

Syphilis



Lecture for general surgery
Chorna I.O.
Poltava



Syphilis

- Aka *lues*
- Contagious, sexually transmitted disease
- Spirochete *Treponema pallidum*
- Enters through skin or mucous membrane where primary manifestations are seen



TREP-STRIP





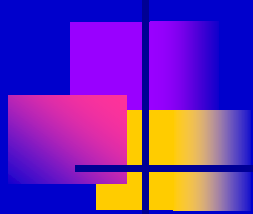
Treponema pallidum

- Spiral spirochete that is mobile
- # of spirals varies from 4 to 14
- Length 5 to 20 microns
- Can be seen on fresh primary or secondary lesions by darkfield microscopy or fluorescent antibody techniques



Treponema pallidum

- Motility has three movements
- Projection and rotation in the direction of the long axis
- Bending or twisting from side to side
- Pathogenic in apes, humans, and rabbits





Syphilis epidemiology

- Major health problem throughout world
- U.S. 2.6 cases per 100,000 in 1999
- Lowest level ever recorded
- Concentrated in 28 counties SE U.S.
- Mainly gay men and crack cocaine users

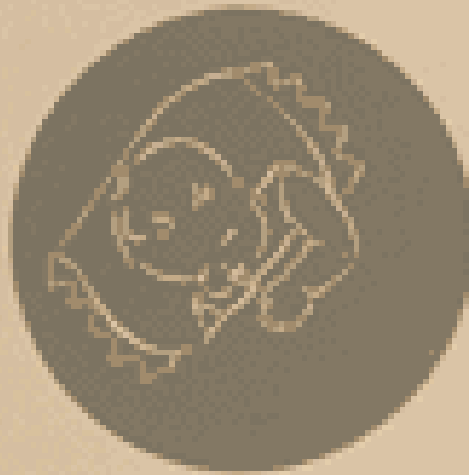




Syphilis epidemiology

- Enhances risk of transmission of HIV
- HIV testing recommended in all patients with syphilis
- Reportable disease, contact tracing

STAMP OUT SYPHILIS



EVERY BABY IS
ENTITLED TO BE
BORN HEALTHY



BLOOD TEST &
EXAMINATION
SHOULD BE
MADE BEFORE
MARRIAGE BY
YOUR DOCTOR
OR

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Serologic Tests

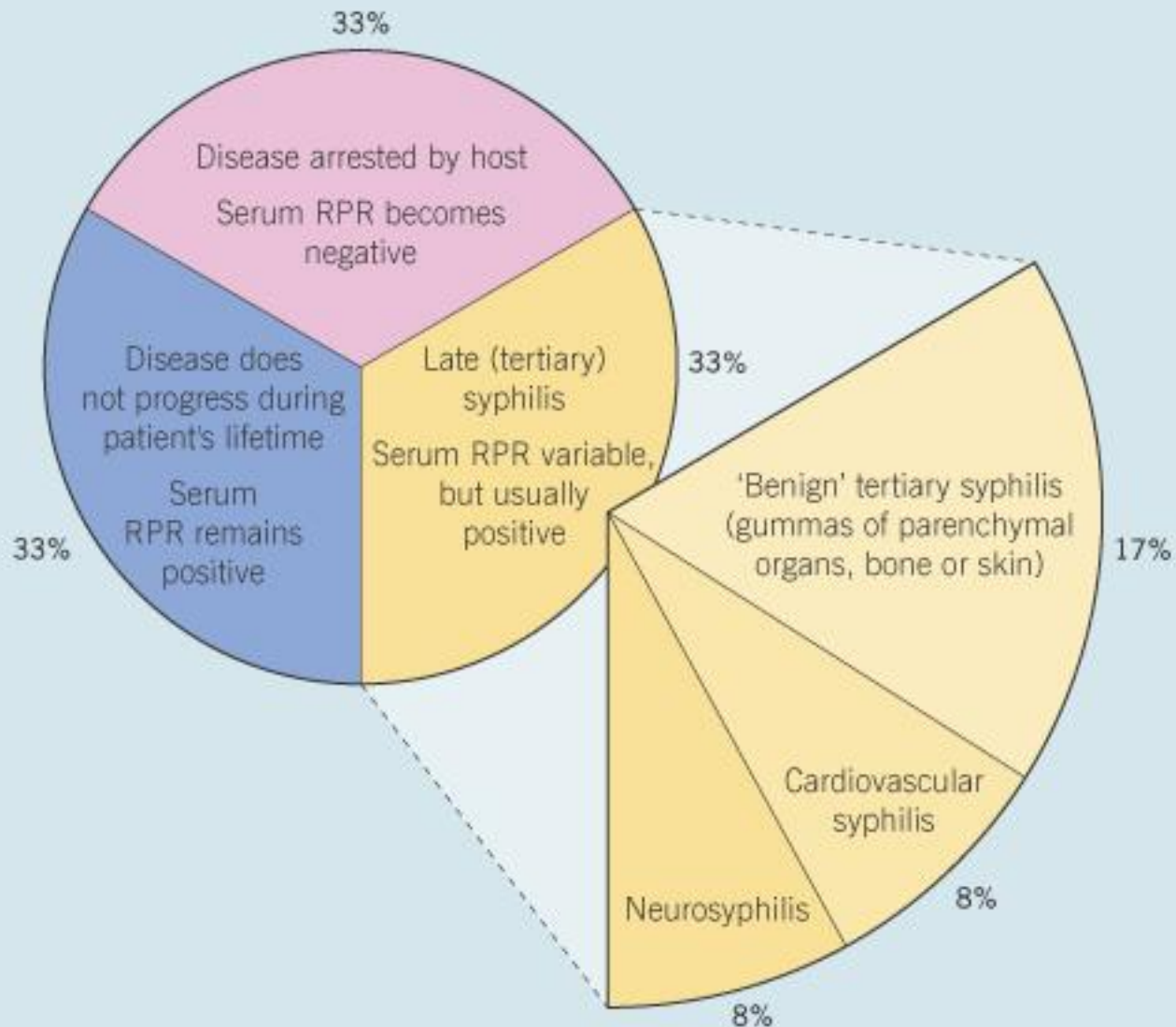
- Reveal patients immune status *not* whether they are currently infected
- Use lipoidal antigens rather than *T. pallidum* or components of it; *non-treponemal antigen tests*
- RPR; rapid plasma reagin
- VDRL; Venereal Disease Research Laboratory



