Flank mass in a 43-year-old male

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Dr. Bobbi Pritt declares she has no conflicts of interest to disclose.

History

- A 43-year-old male presented with tender plaques and nodules involving his left flank.
- Patient is from the upper Midwestern United States.
- His previous medical history is significant for well-controlled insulin-dependent diabetes.
- An excisional biopsy was performed of one of the nodules.

H&E, 20x total magnification

H&E, 40x total magnification

H&E, 100x total magnification

H&E, 200x total magnification
Diagnosis?

A. Helminth, possible roundworm.
B. Helminth, possible cestode
C. Not a helminth, foreign body
D. Not a helminth, fat necrosis
E. No idea, [ask a colleague!]
Lipomembranous Fat Necrosis - General

- A.k.a. membranocystic fat necrosis, lipomembranous panniculitis
- Initially described in 1974 in bone and subcutaneous tissues in a case of sudanophilic leukodystrophy of cerebral hemispheres
- Commonly observed in association with venous insufficiency, arterial ischemia, diabetes, erythema nodosum, and lupus
- Degenerative process involving mature adipose tissue
- Described from various sites: subcutaneous tissue (usually lower extremities), breast, testicle, bone marrow, benign and malignant tumors
- Observed in 0.7% to 9% of inflammatory lesions of subcutaneous tissues
- More common in women (89% in one case series: Snow et al.)
- Mean age 57 years (range 32-80 years)

Lipomembranous Fat Necrosis - Morphology

- Cystic (most common; often microcystic) and non-cystic forms
- Adipocyte necrosis
- Formation of eosinophilic anucleate, crenated, undulating ribbon-like membranes.
- Pseudopapillary tufts
- PAS-positive, diastase resistant membranes
- CD68 and lysozyme positive

Cysts may form complex “Arabesque” patterns

Image courtesy of Lawrence Gibson, MD

Polycystic lipomembranous osteodysplasia with sclerosing leukoencephalopathy

- Autosomal recessive genetic disorder
- Associated with polymorphisms of 2 genes: TYROBP (DAP12) and TREM2
- Characterized by fractures (resulting from polycystic osseous lesions), frontal lobe syndrome, and progressive pre-senile dementia beginning in the fourth decade.
- Patient: 34 year-old female residing in a skilled nursing facility. Presented with fractures of the tibia and other bones.
DDX: Worms in Tissue

Large Worms in Subcutaneous Tissue

- Roundworms
  - *Dirofilaria* species (size in cross-section: 300-350 µm)
  - *Onchocerca volvulus* (150-400 µm diameter)
  - *Loa loa* (~500 µm in diameter)
- Tapeworms
  - *Taenia solium* (cysticercosis)
  - Other *Taenia* sp. (coenurosis)
  - *Spirometra* sp. (sparganosis)

Anatomy of a Roundworm

- Cuticle (including spines, ridges)
- Well-defined musculature
- Internal organs

Examples of large roundworms
Anatomy of a tapeworm larva
- Thin acellular cuticle
- Smooth muscle fibers
- Calcareous corpuscles (small calcified bodies)
- Depending on the tapeworm: protoscoleces (immature heads) with suckers and hooklets, fluid-filled sac

A recent case of lipomembranous fat necrosis simulating a cestode.

Lipomembranous fat necrosis
Sparganosis

Other examples of tapeworm larvae

A recent case of cysticercosis
DDx: plant material

Approach
• Measure!
• Look for defined structures
  • Cuticle and underlying musculature
  • Reproductive or gastrointestinal organs
  • Eggs
  • Special stains
    • Masson’s trichrome, PAS, acid fast
    • Polarizable?
  • Consult (e.g. microbiologist, colleague, CDC ID Path and DPdx groups)

References
THANK YOU