

ER-Infection combine conference

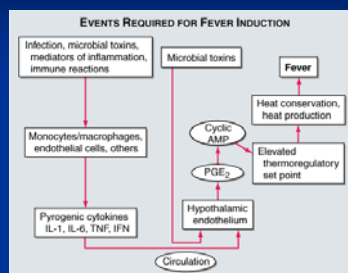
2010/08/21
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Discussion

- ※ Fever versus Hyperthermia
- ※ Fever of unknown origin
- ※ Sarcoidosis

Fever versus Hyperthermia1

- Fever-- an elevation of body temperature and occurs in conjunction with an increase in the hypothalamic set point (e.g., from 37°C to 39°C).
- Individual response by vasoconstriction 、 shivering 、 behavioral adjustment



~Harrison's Principles of Internal Medicine

Fever versus Hyperthermia2

- Hyperthermia -- does **not** involve pyrogenic molecules. The setting of the hypothalamic thermoregulatory center is unchanged.
- Exogenous heat exposure and endogenous heat production are two mechanisms by which hyperthermia can result in dangerously high internal temperatures.

Table 17-1 Causes of Hyperthermia Syndromes

Heat Stroke
Exertional: Exercise in higher-than-normal heat and/or humidity
Nonexertional: Anticholinergics, including antihistamines; antiparkinsonian drugs; diuretics; phenothiazines
Drug-Induced Hyperthermia
Amphetamines, cocaine, phencyclidine (PCP), methylenedioxymethamphetamine (MDMA; "ecstasy"), lysergic acid diethylamide (LSD), salicylates, lithium, anticholinergics, sympathomimetics
Neuroleptic Malignant Syndrome
Phenothiazines; butyrophenones, including haloperidol and bromperidol; fluoxetine; loxapine; tricyclic dibenzodiazepines; metoclopramide; domperidone; thiothixene; molindone; withdrawal of dopaminergic agents
Serotonin Syndrome
Selective serotonin reuptake inhibitors (SSRIs), monoamine oxidase inhibitors (MAOIs), tricyclic antidepressants
Malignant Hyperthermia
Inhalational anesthetics, succinylcholine
Endocrinopathy
Thyrotoxicosis, pheochromocytoma
Central Nervous System Damage
Cerebral hemorrhage, status epilepticus, hypothalamic injury

~Harrison's Principles of Internal Medicine

fever of unknown origin

- Fever higher than 38.3°C on several occasions
- Duration of fever for at least three weeks
- Uncertain diagnosis after one week of study in the hospital
- new system for classification of FUO:
 - classic FUO
 - nosocomial FUO
 - neutropenic FUO; and
 - FUO associated with HIV infection.

Classic FUO

- 3 outpatient visits or
- 3 days in the hospital without elucidation of a cause or
- 1 week of "intelligent and invasive" ambulatory investigation.

Classic FUO-- etiology

- Infections
- Malignancies
- Connective tissue diseases

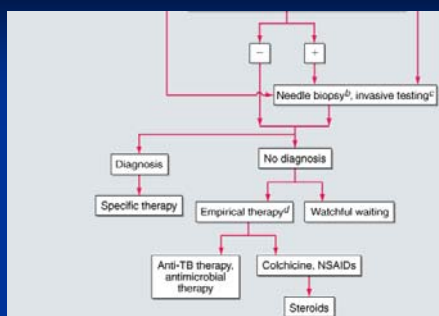
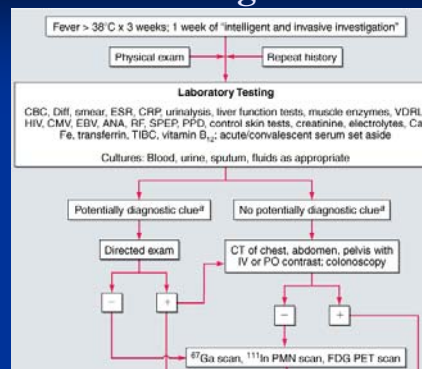
Table 19-1 Classic FUO in Adults

Authors (Year of Publication)	Years of Study	No. of Cases	Infections (%)	Neoplasms (%)	Noninfectious Inflammatory Diseases (%)	Miscellaneous Causes (%)	Undiagnosed Causes (%)
Petersdorf and Beeson (1961)	1952-1957	100	36	19	19 ^a	19 ^a	7
Larson and Featherstone (1982)	1970-1980	105	30	31	16 ^b	11 ^a	12
Knockaert and Vanneste (1992)	1980-1989	199	22.5	7	23 ^a	21.5 ^b	25.5
de Kleijn et al. (1997, Part I)	1992-1994	167	26	12.5	24	8	30