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NATURAL HISTORY OF UNTREATED SYPHILIS

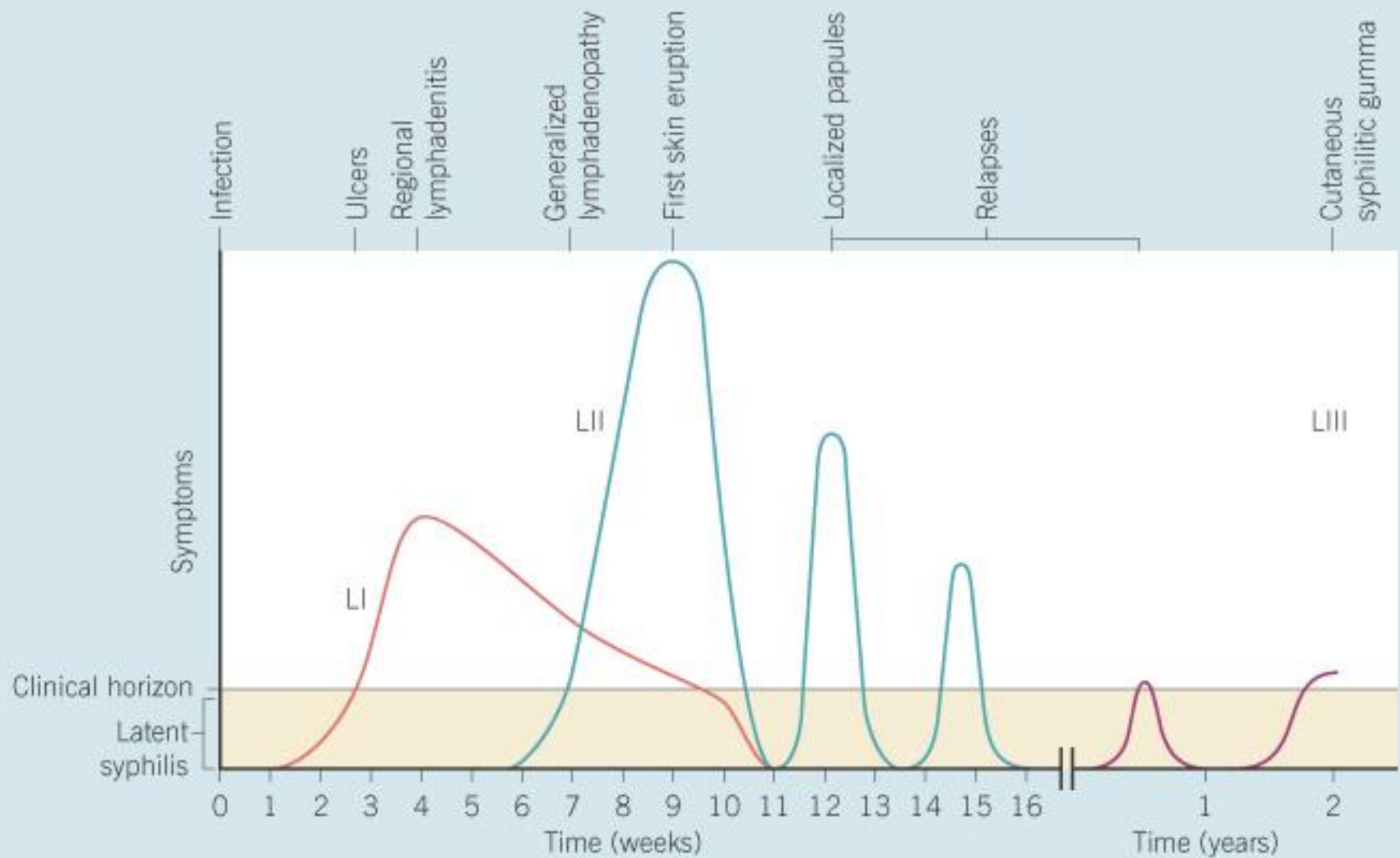




Serologic Tests

- Positive within 5 to 6 weeks after infection
- Strongly positive in secondary phase
- Strength of reaction is stated in dilutions
- May become negative with treatment or over decades

CLINICAL MANIFESTATIONS OF EARLY SYPHILIS

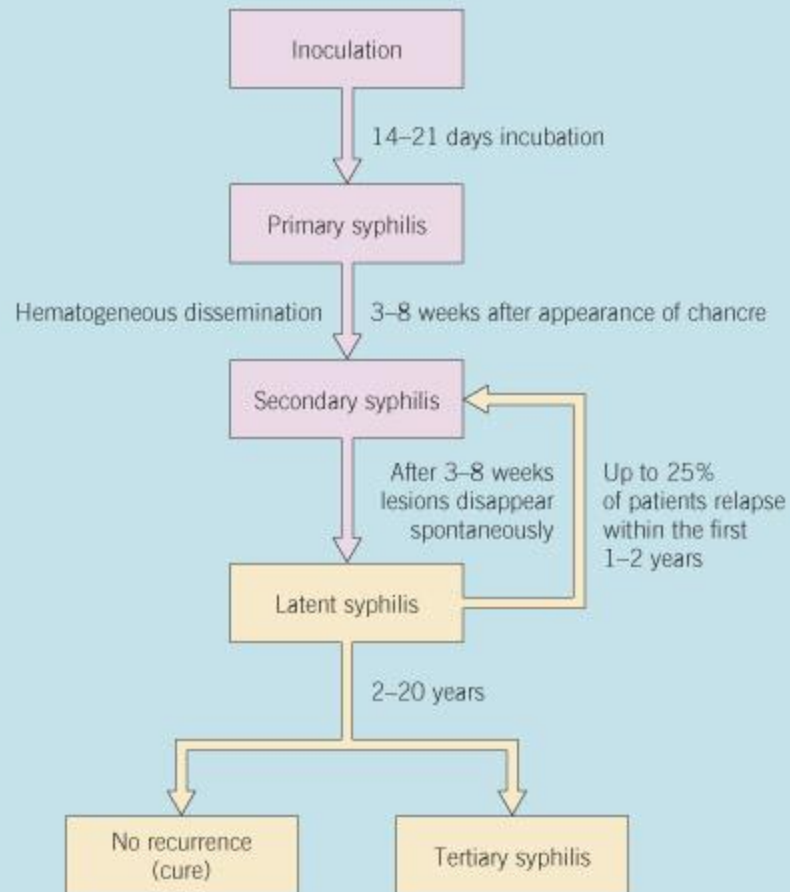




Serologic Tests

- To improve sensitivity and specificity tests using a specific treponemal antigen devised
- MHA-TP: microhemagglutination assay for *T. pallidum*
- FTA-ABS: fluorescent treponemal antibody absorption test
- All positive nontreponemal test results should be confirmed with a specific treponemal test

