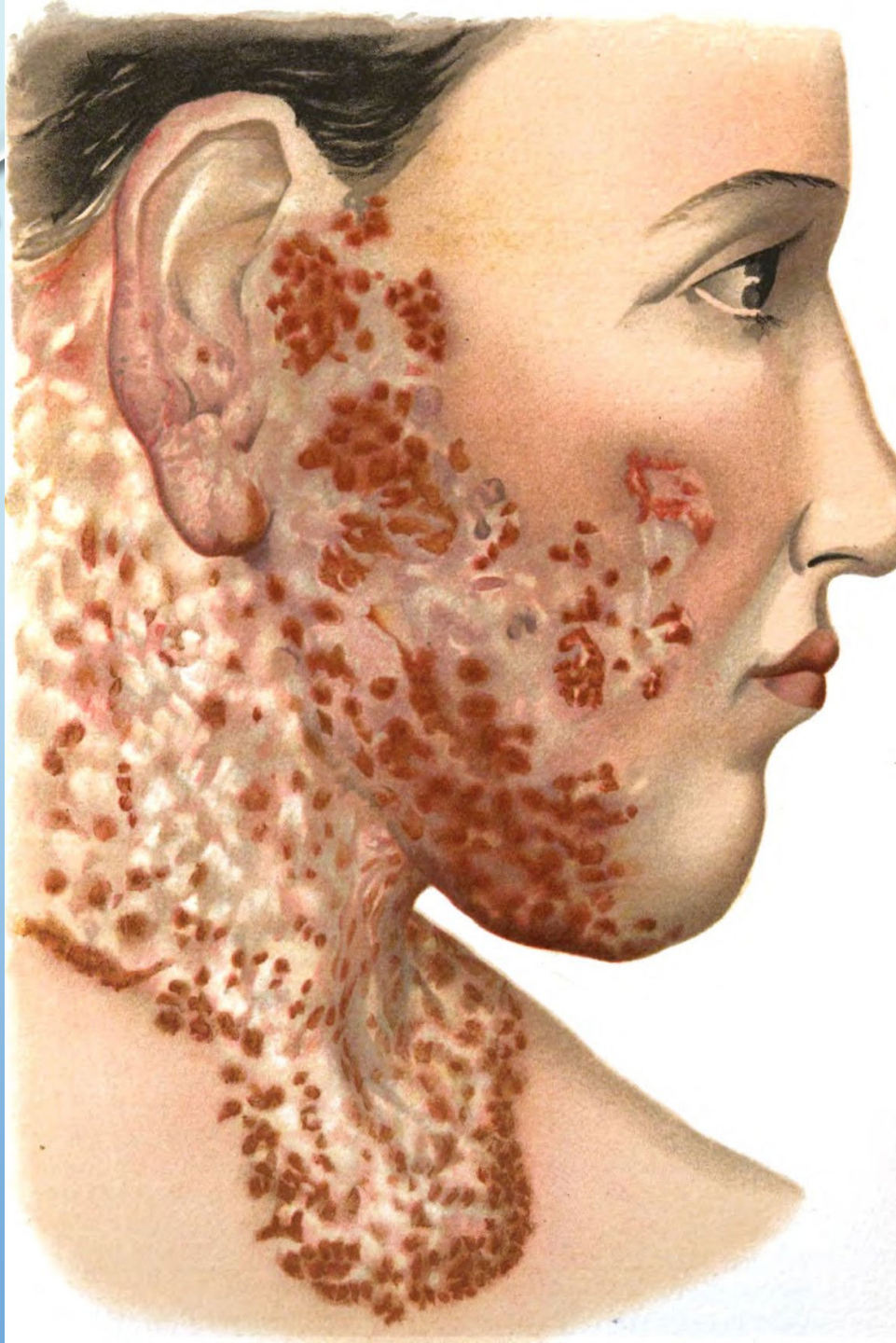


Tuberculoid granulomas

Common in young adults  
90% in head and neck region  
Also in extremities and buttock









# LUPUS VULGARIS



# SCROFULODERMA

- CAUSED BY TUBERCULOSIS INVOLVEMENT OF THE SKIN BY DIRECT EXTENSION, USUALLY FROM UNDERLYING TUBERCULOUS LYMPHADENITIS.
- AN ASYMPTOMATIC REDDISH SWELLING, WHICH BREAKS DOWN TO FORM SINUSES, FISTULAE OR TUBERCULOUS ULCERS
- CHARACTERISTIC CASEOUS MATERIAL DISCHARGES FROM LESIONS
- MOST COMMON SITES- NECK, CHEST



# SCROFULODERMA





# TUBERCULOSIS CUTIS ORIFICIALIS

- CONTIGUOUS SPREAD OF TB FROM VISCERA
- OCCURS AT THE MUCOCUTANEOUS BORDERS OF THE NOSE, MOUTH, ANUS, URINARY MEATUS, AND VAGINA, AND ON THE MUCOUS MEMBRANE OF THE MOUTH OR TONGUE.