Classic FUO-- diagnostic approach

- The most critical feature of the evaluation of a patient with FUO is to **take a careful history** and to **reassess the patient frequently**.
- thorough history should include the following information:
 - Travel
 - Animal exposure (eg, pets, occupational, living on a farm)
 - Immunosuppression (with the degree noted)
 - Drug and toxin history, including antimicrobials
 - Localizing symptoms

Classic FUO-- diagnostic testing



~Harrison's Principles of Internal Medicine

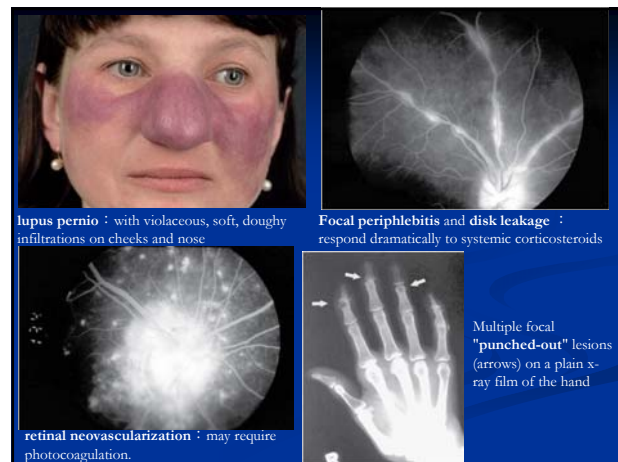
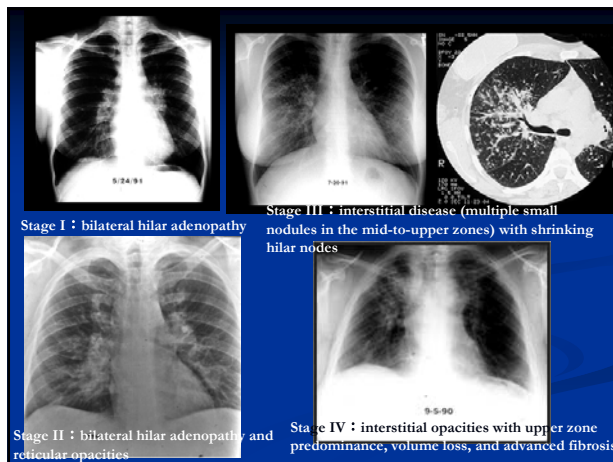
Classic FUO -- Treatment

- Empiric course of antimicrobials should be considered if **an infectious diagnosis** is strongly suspected
- Antituberculosis medications (particularly in the elderly or foreign-born) and broad-spectrum antibiotics are reasonable in this setting (Table 30-9)
- Empiric administration of corticosteroids **should be discouraged**; they can suppress fever and exacerbate many infections that cause FUO

Sarcoidosis

- a multisystem granulomatous disorder of unknown etiology.
- characterized pathologically by the presence of **noncaseating granulomas** in involved organs.
- initially presents with one or more of
 - Bilateral hilar adenopathy
 - Pulmonary reticular opacities
 - Skin, joint, and/or eye lesions

Clinically-Evident Organ System Involvement (%)	Major Clinical Features
Pulmonary (70-90%)	Bilateral hilar adenopathy, restrictive and obstructive disease, reticulonodular infiltrates, fibrocystic disease, bronchiectasis, mycetomas
Ocular (20-30%)	Anterior and posterior uveitis, optic neuritis, chorioretinitis, conjunctival nodules, glaucoma, keratoconjunctivitis, lacrimal gland enlargement
Cutaneous (20-30%)	Erythema nodosum, lupus pernio, cutaneous and subcutaneous nodules, plaques, alopecia, dactylitis
Hematologic (20-30%)	Peripheral lymphadenopathy, splenomegaly, hypersplenism, anemia, lymphopenia
Musculoskeletal and joints (10-20%)	Arthralgias, bone cysts, myopathy, heel pain, Achilles tendinitis, sacroillitis
Hepatic (10-20%)	Hepatomegaly, pruritus, jaundice, cirrhosis
Salivary and parotid gland (10%)	Sicca syndrome, Heerfordt syndrome
Sinuses and upper respiratory tract (SURT) (5-10%)	Chronic sinusitis, nasal congestion, saddle-nose deformity, hoarseness, laryngeal or tracheal obstruction
Cardiac (5-10%)	Arrhythmias, heart block, cardiomyopathy, sudden death
Neurologic (5-10%)	Cranial neuropathy, aseptic meningitis, mass brain lesion, hydrocephalus, myelopathy, polyneuropathy, mononeuritis multiplex
Gastrointestinal (<10%)	Abdominal pain, GI tract dysmotility, pancreatitis
Endocrine (<10%)	Hypercalcemia, hypopituitarism, diabetes insipidus, epididymitis, testicular mass
Renal (<5%)	Hypercalciuria, renal calculi, nephrocalcinosis, interstitial nephritis, renal failure