NATURAL HISTORY OF UNTREATED SYPHILIS





Serologic Tests

- Treponemal tests become positive early, useful in confirming primary syphilis
- Remain positive for life, useful in diagnosing late disease
- Treatment results in loss of positivity in 13-24% of patients



Biologic False-Positive Test Results

- Positive STS in persons with no history or clinical evidence of syphilis
- Acute BFP: those that revert to negative in less than 6 months
- Chronic BFP: persist > 6 months



BFP Test Results in Syphilis

- Acute BFP
- Vaccinations
- Infections
- pregnancy
- Chronic BFP
- Connective tissue disease (SLE)
- Liver disease
- Blood transfusions
- IVDA



Cutaneous Syphilis

- Chancre is usually the first cutaneous lesion
- 18 to 21 days after infection
- Round indurated papule with eroded surface that exudes a serous fluid
- Cartilage-like consistency
- Usually painless (**Hunterian chancre** is “classic” heals without scarring)





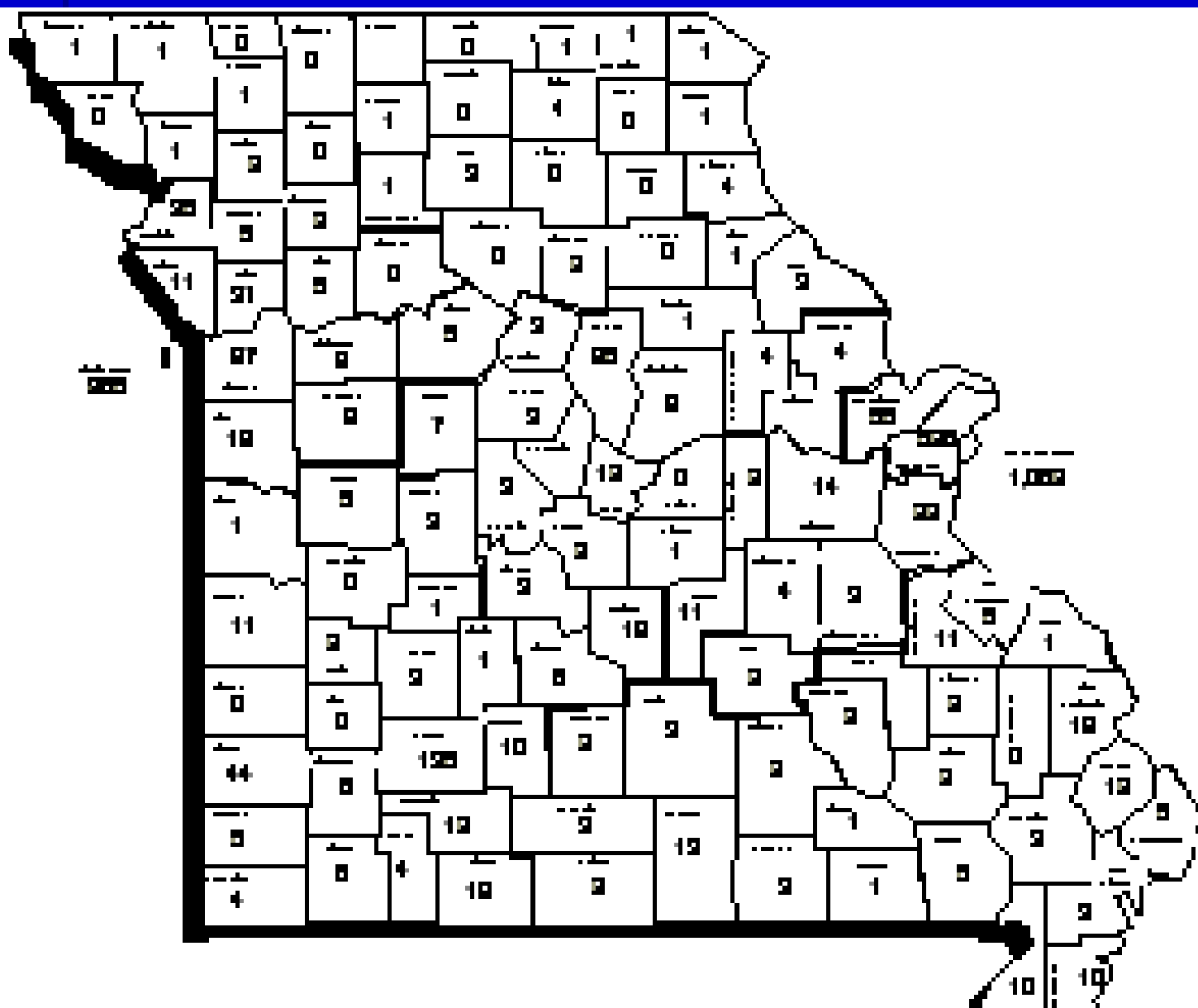
Chancere

- Inguinal adenopathy 1-2 weeks after chancre
- Generally occur singly, may be multiple
- Diameter mm to cm



