LEARNING OBJECTIVE 1: Consider CMV as a cause of gastroenteritis and hepatitis in an immunocompetent host

LEARNING OBJECTIVE 2: Review the diagnosis and management of CMV hepatitis

Subjective:
- 69 yo male presented with diarrhea, vomiting, fever, and muscle aches.
- During a trip to the golf coast the patient ate some undercooked seafood and soon after started vomiting and having non-bloody diarrhea for three days duration.
- After the episode he experienced six days of fever, myalgia, nausea, and diaphoresis which continued, prompting his hospitalization.

Objective:
- On presentation he was tachycardic, febrile, and hypotensive. Stabilized in the ED.
- Laboratory results showed
  - CBC: normocytic anemia and mild thrombocytopenia.
  - BUN and Cr were elevated
  - AST: 408 units/L
  - ALT: 690 units/L
  - alk phos: 344 u/L
  - ANA and CRP were elevated
  - ferritin: 1153 ng/mL (30-300)
  - ceruloplasmin: 22.3 mg/dL (20-35)
  - serum iron: 6 mg/dL (50-170)
  - TIBC: 288 mcg/dL (250-450)
  - iron saturation: 50%
  - Tylenol levels were normal
  - Liver ultrasound was unremarkable.

Patient Presentation
- The leading differential diagnosis was acute viral gastroenteritis with post viral syndrome given:
  - the acute diarrheal illness followed by fever and systemic symptoms
  - negative blood and stool cultures
  - negative liver ultrasound
  - no requirement for antibiotics.
- Liver biopsies showed pathology consistent with cytomegalovirus induced hepatitis.
- The patient gradually improved with supportive care.
- Liver biopsies showed pathology consistent with cytomegalovirus induced hepatitis.
- The patient gradually improved with supportive care.
- ALT, AST, and alkaline phosphatase progressively improved, and the patient was discharged home in an improving condition.

Liver Enzyme Trend

Hospital Course

Typical Presentation and Evaluation:
- Mononucleosis syndrome with:
  - increase in lymphocytes or monocytes by 50%
  - greater than 10% atypical lymphocytes
- CMV IgM and IgG are useful markers after EBV has been ruled out.
- Interestingly in our case CMV immunoglobulin levels were negative.
- CMV induced hepatitis presents with transaminits and a slight increase in both serum total bilirubin and alkaline phosphatase.
- Histologically, the detection of the distinct "owl's eye" inclusion bodies on tissue sample is highly specific for determining liver involvement of CMV.

Discussion
- Cytomegalovirus (CMV) is a double stranded DNA virus belonging to the family of Herpesviridae.
- CMV is primarily a threat in the immunocompromised population.
- CMV infections in immunocompetent patients may have clinically relevant manifestations.
- CMV hepatitis is one example as illustrated by this case.

Treatment:
- CMV hepatitis is typically a self limiting illness in an immunocompetent patient.
- The benefit of antiviral agents such as ganciclovir must be weighed against the risk of complications.
- myelosuppression
- central nervous system disorders
- hepatotoxicity
- Other antiviral treatment options include:
  - Valganciclovur
  - Cidofovir
  - Foscarnet

- CytosGamm - CMV hyperimmunoglobulin that may be used in treatment of CMV disease in combination with antivirals
  - Maribavir, a benzimidazole nucleoside, may be used for resistant CMV
  - Leflunomide has off-label utility in CMV disease treatment

References

An Immunocompromised Patient With Cytomegalovirus Induced Hepatitis
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