# ORIFICIAL TUBERCULOSIS



Figure 1. Large fungating lesion on the upper lip.



# TUBERCULIDS

- HYPERSENSITIVITY REACTION TO M TUBERCULOSIS OR ITS PRODUCTS IN PATIENTS WITH SIGNIFICANT IMMUNITY.
- CRITERIA
  - SKIN LESION MUST SHOW TUBERCULOID HISTOPATHOLOGY
  - M TUBERCULOSIS MUST NOT BE DEMONSTRATED IN THE LESION
  - TUBERCULIN TEST MUST BE STRONGLY POSITIVE
  - TREATMENT OF UNDERLYING TB FOCUS MUST LEAD TO RESOLUTION OF SKIN LESION



# LICHEN SCROFULOSORUM

- SECOND MOST COMMON PATTERN OF CUTANEOUS TB IN CHILDREN
- RARE TUBERCULID- PRESENTS AS A **LICHENOID** ERUPTION OF MINUTE PAPULES IN CHILDREN AND ADOLESCENTS WITH TUBERCULOSIS
- THE ERUPTIONS ARE USUALLY ASYMPTOMATIC, CLOSELY GROUPED, SKIN- COLORED TO VIOLACEOUS/REDDISH BROWN PAPULES, OFTEN PERIFOLLICULAR
- MAINLY FOUND ON THE ABDOMEN, CHEST, BACK, AND PROXIMAL ASPECTS OF THE LIMBS
- DIFFERENTIAL- LICHEN PLANUS, PAPULAR SARCOIDOSIS
- A SUPERFICIAL INFLAMMATORY REACTION ABOUT HAIR FOLLICLES AND SWEAT DUCTS WHICH MAY INCLUDE TUBERCULOID GRANULOMAS. ACID-FAST ORGANISMS ARE NOT USUALLY SEEN OR CULTURED FROM THE LESIONS. CASEATION IS RARE

# LICHEN SCROFULOSORUM



# PAPULONECROTIC TUBERCULID

- CROPS OF RECURRENT, CRUSTED, SYMMETRIC ERUPTION OF NECROTIZING SKIN PAPULES
- INVOLVING PRIMARILY THE BUTTOCKS AND EXTENSOR SURFACES OF THE ARMS AND LEGS
- HEAL WITH VARIOLIFORM AND PITTING SCARRING AFTER ABOUT 6 WEEKS.





# ERYTHEMA INDURATUM OF BAZIN

- IT OCCURS MAINLY IN WOMEN,
- PRESENTS AS RECURRING NODULES OR LUMPS ON THE BACK OF THE LEGS THAT MAY ULCERATE AND SCAR.
- IT IS A TYPE OF [NODULAR VASCULITIS](#)/ PANNICULITIS.

# ERYTHEMA INDURATUM



# MILIARY TUBERCULOSIS

- IT IS A RARE HAEMATOGENOUS DISSEMINATION OF TB
- USUALLY AFFECTS-
  - YOUNG CHILDREN
  - IMMUNOCOMPROMISED PATIENTS
  - CONCURRENT HIV INFECTION
  - FOLLOWING VIRAL INFECTION
- PATIENT DEVELOPS
  - CROPS OF BLUISH PAPULES, VESICLES, PUSTULES
  - ERYTHEMATOUS NODULES
  - HEMORRHAGIC LESIONS



# MILIARY TUBERCULOSIS

- SKIN LESIONS ARE SMALL (MILLET-SIZED) RED SPOTS THAT DEVELOP INTO ULCERS AND [ABSCESSSES](#)
- THE PATIENT IS GENERALLY SICK
- PROGNOSIS IS POOR (MANY PATIENTS DIE EVEN IF DIAGNOSED AND TREATED)

