MEDICINE AND ORTHOPEDICS ORALS

QUESTION #1

What is Dengue fever, and how is it transmitted (vector) and treated? Please be sure to indicate its clinical signs and symptoms. Why is it important in podiatric medicine? [10 minutes]

Answer:

Dengue fever, which is often called “breakbone” fever or “bonecrusher” disease because of the intense pain it causes in the lower extremity - and all joints and muscles - is most prevalent during rainy seasons when standing water provides an ideal breeding ground for mosquitoes. It is primarily a problem in tropical slums, where trash collection and sanitation are not as advanced as in tourist areas.

Dengue (DF) and dengue hemorrhagic fever (DHF) are caused by one of four closely related, but antigenically distinct, virus serotypes (DEN-1, DEN-2, DEN-3, and DEN-4), of the genus Flavivirus. Infection with one of these serotypes provides immunity to only that serotype for life, so persons living in a dengue-endemic area can have more than one dengue infection during their lifetime. DF and DHF are primarily diseases of tropical and sub tropical areas, and the four different dengue serotypes are maintained in a cycle that involves humans and the Aedes mosquito.

However, Aedes aegypti, a domestic, day-biting mosquito that prefers to feed on humans, especially the LEs, and is the most common Aedes species. Infections produce a spectrum of clinical illness ranging from a nonspecific viral syndrome to severe and fatal hemorrhagic disease. Important risk factors for DHF include the strain of the infecting virus, as well as the age, and especially the prior dengue infection history of the patient.

No dengue vaccine is available. Recently, however, attenuated candidate vaccine viruses have been developed. Efficacy trials in human volunteers have yet to be initiated. Research is also being conducted to develop second-generation recombinant vaccine viruses. Therefore, an effective dengue vaccine for public use will not be available for 5 to 10 years, according to the CDC in Atlanta, GA in 2010.
QUESTION #2

What is the antibiotic drug Selzentry® and for what medical condition is it used? Please briefly mention its mechanism of action. Note this question demonstrates podiatric medical modernity [five minutes].

Answer:

This is a relatively new drug to help patients with the AIDS virus that are running out of treatment options, but with lingering questions about its long-term effects.

The drug Selzentry®, made by Pfizer, is the first AIDS drug that works by blocking the CCR5 receptor that HIV often uses to enter white blood cells. Physicians familiar with the drug, known chemically as maraviroc, have long known that people who naturally lack a working version of the CCR5 doorway are somewhat resistant to HIV infection and are slow to develop AIDS if they do become infected.

The drug is designed to block viral entry into disease-fighting white blood cells. This reduces viral load and increases T-cell counts in people who are already being treated for certain strains of HIV.

Selzentry® is the first in a new class of oral HIV medicines in more than 10 years. So-called CCR5 antagonists are designed to stop the virus outside the surface of cells before it enters, rather than fighting the virus inside as do other oral HIV medicines.

The drug was granted accelerated approval in 2008-09, a process designed for medicines that appear to provide a significant therapeutic benefit over existing drugs for serious or life-threatening diseases.
QUESTION #3

Please briefly discuss the classification scheme for deep subcutaneous mycotic infections of the foot? Then, describe Toxic Shock Syndrome in a young male patient? [five minutes]

Answer:

- Sporotrichosis: Granulomatous infection of skin and subcutaneous tissue. Chancre will develop at site of entry.
- Blastomycosis: Blastomyces dermatitis. 2-Hydroxystilbamidine for chronic infection.
- Mycetoma: Chronic granulomatous infection of soft tissue and bone.
- Madura Foot: Fungal infection known as Eumycetoma. i. Madurella mycetomi ii. Pertriellidium Boydii.

Toxic Shock Syndrome [TSS]:

Caused by Staphylococcus aureus, Phage types 29 and 52.

Treatment: Explore operative wound. Take aerobic and anaerobic culture. Treatment often includes debridement of necrotic tissue with antibiotics.