Chancres

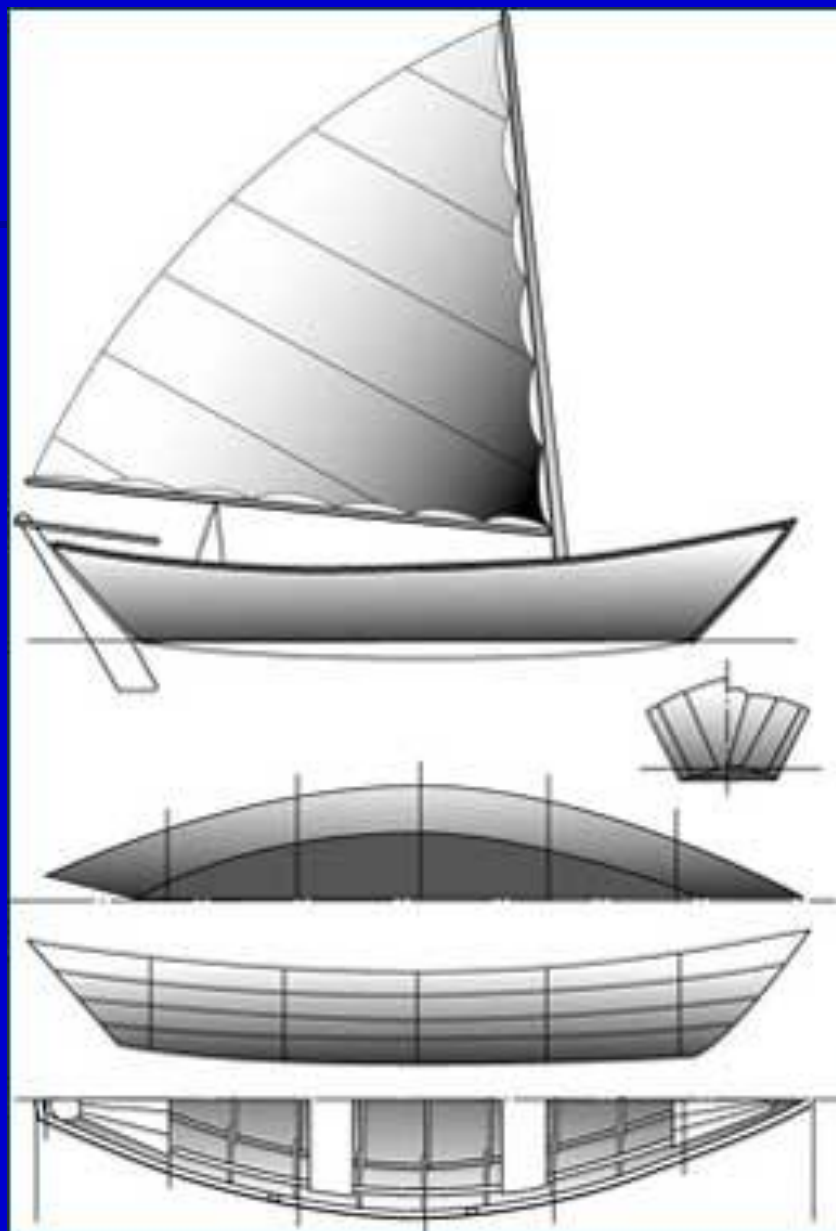
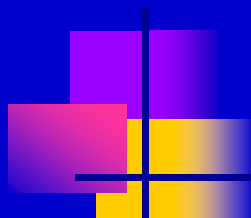
- Women genital chancre less often observed due to location within the vagina and cervix
- Edema of labia may occur





The "Dory Flop"

- “a chancre in the prepuce, being too hard to bend, will flip over all at once when the prepuce is drawn back”
- Resembles the movement of a dory as it is being turned upside down







Chancere

- Untreated, the chancre heals spontaneously in 1 to 4 months
- Constitutional symptoms begin just as chancres disappear
- Extragenital chancre: may be larger, frequently on lips, rarely tongue, tonsil, breast, finger, anus.



Chancre Histology

- Ulcer covered by neutrophils and fibrin
- Dense infiltrate of lymphocytes and plasma cells
- Spirochetes in untreated primary syphilis with silver stains; Warthin-Starry
- Direct fluorescent antibody tissue test (DFAT-TP)- serous exudate collected on a slide sent for exam



Serology

- Nontreponemal tests positive 50%
- Treponemal tests positive 90%
- Positivity depends upon duration of infection, if chancre has been present for several weeks, test is usually positive



Chancre vs. Chancroid

- Incubation 3 weeks
 - Painless, no ulcer, no surrounding inflammatory zone
 - Oval, hard
 - Lymphadenopathy may be bilateral, nontender, nonsuppurative
- Incubation 4-7 days
 - Ulcer inflamed, very painful, inflammatory zone
 - Soft, covered by a membrane
 - Lymphadenopathy unilateral, tender, suppurative



Ddx in Syphilis

- **Chancroid**; multiple lesions, may coexist with chancre, must r/o syphilis
- **Granuloma Inguinale**; indurated nodule that erodes, soft red granulation tissue, Donovan's bodies in macrophages with Wright's or Giemsa's stain
- **Lymphogranuloma Venereum**; small, painless, superficial non indurated ulcer, primary lesions followed in 7 to 30 days by adenopathy
- HSV; grouped vesicles, burning pain

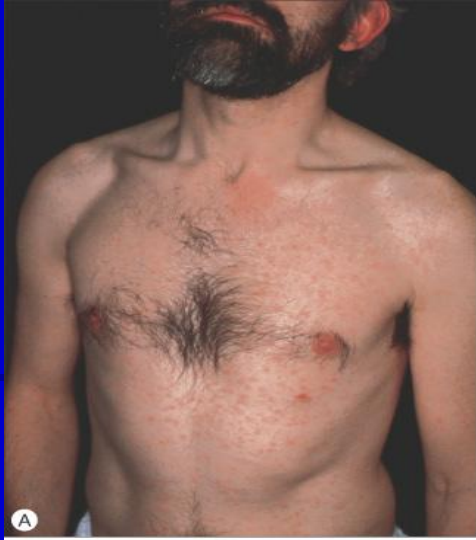






Secondary Syphilis

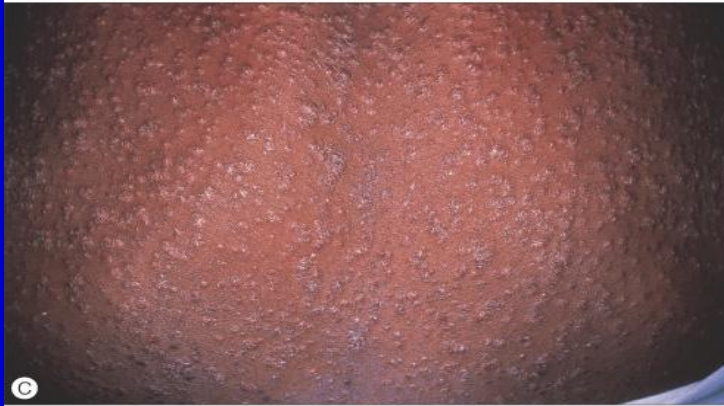
- Skin manifestations in 80% called *sypilids*
- Symmetric, generalized, superficial, macular transient; later papular, pustular
- Early on face, shoulders, flanks, palms and soles, anal or genital areas