# MILIARY TUBERCULOSIS



# TUBERCULOUS GUMMA

- HEMATOGENIC DISSEMINATION FROM A PRIMARY FOCUS
- ALSO KNOWN AS METASTATIC TUBERCULOUS ABSCESS
- FIRM, SINGLE OR MULTIPLE NON-TENDER ERYTHAEMATOUS NODULES
- OFTEN PRESENT IN MALNOURISHED CHILDREN OR IMMUNE DEFICIENT ADULTS
- OCCASIONALLY, THE LESIONS BREAK DOWN AND DISCHARGE THEIR CONTENTS OR PERSIST AND FORM SINUSES



# TUBERCULOUS GUMMA



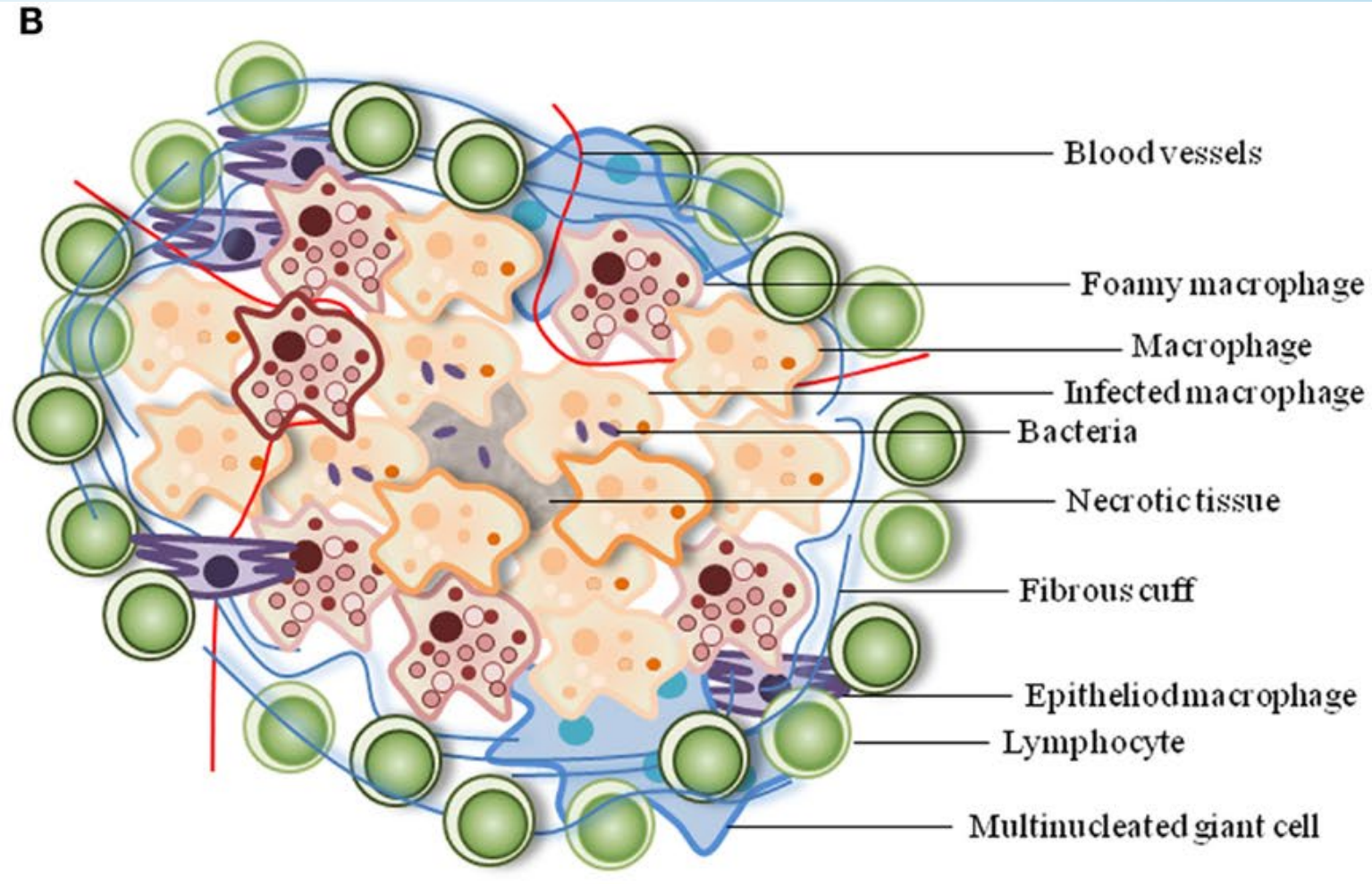
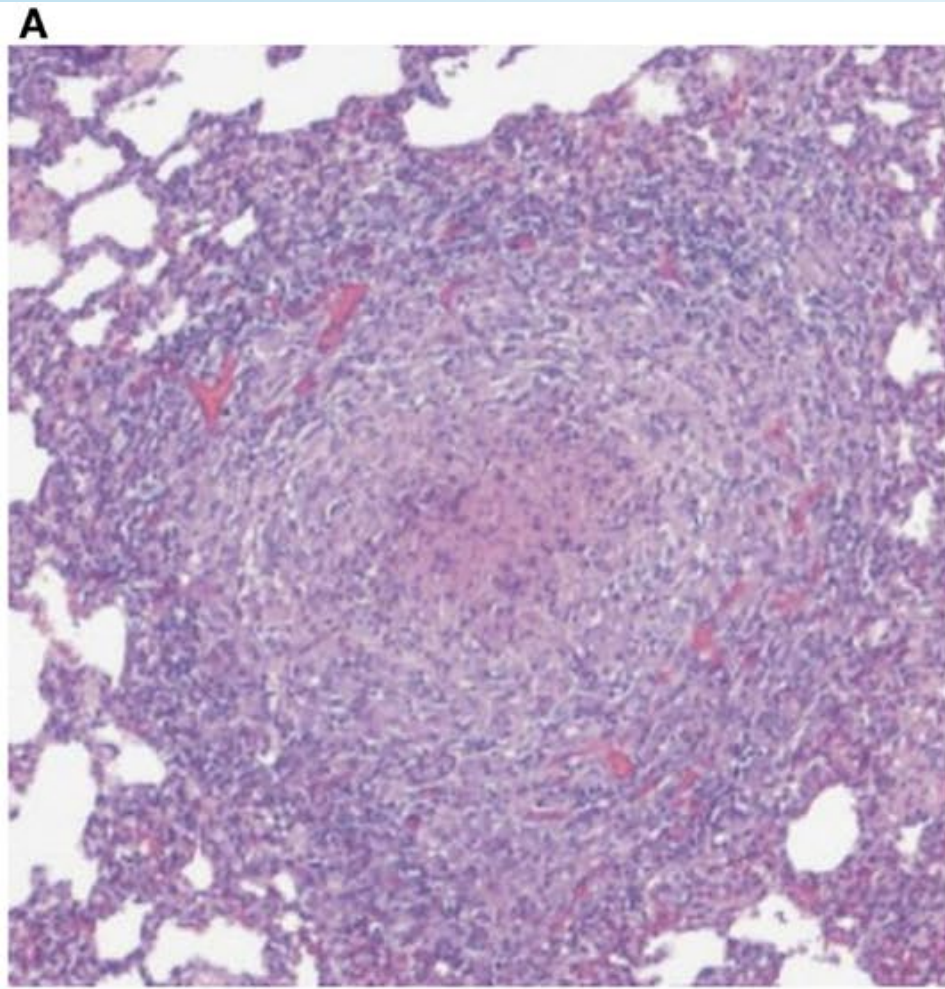
# DIAGNOSIS

