Introduction
Infectious mononucleosis is characterized by fever, pharyngitis, lymphadenopathy, fatigue, and atypical lymphocytosis. This constellation of findings is most often seen in Epstein-Barr Virus (EBV) infection, but can also be seen with cytomegalovirus, toxoplasmosis, HIV, HPV or Hepatitis B infection. EBV can be asymptomatic from asymptomatic infection to severe illness with hepatitis, myocarditis, opthalmic rupture, neurological, and hematological complications. The acute symptoms commonly resolve within 1 month. Laboratory testing for infectious mononucleosis is complex. There are five EBV antibodies with numerous patterns of positivity identified in the various stages of EBV infection.

Case Description
A 32-year-old male with history of rare cocaine use, tobacco use, and depression presented to his primary care clinic with 5 days of fever, night sweats, sore throat, headache, fatigue, and new cervical lymphadenopathy. His history was notable for camping in the Mojave Desert 3 months prior, last intranasal cocaine use 3 months ago, and a new sexual partner 2 months ago.

Physical Exam
Vital signs were normal without fever. Gen. fatigued appearing young man in no acute distress. Hx/PE: Oropharynx was erythromyzied with enlarged tonsils without exudates. Tender left cervical nodes of 5cm. Abdomen: soft, mild tenderness to palpation on the right without organomegaly. Cardiac, genitourinary, skin and neurologic exam were normal.

Clinical Course
Two weeks after initial presentation the patient developed worsening pharyngitis, headache, mild confusion and was admitted to the hospital. Lumbar puncture and additional laboratory evaluation and imaging were obtained. CT imaging showed multiple borderline enlarged lymph nodes in the chest and abdomen, as well as moderate splenomegaly and mild hepatic steatosis and enlargement. Given the non-diagnostic initial work up, an unusual etiology was noted (obtained the center column for pathology images).

About 1 month after initial presentation, EBV serologies were repeated and found to be positive in a pattern of acute EBV infection. The diagnosis of Infectious Mononucleosis was made. The patient improved over the course of several months with symptomatic treatment.

Laboratory Evaluation
- Normal basic metallic panel, liver enzymes notable for AST 280, ALT 480.
- Elevated LDH to 455 (normal 250-450).
- ESR elevated to 48 (normal 0-15). CRP elevated to 37 (normal < 10). CBC showed a mild normocytic anemia with hematocrit 32 and white blood cell count of 8.86 with a reactive lymphocytosis to 32% (normal < 10%). LP was performed with 1 WBC, 10 RBCs, glucose 56, LDH 11.
- Evaluation for HIV, Hepatitis C and B, GC/Ghomilya, Coccidioides, syphilis, TB, toxoplasma, hriptosplasmosis, bartonella were all negative.
- CMV serologies revealed a weakly positive IgM and positive IgG.
- Urine analysis was unremarkable.
- See center column for EBV and CMV serologies.

Imaging Evaluation
- Chest XRAY showed mild airway thickening in the right peribular area.
- Right Upper Quadrant ultrasound showed trace hepatic ascites and decreased pulsatility with near metaphasic waveforms of the hepatic veins, this can be seen in inivious liver disease.
- CT of the head showed no acute intracranial abnormalities.
- See center column for notable findings from CT imaging of neck, chest, abdomen and pelvis.

Discussion
Viral capsid antigen (VCA) and heterophile antibodies are the first to develop in EBV infection typically after 5-7 days. Heterophile antibodies are highly specific in the appropriate clinical setting, but are somewhat insensitive. In the first week of symptoms, false negative rates can be up to 25%. Serologic testing should be performed before 5-7 days, once EBV can be obtained, but should be reserved for cases in immunocompromised patient where results would change therapeutic management. Given that EBV and heterophile antibodies can take up to a week to develop, high clinical suspicion is essential and repeat serologies may be indicated if initial results are non-diagnostic.

Conclusions
- Infectious mononucleosis tends to be a more serious illness with older age of the patient, also the likelihood of hepatic involvement increases with age.
- 80% of people develop AST elevations, 25% of people develop hepatomegaly, 33% of people develop splenomegaly.
- Viral capsid antigen (VCA) and heterophile antibodies are the first to develop in EBV infection typically after 5-7 days.
- Repeat serologies may be indicated if initial results are non-diagnostic.

References