


Approach to lower limb edema

MOHAMMAD DELSHAD,MD

VASCULAR & ENDOVASCULAR SURGEON

GUMS ,RAZI HOSPITAL

- 
- ▶ Lower limb edema is a common and challenging diagnostic problem often with a significant impact
 - ▶ It is defined as swelling caused by an increase in interstitial fluid that exceeds the capacity of physiologic lymphatic drainage
 - ▶ Symptoms can be debilitating and negatively impacts physical and psychological health and reduces quality of life with significant costs to society

There are 2 types of leg edema:


- ▶ **Venous edema** consists of excess low viscosity , protein-poor interstitial fluid resulting from increased capillary filtration that cannot be accommodated by a normal lymphatic system
- ▶ **Lymphedema** consists of excess protein-rich interstitial fluid within the skin and subcutaneous tissue resulting from lymphatic dysfunction
- ▶ A third type, **lipidema**, is more accurately considered a form of fat maldistribution rather than true edema

Unilateral		Bilateral	
Recent ^a	Chronic ^b	Recent ^a	Chronic ^b
Unilateral DVT	Primary venous disease	Bilateral DVT	Chronic venous disease/post-thrombotic syndrome
Ruptured Baker's cyst	Post-thrombotic syndrome	Acute heart failure	Pulmonary hypertension
Ruptured leg muscle	Iliac vein compression	Acute renal/liver failure	Heart/renal/liver failure
Compartment syndrome	Lymphedema	IVC thrombosis	Idiopathic edema
Intramuscular hematoma	Vascular malformation	IVC tumors	Chronic IVC occlusion, IVC aplasia/hypoplasia
Infection	Reflux sympathetic dystrophy	Drugs	Drugs (see Table 2)
Superficial vein thrombosis	Mass/tumor ^c	Bilateral infections	Lymphedema
Mass/tumor ^c	Venous advential cystic disease		Lipedema
Fracture	Infection		Pregnancy, premenstrual edema
Sprain/strain	Static foot disorders		Obesity
Insect/animal bites	Radiation		Malabsorption syndrome, hypoalbuminemia
	Atrophy/hypertrophy		Spinal cord injury/immobility
	Overgrowth syndromes		Static foot disorders
			Thyroid disease
			Obstructive sleep apnea