A



B



C



E



D





Secondary Syphilis

Macular Eruptions

- **Exanthematic erythema** 6-8 weeks after chancre, extends rapidly, may last hours to months
- Round indistinct, slightly scaling ham-colored macules
- Pain, burning absent, pruritus may be present
- Generalized shotty adenopathy



Secondary Syphilis

Papular Eruptions

- Arise later than macular, raw-ham, round, 2-5mm or more in diameter, slightly raised, smooth or thick scale
- Face and flexures of arms and legs, trunk
- Palmar and plantar yellowish-red spots
- Ollendorf's sign; papule tender to touch of a blunt probe



Secondary Syphilis

Papular Eruptions

- Papulosquamous syphilids may produce a psoriasiform eruption
- Follicular or lichenoid syphilids appear as minute scale-capped papules
- Tend to be disseminated, but may be localized, asymmetrical, con figurate, hypertrophic, confluent.



Secondary Syphilis

Papular Eruptions



- Annular syphilid mimics sarcoidosis, more common in blacks
- Cheeks, angle of mouth, annular, gyrate, ridges; “nickels and dimes”
- Pustular syphilid; rare, face, trunk, extremities red small crust-covered ulceration
- Rupial syphilid; superficial ulceration is covered with a pile of terraced crusts resembling an oyster shell.



Secondary Syphilis

Papular Eruptions

- Lues Maligna; rare, severe ulcerations, pustules, or rupioid lesions, accompanied by severe constitutional symptoms.
- Condylomata lata; papular mass, weeping, gray 1-3cm, groin, anus (not vegetative like condylomata acuminata)
- Syphilitic alopecia; irregular, scalp has a moth-eaten appearance 5% of pts



Secondary Syphilis

Mucous Membrane



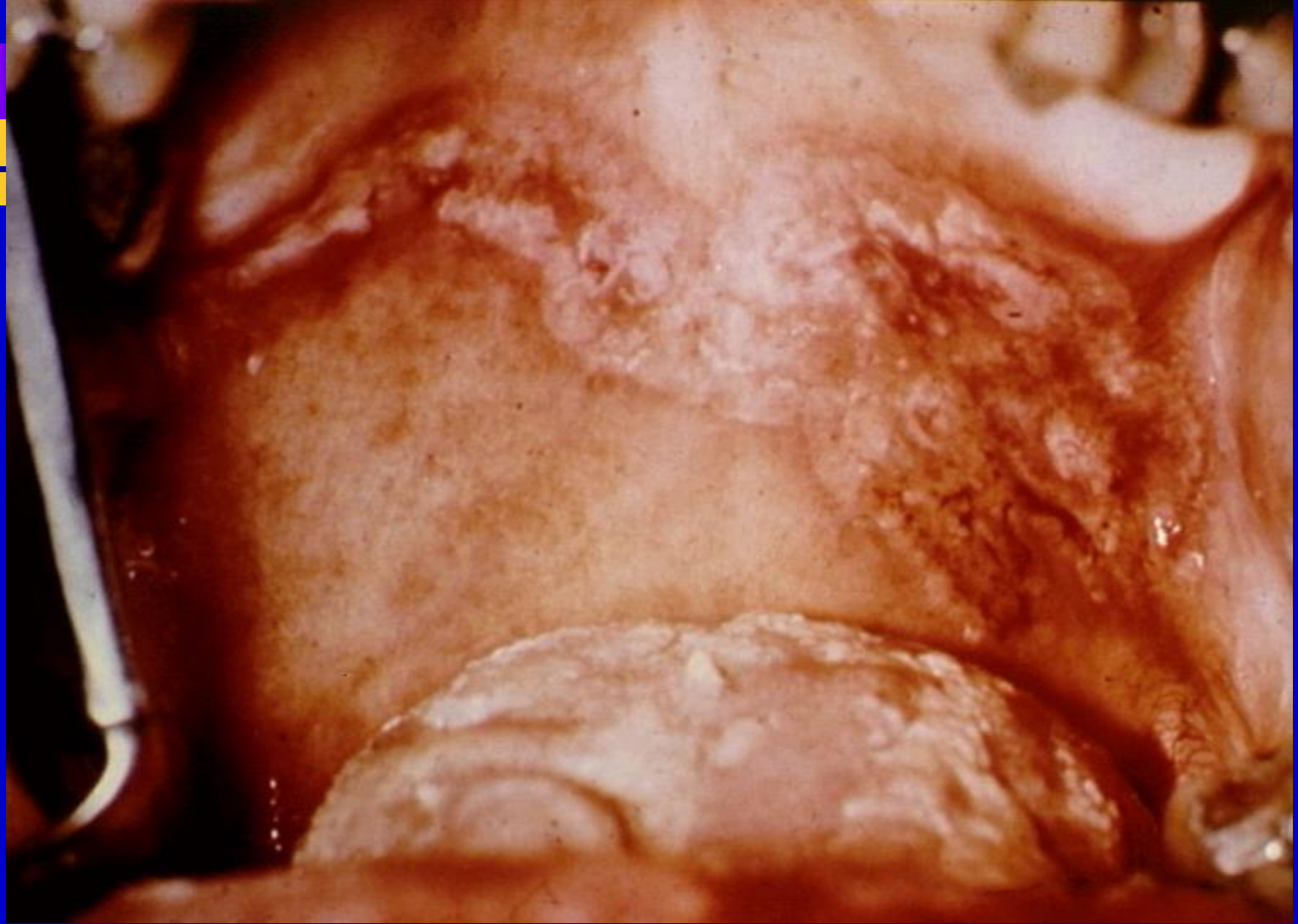
- Present in 1/3 of secondary syphilis
- Most common is “syphilitic sore throat”
- Diffuse pharyngitis, hoarseness
- Tongue; patches of desquamation of papillae
- Ulcerations of tongue and lips in late stages