- SKIN BIOPSY- TYPICAL TUBERCLES ARE CASEATING EPITHELOID GRANULOMAS CONTAINING ACID FAST BACILLI. THESE ARE DETECTED BY TISSUE STAINING, CULTURE AND **PCR**.
- TUBERCULIN SKIN TEST
- QUANTIFERON GOLD
- X RAY
- SPUTUM CULTURE



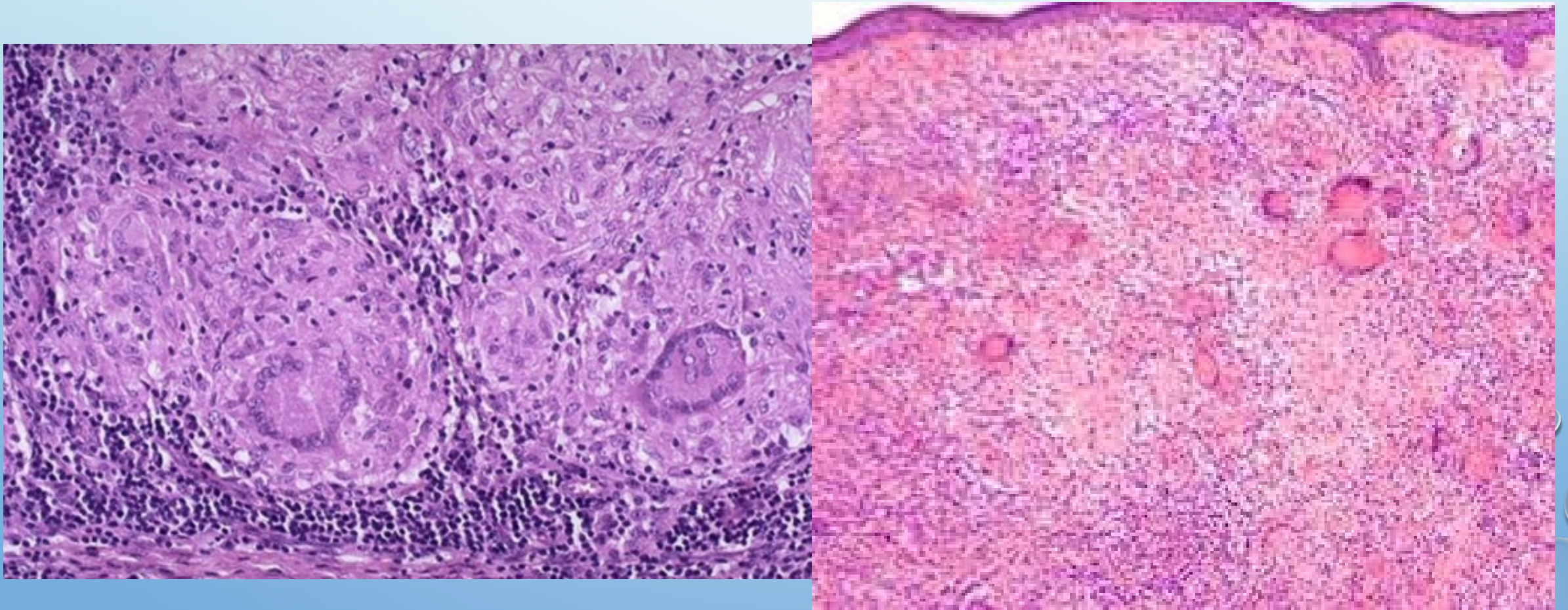
# TUBERCULOID GRANULOMA

- AN EPITHELOID GRANULOMA COMPOSED OF A CENTRAL ZONE CONTAINING GIANT CELLS, WITH OR WITHOUT CASEATION AND A PERIPHERAL ZONE OF LYMPHOCYTES AND FIBROBLASTS





# PATHOLOGY OF LUPUS VULGARIS





# TUBERCULIN TEST

- THE MANTOUX TUBERCULIN SKIN TEST- STANDARD METHOD OF DETERMINING WHETHER A PERSON IS INFECTED WITH M TB.
- TUBERCULIN IS MADE FROM PROTEINS DERIVED FROM INACTIVE TUBERCLE BACILLI
- 0.1 ML OF 5 UNITS OF TUBERCULIN INJECTED UNDER THE SKIN
- THE SKIN REACTION SHOULD BE READ BETWEEN 48 TO 72 HOURS AFTER INJECTION
- THE REACTION SHOULD BE MEASUREMENT OF INDURATION IN MILLIMETRES (NOT ERYTHEMA)

# TUBERCULIN TEST INTERPRETATION

- POSITIVE TEST >10MM DIAMETER
  - CLINICAL OR LATENT TB
  - CONTACT WITH ENVIRONMENTAL MYCOBACTERIA/ VACCINATION
- LOW SENSITIVITY ( FALSE NEGATIVE)
  - IMMUNOCOMPROMISED
  - PATIENTS WITH SEVERE ILLNESS
  - ACTIVE TB
  - HIV PATIENT
- ❖ **SENSITIVITY- 58.9%**
- ❖ **SPECIFICITY-62.5%**