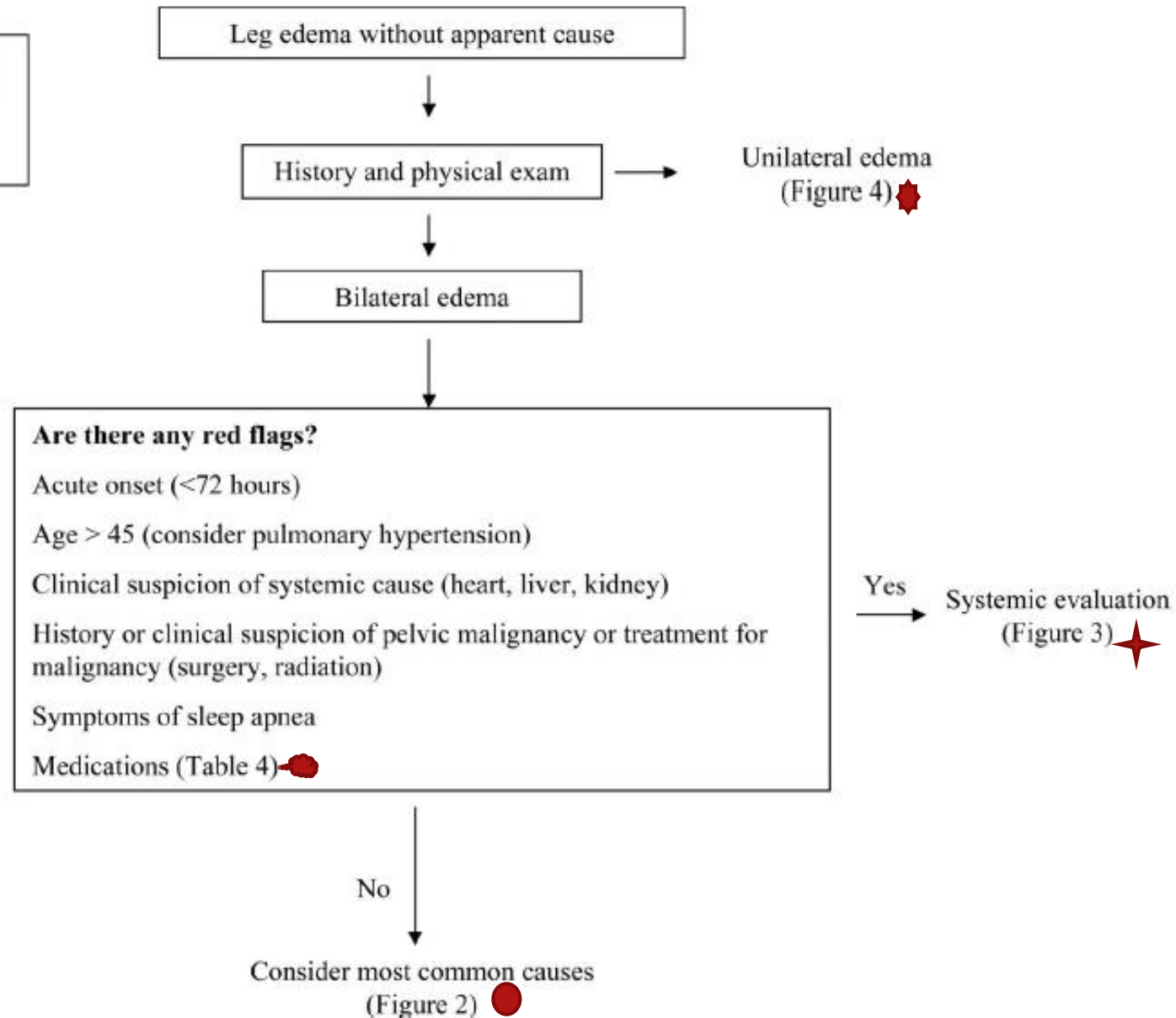
Note: Arteriovenous fistulas involving large vessels can present with acute or chronic and unilateral or bilateral swelling. More commonly it presents as a chronic condition.

^aRecent definition includes acute (<3 days) and sub-acute (3 days – 3 months).

^bChronic definition >3 months.

- 
- ▶ The most common cause of leg edema in older adults is venous insufficiency
 - ▶ The most common cause in women between menarche and menopause is idiopathic edema, formerly known as “cyclic” edema
 - ▶ A common but under-recognized cause of edema is pulmonary hypertension, which is often associated with sleep apnea

Note: The cause of leg edema is often multifactorial. Thus, more than one path in the algorithm may be relevant.