TSS is a bacterial infection that is generally not related to fungal infections.
QUESTION #4

Please list the causative conditions associated with Charcot’s Foot neurotrophic disease as well as the diabetic foot ulceration classification of Mooney-Wagner? Include radiographic finding of early and late stage Charcot’s foot development [ten minutes].

Conditions Associated with Charcot’s Disease

- Alcoholism
- Diabetes Mellitus
- Leprosy
- Multiple Sclerosis
- Poliomyelitis
- Pernicious Anemia
- Peripheral Nerve Lesions
- Syringomyelia
- Spina Bifida
- Tabes Dorsalis
- Spinal Cord Trauma

Dysvascular and diabetic foot ulcers classification of Wagner and Mooney:

- Grade 0: No open skin lesion is present but breakdown is possible due to musculoskeletal deformities and sensory neuropathy (“at risk foot”).
- Grade 1: Skin lesion is present with or without underlying bony prominences. (Superficial ulceration)
- Grade 2: Ulceration is deep and penetrates to tendon, bone or joint structures. (Deep ulceration)
- Grade 3: Deep abscess formation with tendon involvement, plantar space infection, osteomyelitis or septic arthritis. (Deep abscess or osteitis)
- Grade 4: Gangrene present in digits or forefoot. (Local gangrene)
- Grade 5: Gangrene involving the entire rearfoot (Global gangrene).

Early findings in the first stage of Charcot foot development include soft tissue edema, joint effusion and osteophytosis. As the condition progresses, intra- and extra articular debris formation, subluxation and osteochondral fragmentation may be observed. Advanced changes in this first stage include; complete loss of joint organization with fracture, dislocation, marked effusion and severe deformities.

The second stage of Charcot disease is a period of decreased destruction. During this time, there is resorption of debris with new periosteal bone formation and fusion of fragments. Osteosclerosis of bone ends is usually observed. Coalescence leads to the final stage of reconstruction as the body attempts to restore joint architecture. Joint ankylosis and osseous revascularization occur in this final stage.
QUESTION #5

Please discuss the difference between an extra-skeletal osteogenic sarcoma, extra-skeletal chondrosarcoma and Ewing’s sarcoma? Which condition(s), if any at all, may ultimately require amputation - versus - excision, incision or minor (or radical) debridement? [five minutes]

Answer:

EXTRASKELETAL OSTEOGENIC SARCOMA

Rare neoplasm that is identical to osteogenic sarcoma. Pain depends on involvement of or impingement on other local tissues, and/or interference with function.

EXTRASKELETAL CHONDROSARCOMA

Rare, malignant, metastatic, cartilaginous neoplasm that occurs in the soft tissues, it occurs in the well differentiated, myxoid, and mesenchymal (poorly differentiated) forms, and has been reported in the foot. Amputation is possible.

EWING’S SARCOMA

ES is a malignant neoplasm of primitive mesenchymal cells, rare above the age of 30 years constituting about 1/3 of all childhood malignant bone tumors. Since this lesion is primarily intraosseous, any evidence of tumor outside of bone must prompt a careful search for evidence that the origin was intraosseous. Surgical excision with wide margins constitutes part of the treatment, along with chemotherapy and irradiation, to which many of these neoplasms react favorably but amputation may be necessary.
QUESTION #6

Please discuss acute gouty pedal arthritis, its predisposing factors, and include diagnostic laboratory studies and both old and newer drug treatments? [ten minutes]

Answer:

Gouty Arthritis

Predisposing Factors include recent intake of far greater than normally ingested amounts of alcohol and or food (especially shell fish and purine rich foods) or recent trauma, or the use of medications potentially inducing hyperuricemia.

- Low dose aspirin intake.
- Use of specific diuretic agents: Thiazides, Furosemide, Acetazolamide or pyrazinamide in treating tuberculosis.

Gout is related to polycythemia, acute leukemia, multiple myeloma, myeloproliferative disorders, Gaucher's disease, lymphosarcoma, and other malignant conditions, and infectious mononucleosis. Increased risk factors include hypertension, obesity, and hyperlipidemia (hypertriglyceridemia and hypercholesterolemia), diabetes mellitus, glycogen storage diseases or renal disease. Heavy metal poisoning and family history of gout are also implicated.