Secondary Syphilis

Mucous membrane

- Mucous patches are the most characteristic mucous membrane lesions; macerated, flat. Grayish, rounded erosions covered by a delicate, soggy membrane.
- Highly infectious, occur on tonsils, tongue, pharynx, gums, lips, and buccal areas, or on the genitalia







Secondary Syphilis

Systemic Involvement

- Lymphadenopathy common.
- Acute Glomerulonephritis, gastritis, proctitis, hepatitis, meningitis, SNHL, iritis, uveitis, optic neuritis, Bell's palsy, pulmonary nodular infiltrates, osteomyelitis, polyarthrititis.



Secondary Syphilis

Diagnosis

- Nontreponemal serologic tests for syphilis are strongly reactive (seronegativity rarely in AIDS)
- Spirochetes on darkfield exam



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Secondary Syphilis

Ddx “*Great Imitator*”

- Pityriasis rosea
- Drug eruptions (pruritic)
- Lichen planus; Wickham's striae, Koebner's, pruritic
- Psoriasis; no adenopathy
- Sarcoidosis; need serology and silver staining of biopsy
- Infectious mononucleosis, false pos RPR
- Geographic tongue
- Aphthous stomatitis



Latent Syphilis

- After the lesions of secondary syphilis have involuted, a latent period occurs
- May last a few months or a lifetime
- 60-70% of pts untreated remain asymptomatic for life
- No clinical signs, but serologic tests positive
- Women may infect unborn child for 2 years



Late Syphilis

- Defined by CDC as infection of greater than 1 years duration
- Tertiary Cutaneous Syphilis
- Late Osseous Syphilis
- Neurosyphilis
- Late Cardiovascular Syphilis



Tertiary Cutaneous Syphilis

- Tertiary syphilids usually occur 3-5 years after infection
- 16% of untreated pts will develop lesions of skin, mucous membrane, bone or joints
- Skin lesions are localized, destructive, heal with scarring



Tertiary Syphilids

- Two main types; Nodular syphilid and the Gumma
- Nodular; reddish brown firm papules or nodules 2mm or larger, scales.
- Gumma; larger



Dr. Dengue &
Sungu



Nodular Tertiary Syphilid

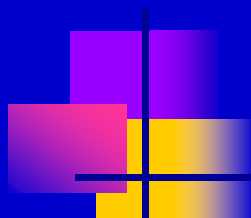
- Lesions tend to form rings and undergo involution as new lesions develop just beyond
- Characteristic circular or serpiginous pattern
- “kidney-shaped” lesion occurs on the extensor surfaces of the arms and on back
- Patches have scars and fresh ulcerated lesions
- Process may last for years, slowly marching across large areas of skin



Gumma

- May occur as unilateral, isolated, single or disseminated lesions, or serpiginous
- May be restricted to the skin, or originate in deeper tissues, and break down the skin
- Lesions begin as small nodules, enlarge to several centimeters
- Central necrosis, deep ulcer with a gummy base, most frequent site is lower legs





Wax model of face, surface epithelioma, middle of forehead,
ca. 1900-1924. Acc. 4M.550.10001



Wax model of hand, warts on palm,
Dermis, ca. 1900. Acc. 4M.550.10002





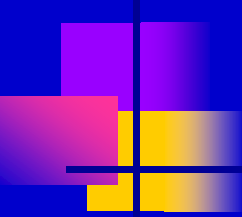
Diagnosis of Tertiary Syphilis

- Histopathology tuberculoid granules with multinucleate giant cells
- Nontreponemal tests (VDRL, RPR) positive in 75%
- Treponemal tests (FTA-ABS, MHA-TP, TPI) positive in nearly 100%
- Darkfield negative, PCR may be positive



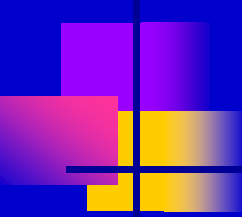
Ddx Tertiary Syphilis

- R/o tumors; SCCA tongue, leukemic infiltrates, sarcoidosis
- Ulcerated syphilids resemble scrofula, atypical mycobacterium, sporotrichosis, blastomycosis
- Mycosis fungoides (CTCL) has eczema and pruritis
- Perforation of hard palate and septum