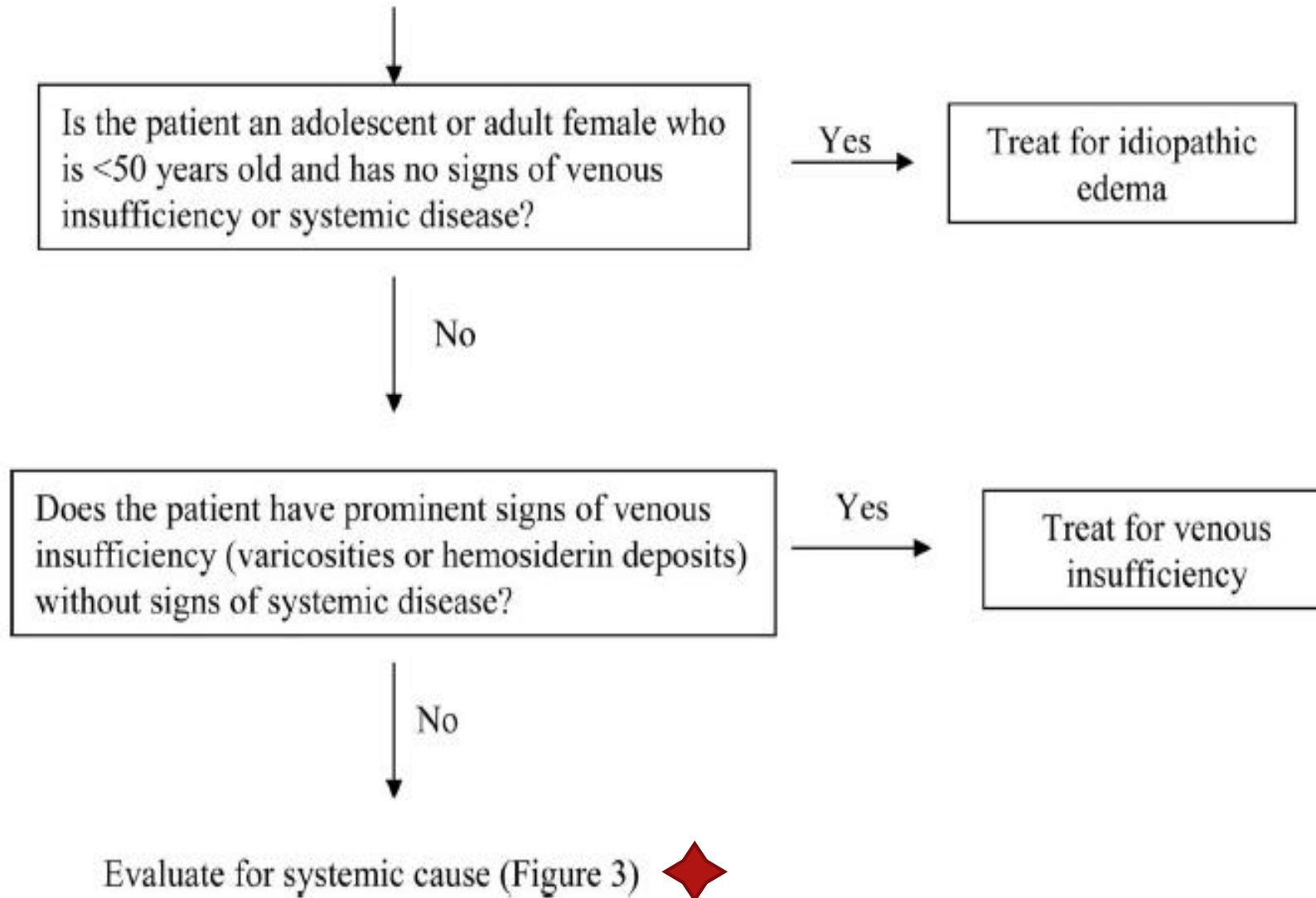


Figure 2. Common causes.



Systemic evaluation:

- complete blood count
- urinalysis
- electrolytes
- creatinine
- blood sugar
- thyroid stimulating hormone
- albumin
- other tests for specific indications

Specific indications:

Acute edema: d-Dimer, follow with doppler exam if d-Dimer elevated OR clinical suspicion of DVT high

Age >45 years: echocardiogram to rule out pulmonary hypertension, heart failure

Suspicion of heart disease: ECG, echocardiogram, chest radiograph, brain natriuretic peptide

Suspicion of liver disease: ALT, AST, total bilirubin, alkaline phosphatase, prothrombin time, serum albumin