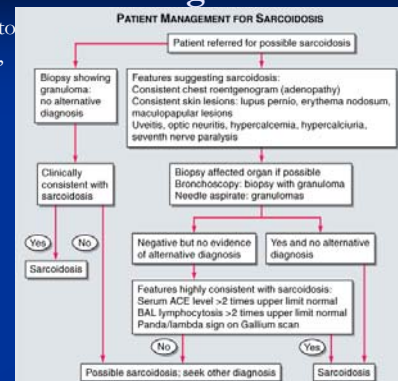


Sarcoidosis – Laboratory finding

- Leukopenia (5 to 10 percent), eosinophilia (approximately 25 percent), and thrombocytopenia (rare)
- The **erythrocyte sedimentation rate** is frequently elevated, but is not useful in assessing disease activity.
- Hypercalciuria is more commonly observed than hypercalcemia.
- Hypergammaglobulinemia (30 to 80 percent), diminished skin test reactivity, and a positive rheumatoid factor can exist.
- Serum angiotensin converting enzyme (**ACE**) level is elevated in 75 percent of untreated patients with sarcoidosis

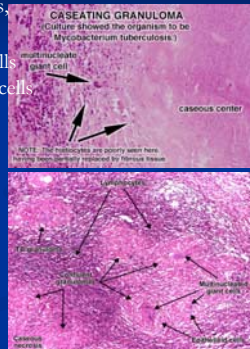
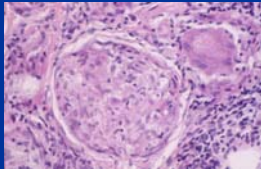
Sarcoidosis -- Diagnosis

- Symptoms related to the lung, skin, eyes, peripheral nerves, liver, kidney, heart, and other tissues.
- Demonstration of **noncaseating granulomas** in a biopsy specimen.
- Exclusion of other granulomatous disorders.

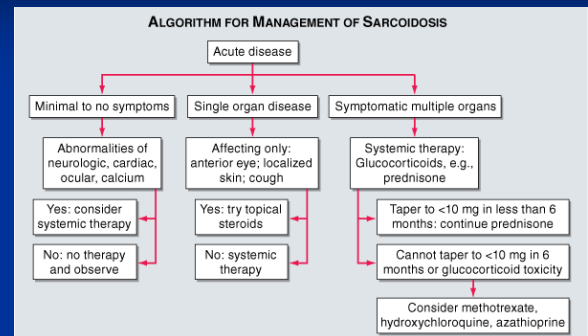


Sarcoidosis -- Histology

- Non caseating epithelioid granulomas, well formed and separated
- Langhan's or multinucleated giant cells can be observed with the epithelioid cells
- Schaumann bodies
- Asteroid bodies



Sarcoidosis -- Treatment



Sarcoidosis -- Treatment

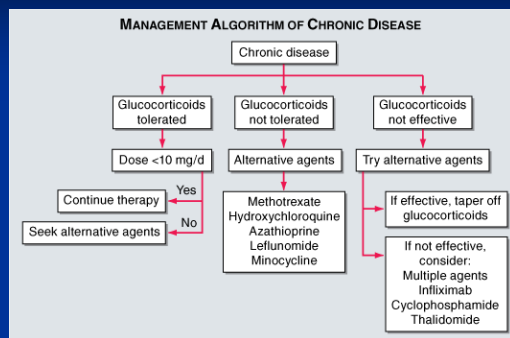


Table 322-2 Commonly Used Drugs to Treat Sarcoidosis

Drug	Initial Dose	Maintenance Dose	Monitoring	Toxicity	Support Therapy*	Support Monitoring*
Prednisone	20–40 mg qd	Taper to 5–10 mg	Glucose, blood pressure, bone density	Diabetes, osteoporosis	A: Acute pulmonary D: Extrapulmonary	
Hydroxychloroquine	200–400 mg qd	400 mg qd	Eye exam q6–12 mo	Ocular	B: Some forms of disease	D: Routine eye exam
Methotrexate	10 mg qw	2.5–15 mg qw	CBC, renal, hepatic q2mo	Hematologic, nausea, hepatic, pulmonary	B: Steroid sparing C: Some forms chronic disease	D: Routine hematologic, renal, and hepatic monitoring
Azathioprine	50–150 mg qd	50–200 mg qd	CBC, renal q2mo	Hematologic, nausea	C: Some forms chronic disease	D: Routine hematologic monitoring
Infliximab	3–5 mg/kg q2wk for 2 doses	3–10 mg/kg q4–8 wk	Initial PPD	Infections, allergic reaction, carcinogen	B: Chronic pulmonary disease	C: Caution in patients with latent tuberculosis or advanced congestive heart failure