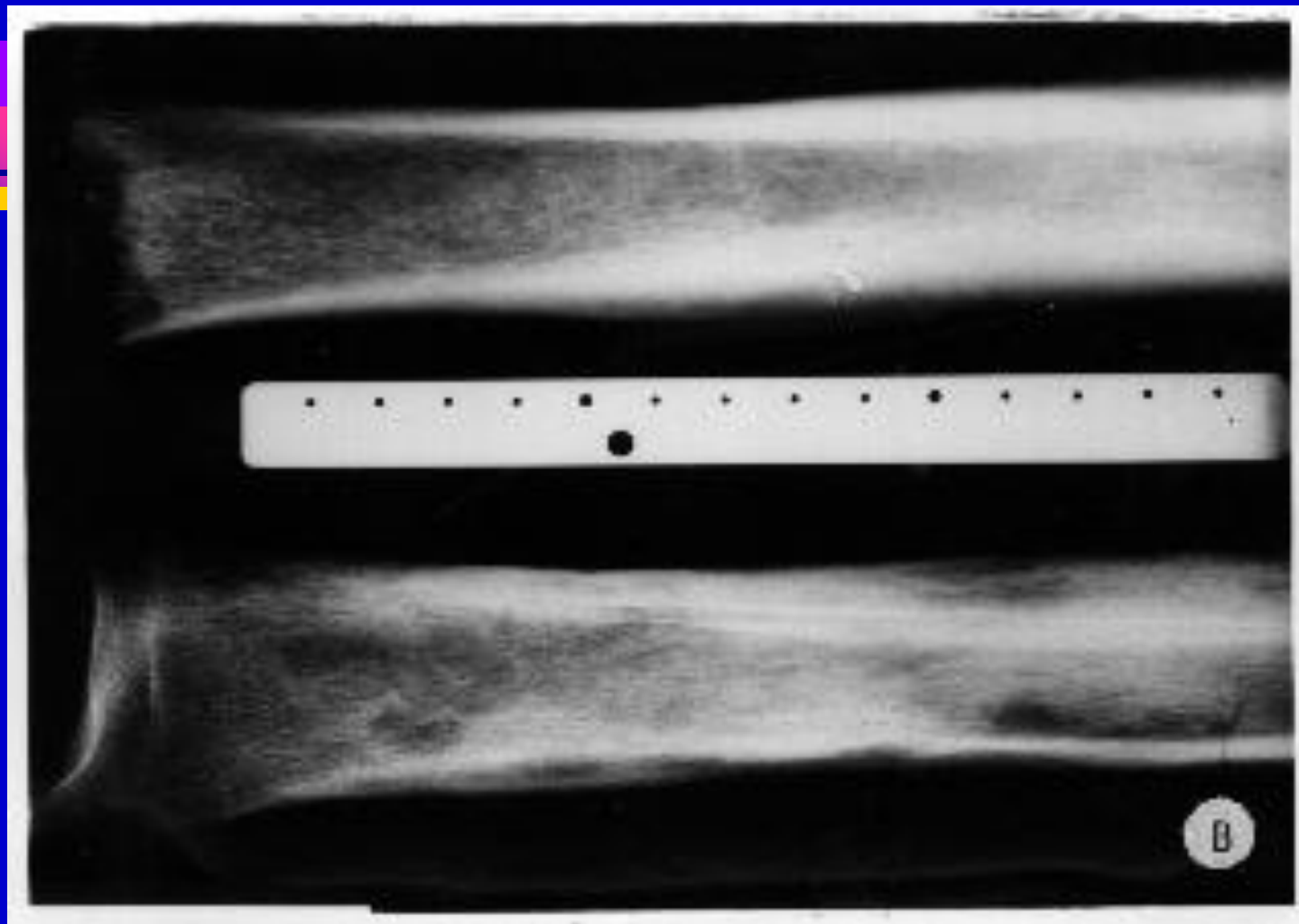
Late Osseous Syphilis

- Gummatous lesions can involve the periosteum and bone
- Head, face, tibia
- Periostitis, osteomyelitis, osteitis, gummatous osteoarthritis
- “Osteoscope”; bone pain often at night
- “Osteodope”; derm resident on Bourbon street



Late Osseous Syphilis

- Charcot joint; loss of contours of joint, hypermobility, painless
- Associated with tabes dorsalis



Neurosyphilis



- CNS involvement with syphilis can occur at any stage
- Most are asymptomatic; CSF pleocytosis, or a positive CSF serology
- 4-10% of untreated pts will develop neurosyphilis







Early Neurosyphilis

- First year of infection, meningeal
- Headache, stiff neck, cranial nerve disorders (SNHL, CN V, visual), seizures, delirium, increased ICP



Meningovascular Neurosyphilis

- 4-7 years after infection
- Thrombosis of vessels in the CNS
- Hemiplegia, aphasia, hemianopsia, transverse myelitis, progressive muscular atrophy
- CN palsies; CN IIX, III, IV, VI
- “Argyll Robertson Pupil”
accommodates, but doesn't react





Late Neurosyphilis

- Parenchymatous neurosyphilis occurs more than 10 years after infection
- Two classical patterns; Tabes Dorsalis, and General Paresis



Tabes Dorsalis

- Degeneration of the dorsal roots of the spinal nerves and posterior columns of the the spinal cord
- Gastric crisis with severe pain and vomiting is most common
- Pain, urination problems, paresthesias, ataxia, diplopia, vertigo, deafness



Tabes Dorsalis

- Signs: Argyll Robertson pupil, reduced lower cord reflexes, Romberg sign, sensory loss, atonic bladder, Charcot's joints, optic atrophy
- Personality changes, memory loss, apathy, megalomania, delusions, dementia (Garcia von Lin syndrome)





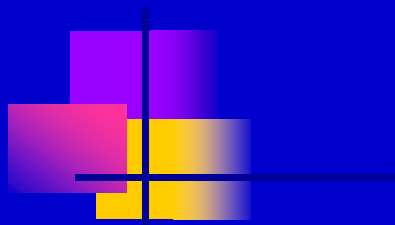
Late Cardiovascular Syphilis

- Occurs in 10% of untreated pts
- Aortitis; aortic insufficiency, coronary disease, aortic aneurysm



Congenital Syphilis

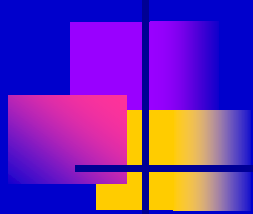
- Prenatal syphilis acquired in utero
- Infection through the placenta usually does not occur before the fourth month, so treatment of the mother before this time will almost always prevent infection in the fetus.
- If infection occurs after the fourth month 40% risk of fetal death





Congenital Syphilis

- 40% of pregnancies in women with untreated early syphilis will result in a syphilitic infant.
- Most neonates with congenital syphilis are normal at birth.
- *Early congenital syphilis*; lesions occurring within first two years of life
- *Late congenital syphilis*; lesion occur after two years





Early Congenital Syphilis

- Cutaneous manifestations appear most commonly during 3rd week
- Snuffles (a form of Rhinitis) is most frequent, bloody drainage, ulcers may develop, later septal perfs
- 30-60% of infants develop cutaneous lesions similar to secondary syphilis
- Red to copper maculopapular, become large, scaling, pustules, crusting
- Face, arms, buttocks, legs, palms and soles
-



Early Congenital Syphilis

- Face, perineum, and intertriginous areas, usually fissured lesions resembling mucous patches. Radial scarring results leading to ***Rhagades***
- Bone lesions occur in 70-80% , epiphysitis is common and causes pain on motion, leading to infant refusing to move; ***Parrot's pseudoparalysis.***



Early Congenital Syphilis

- Radiologic features of the bone lesions in congenital syphilis during the first 6 months are characteristic.
- Bone lesions occur at the epiphyseal ends of long bones.
- Lymphadenopathy, hepatomegaly, nephrotic syndrome, meningitis, nerve palsies may all occur