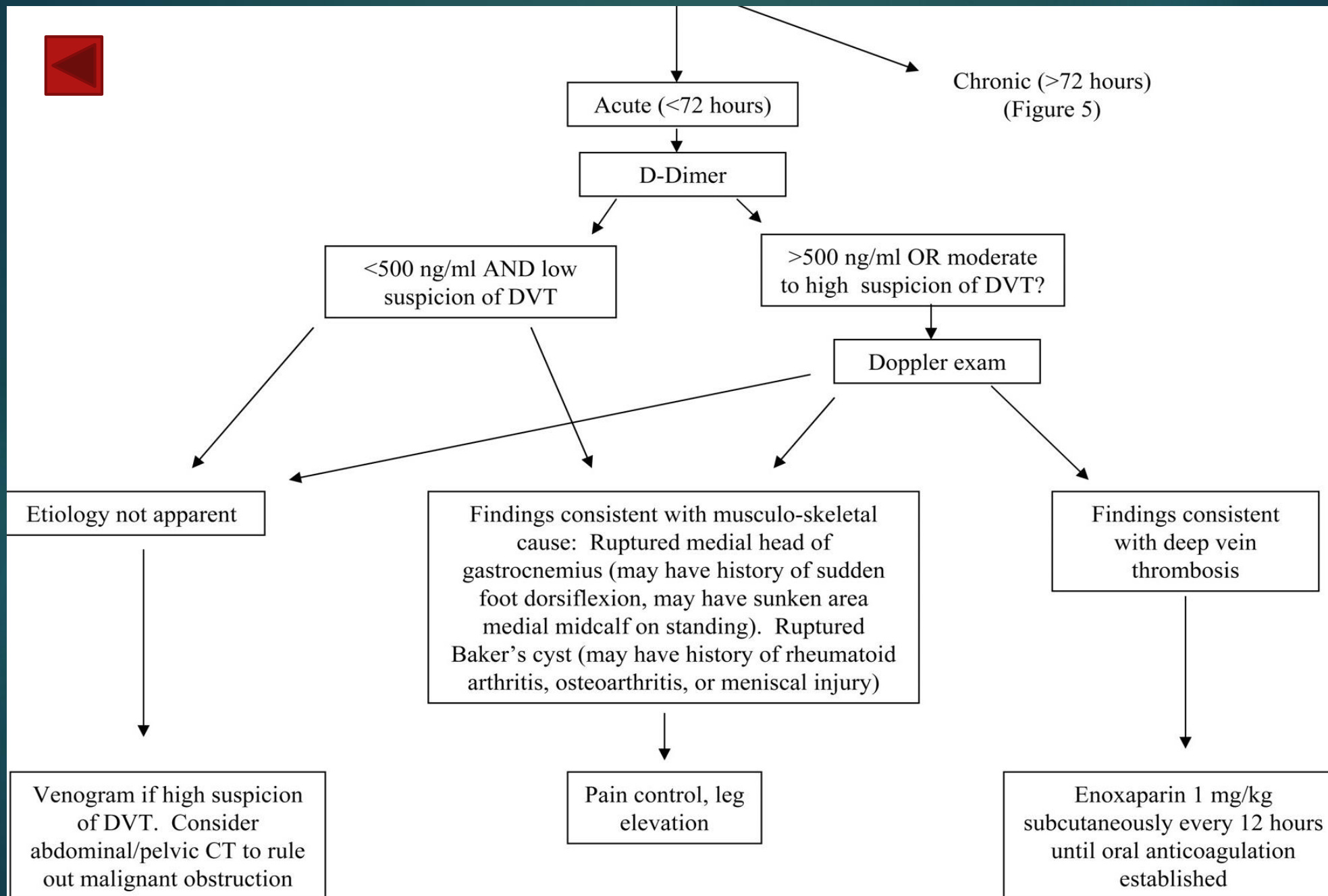
Suspicion of kidney disease: urinalysis with exam of sediment, serum lipids