# TREATMENT

- SAME AS THAT FOR SYSTEMIC TB- LONG, MULTIDRUG THERAPY
- TREATMENT DIVIDED INTO 2 PHASES
  - AN INTENSIVE OR BACTERICIDAL PHASE, DESIGNED TO RAPIDLY REDUCE THE TOTAL BODY BURDEN OF M TB. (2MONTHS USUALLY)
  - A CONTINUATION OR STERILIZATION PHASE (4 MONTHS)
- MAIN DRUGS USED- ISONIAZID, RIFAMPICIN, PYRAZINAMIDE, AND EITHER ETHAMBUTOL OR STREPTOMYCIN

# DOTS

- CURRENT STRATEGY- DIRECTLY OBSERVED TREATMENT SHORT COURSE
- MOST DOTS HAVE THRICE WEEKLY SCHEDULES
- FOR CUTANEOUS TUBERCULOSIS- CATEGORY III IS RECOMMENDED- 2H3+R3+Z3 AND 4H3+R3

RIFAMPICIN (R-450MG), ISONIAZID (H-600MG), PYRAZINAMIDE (Z-1500MG)- 3 DAYS/ WEEK FOR 2 MONTHS, THEN

RIFAMPICIN (R-450MG), ISONIAZID (H-600MG)- 3 DAYS/ WEEK- 4 MONTHS



# ATYPICAL MYCOBACTERIAL INFECTIONS

- INFECTIONS CAUSED BY A SPECIES OF MYCOBACTERIUM OTHER THAN *MYCOBACTERIUM TUBERCULOSIS* AND *M LEPRAE*
- *MYCOBACTERIUM AVIUM-INTRACELLULARE*
- *MYCOBACTERIUM KANSASII*
- *MYCOBACTERIUM MARINUM*
- *MYCOBACTERIUM ULCERANS*
- *MYCOBACTERIUM CHELONAE*
- *MYCOBACTERIUM FORTUITUM*
- *MYCOBACTERIUM ABSCESSUS*

# *MYCOBACTERIUM MARINUM*

- SWIMMING POOL/ FISH TANK GRANULOMA
- DUE TO RECREATIONAL OR OCCUPATIONAL EXPOSURE TO CONTAMINATED FRESHWATER OR SALTWATER
- USUALLY, A SINGLE LUMP OR PUSTULE THAT BREAKS DOWN TO FORM A CRUSTY SORE OR ABSCESS
- CAN HAVE SATELLITE LESIONS IN A SPOROTRICHIOD DISTRIBUTION
- COMMON SITES- FINGERS, KNUCKLES, FEET, KNEES, ELBOWS
- RARELY CAUSES RED, SWOLLEN AND TENDER JOINTS (BURSITIS, TENOSYNOVITIS, ARTHRITIS, OSTEOMYELITIS)







# MYCOBACTERIUM ULCERANS

- ALSO KNOWN AS BURULI ULCER, KUMASI, **BAIRNSDALE ULCER**
- MOST COMMON IN CENTRAL AND WEST AFRICA AROUND AREAS OF LUSH VEGETATION AND SWAMPS. ALSO SEEN IN AUSTRALIA
- SOLITARY, PAINLESS AND SOMETIMES ITCHY NODULE OF 1–2 CM DEVELOPS ABOUT 7–14 DAYS AFTER INFECTION THROUGH BROKEN SKIN
- OVER ONE TO TWO MONTHS THE NODULE MAY BREAK DOWN TO FORM A SHALLOW ULCER THAT SPREADS RAPIDLY AND MAY INVOLVE UP TO 15% OF THE PATIENT'S SKIN SURFACE



# DIAGNOSIS AND MANAGEMENT

- BIOPSY, CULTURE, PCR
- *M MARINUM*- TETRACYCLINES, FLOROQUINOLONES, MACROLIDES (CLARITHROMYCIN), RIFAMPICIN, SULPHONAMIDES (COTRIMOXAZOLE)
- TREATMENT -4-6 WEEKS/ 2 MONTHS
- TREATMENT OF *MYCOBACTERIUM ULCERANS* IS MOST SUCCESSFUL IF TREATMENT IS STARTED IN LESIONS LESS THAN 6 MONTHS OLD WITH A DIAMETER LESS THAN 10 CM.
- **RIFAMPICIN** AND STREPTOMYCIN RECOMMENDED
- SURGERY IS USED AS AN ADJUNCT TO ANTIBIOTIC TREATMENT IN PATIENTS WITH SEVERE INFECTION

THANK YOU