Late Congenital Syphilis

- Lesions are two types; malformations of tissue affected at critical growth periods (Stigmata), and persistent inflammatory foci
- Inflammatory; lesions of the cornea, bones, and central nervous system. Ie; Interstitial Keratitis in 20-50%, perisynovitis of knees (Clutton's joints), tabes dorsalis, seizures, and paresis



Late Congenital Syphilis

- Malformations (Stigmata); destructive effects leave scars or developmental defects
- ***Hutchinson's Triad;*** Changes in incisors, corneal scars, and eighth nerve deafness
- Also; saber shins, rhagades of the lips, saddle nose, mulberry molars



Hutchinson's Teeth

- Malformation of the central upper incisors that appears in the second or permanent teeth. Teeth are cylindrical rather than flattened, cutting edge narrower than base, notch may develop
- ***Mulberry molar***; first molar hyperplastic, flat occlusal surface covered with knobs representing abortive cusps



Treatment of Syphilis

- PCN is drug of choice for treatment of all stages of syphilis.
- HIV testing is recommended in all patients
- If less than one year; 2.4M U of Benzathine PCN G
- PCN-allergic; Tetracycline 500mg QID for 14 days



Jarisch- Herxheimer Reaction

- Febrile reaction occurs after the initial dose of antisyphilitic tx , 60-90% of pts
- 6-8 hours after dose, chills, fever, myalgia, increase in inflammation (neurosyphilis)



Treatment of Sex Partners

- Persons exposed to a patient with early syphilis within the previous 3 months should be treated, even if seronegative
- Single dose azithromycin effective in treating incubating syphilis





Serologic Testing after Tx

- VDRL or RPR repeated every 3 months in first year, every 6 months in second year, then annually
- A fourfold decrease in titer should be seen at 6 months, if not than 3 weekly PCN IM injections
- Response for latent syphilis is slower, 12-24 months
- If not responding; HIV and CSF testing repeated
- Pts with late syphilis may be “serofast”, and titers may not improve



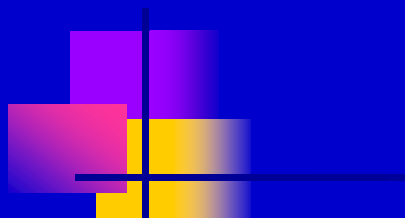
Syphilis and HIV

- Most HIV pts exhibit the classic clinical manifestations and course, and respond similarly to tx
- More likely to present with secondary syphilis and have a persistent chancre
- ? Of increased relapse of neurosyphilis



Yaws

- ***Treponema pallidum subsp. Pertenu***
- Endemic in some tropical, rural regions
- Overcrowding, poor hygiene, transmitted by contact with infected lesions
- Children, disabling course, affects skin, bones, and joints





Early Yaws

- Primary papule or group of papules appear at site of inoculation after 3 week incubation period, initial lesion becomes larger and crusted (***Mother Yaw, maman pian***)
- Feet, legs, buttocks, face, not genitals
- Mother yaw disappears after a few months





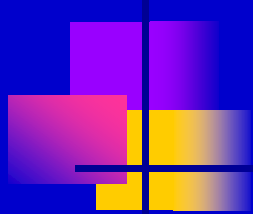
Early Yaws

- Secondary Yaws; weeks or months after mother yaw appears. Smaller, may appear around primary lesion, annular (*ringworm yaws*)
- Around body orifices, and creases condylomata may develop
- Palms and soles may form hyperkeratotic plaques, painful cause a crab-like gait (*crab yaws*)



Late Yaws

- 10% progress to late stage where gummas occur
- Ulcer with clean edges that tend to fuse to form con figurate and serpiginous patterns similar to tertiary syphilis
- Bone, joint, saddle nose, saber shin, Gangosa (destruction of palate and nose)
- Diagnosis; Darkfield, VDRL or RPR





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Endemic Syphilis (Bejel)

- ***Bejel*** is a Bedouin term for this nonvenereal treponematoses, nomadic tribes of North Africa, Southwest Asia, Eastern Mediterranean
- ***T. pallidum subsp. Endemicum***
- Childhood, skin contact, drinking vessels
- Skin, oral mucosa, and skeletal system



Bejel

- Primary lesions rare, probably go undetected in the oral mucosa
- Secondary oral lesions; shallow, painless ulcers, laryngitis
- Condyloma of axillae and groin, lymphadenopathy, osteoperiostitis causes night leg pain



Bejel

- Untreated secondary bejel heals in 6-9 months
- Tertiary stage; gummatous ulcerations of the skin, nasopharynx, and bone.
- Neuro; uveitis, choriitis, optic atrophy

PINTA





Pinta

- *T. carateum*; nonvenereal, endemic
- Only skin lesions occur !
- All ages, Brazilian rain forest





Pinta

- Primary Stage; 7 to 60 days after inoculation. Lesion begins as a tiny red papule, becomes an elevated erythematous infiltrated plaque 10cm in diameter over 2-3 months. Legs, satellite lesions, no erosion or ulceration like in chancres.



Pinta

- Secondary Stage; 5 months to 1 year
- Small, scaling papules that enlarge and coalesce, extremities and face
- Red to blue , black with postinflammatory hyperpigmentation
- Nontreponemal tests reactive in 60%



Pinta

- Late Dyschromic Stage; young adults, hyperpigmented and depigmented macules resembling vitiligo
- Face, waist, wrist, trochanteric areas
- Histo; acanthosis, lichenoid, spirochetes in epidermis



DRINKA

PINTA

MILKA

DAY



Treatment of Yaws, Bejel, and Pinta

- Benzathine PCN G 1.2 to 2.4 M units IM
- Tetracycline 500mg QID for adults
- EES 10mg/kg children QID for 14 days



Nonvenereal Treponematoses

- Yaws
- Endemic Syphilis
- Pinta



Treatment

- Syphilis >1year; 2.4M PCN G weekly for 3 weeks Pcn-allergic; Tetra 500mg QID for 30 days
- Neurosyphilis; IV
- Infant 100,000 to 150,000 units/kg/day Procaine PCN BID for first seven days of life