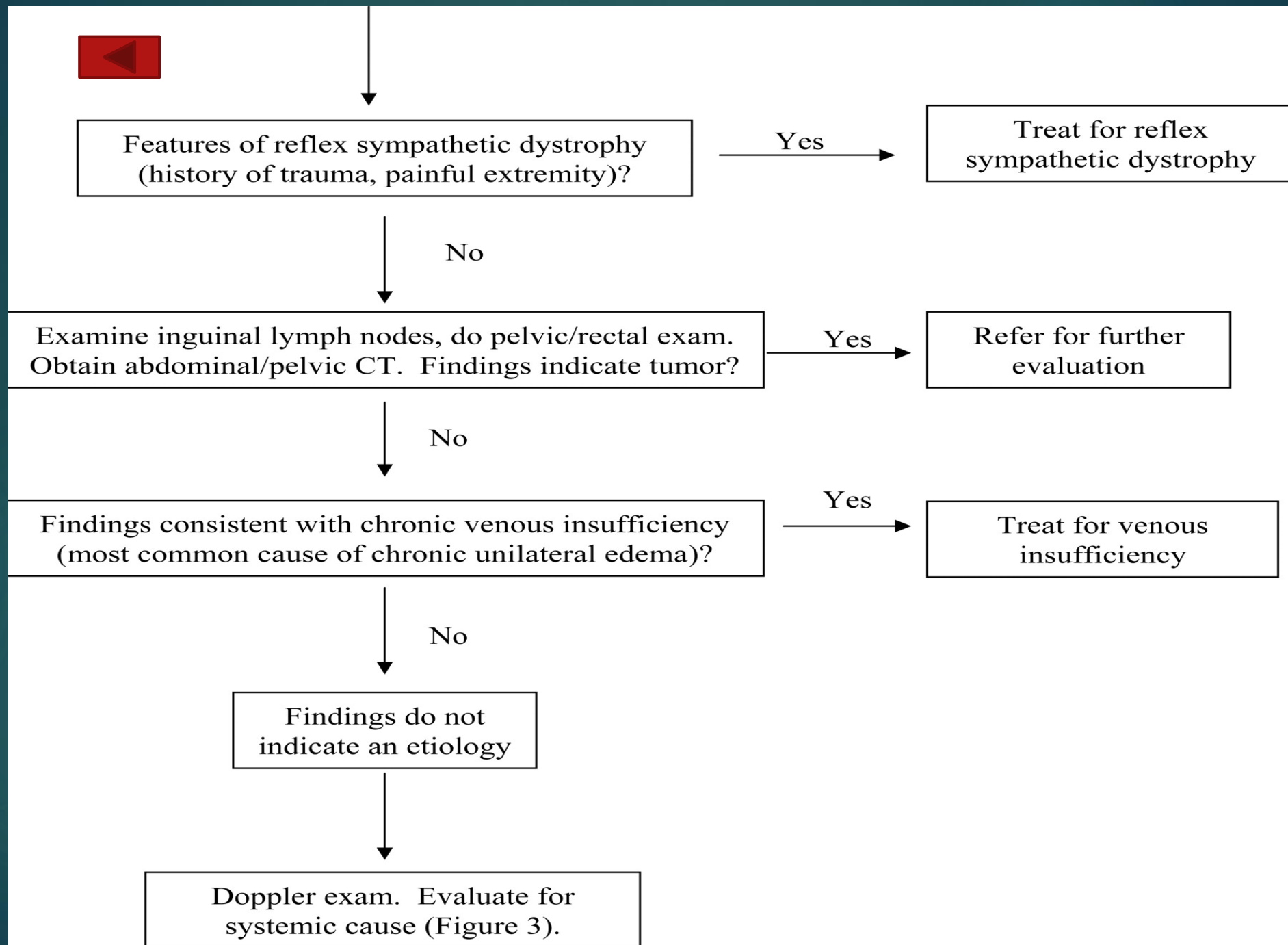
Suspicion of malignancy: abdominal/pelvic CT scan

Suspicion of sleep apnea: sleep study, echocardiogram

Lymphedema: abdominal/pelvic CT scan

Medication known to cause edema (Table 4): consider reducing dose or changing medication





Drugs that may cause leg swelling.