Laboratory Studies: Serum uric acid is often, but need not be, elevated. Levels range from 6-8 mg. Synovial fluid analysis: Urate crystals (negatively birefringent) with PMNL's.

Treatment:

- Agent of choice is indomethacin. Stat dose of 50 to 100 mg followed by 50 mg TID for several days.
- Phenylbutazone/oxyphenylbutazone may be efficacious in treating the acute attack.
  - Usual dose is 100 mg q 4 hr until the attack subsides.
  - In the early initiation of treatment, only 3-4 doses may be needed.

Other nonsteroidal anti-inflammatory agents can be efficacious when given in sufficient doses. The oral use of colchicine may be effective.

- Usual dose is 1.0 mg STAT, followed by 0.5 mg q 2 hr until symptoms resolve.
- IV dose: 2 mg administered slowly over 2-5 minutes then 0.5-1.0 mg at six hour intervals. No more than 4 mg in a 24 hour period.
- More frequent dosing schedules are associated with severe gastrointestinal upset. Usually a single dose of 3.0 mg is given IV.
NOTE: New Gout Drug

On February 16, 2009, the FDA has approved Uloric, the first new gout drug in more than 40 years, made by Takeda Pharmaceuticals. Uloric, is taken once daily by mouth, and is approved for the chronic management of hyperuricemia (elevated levels of uric acid) in gout patients. Uloric works by blocking xanthine oxidase, which helps prevent uric acid production, lowering elevated uric acid levels.

In 2005, the FDA refused to approve Uloric because there were slightly more deaths and heart problems in patients taking the drug than in patients taking allopurinol. As people with gout problems already are at higher risk of heart disease, the FDA issued an "approvable" letter, noting that Uloric could be approved if this safety question were addressed. Takeda resolved the safety question by performing a large new phase III clinical trial that enrolled more gout patients than the two previous phase III trials combined. The new study found no more deaths and no more heart problems in patients taking Uloric than in patients taking allopurinol.

Based on those results, an FDA advisory committee recommended Uloric's approval in November 2008. The FDA often follows the recommendations of its advisory committees, but it's not obligated to do so. The most commonly reported adverse events in Uloric's clinical trials were liver function abnormalities, nausea, joint pain, and rash [www.Gout.com].
QUESTION #7

Please briefly discuss the difference between ankylosing spondylitis and psoriastic arthritis? Which condition(s) exhibits "sucked candy", "sausage toe" and "pencil-in-cup" deformities?

Answer:

Ankylosing Spondylitis:

Primarily affects spinal and pelvic joints. Progressive vertebral fusions can result in complete spinal fusion. Axial joint involvement is rare.

Involvement of the medial calcaneal tuberosity (plantar fascitis) and pain secondary to enthesiopathy (especially Achilles tendonitis) may be noted.

Erosive pedal arthropathy rarely occurs.

Psoriatic Arthritis:

A small percentage of patients with psoriasis will present with associated arthritis. Onset is usually seen with skin lesions present, but may precede them. Most frequently involved joints are in the low back, hands, and feet. Any joint can be affected.

Enthesiopathies and distinct distal interphalangeal joint involvement are frequently noted. Long flexor or extensor tendonitis within a digit can result in "sausage toe deformity. Plantar fascitis, Achilles tendonitis, and symptomatic posterosuperior calcaneal erosive disease are often seen. Extensive, destructive, asymmetrical erosive disease is occasionally noted in the interphalangeal and metatarsophalangeal joints. Neuropathic like erosion of the distal metatarsals and/or phalanges may result in "sucked candy" and "pencil in cup" deformities, even in the absence of remarkable loss of cutaneous sensorium.

Flares in arthritic disease may correspond to flares in skin disease. Potential for extensive destruction and deformity warrants evaluation and treatment directed at optimally conserving and protecting remaining structural integrity and functional capacities.