Hydralazine

Minoxidil

Methyldopa

Hormones

Corticosteroids

Estrogen

Progesterone

Testosterone Gabapentinoids

Pregabalin

Gabapentin

Chemotherapy

Docetaxel

Gemcitabine

Pemetrexed

Lenolidamide/thalidomide

Targeted immunotherapy

Other

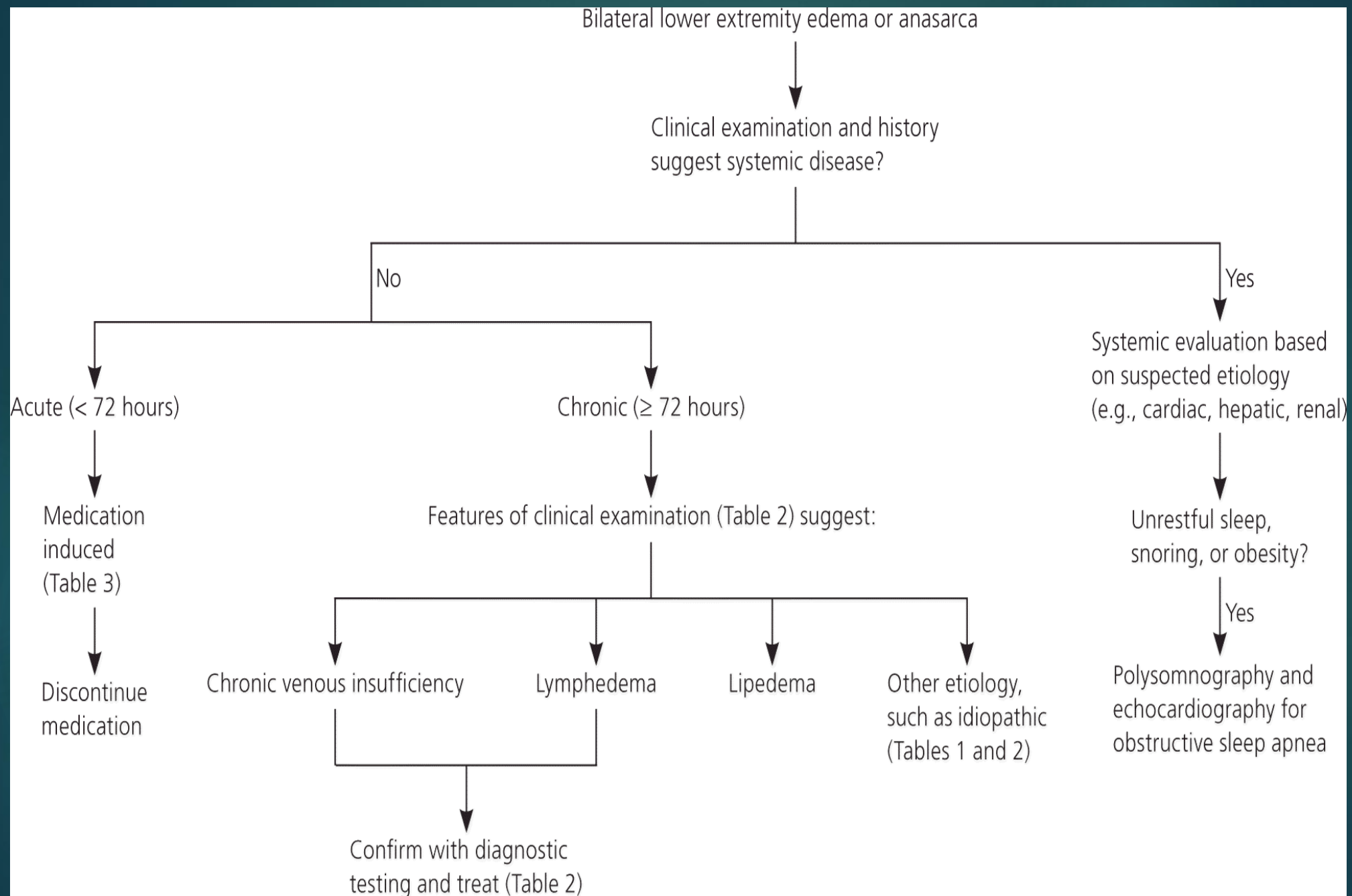
Non-steroidal anti-inflammatory drugs

Pioglitazone, rosiglitazone

Monoamine oxidase inhibitors

Pramipexole





Unilateral lower extremity edema

