Case Study

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GI unit, Bnai Zion MC
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Case study

• D.Y., 66 year-old male

• Admitted on the 23.11.15 due to refractory nausea and vomiting

• Medical history
  – HTN
  – Chronic kidney disease (Cr=1.2)

• Chronic medication
  – Tritace comb® 5 mg /25 mg
A month prior to admission the patient returned from a trip to China.

Upon his return, he started complaining of weakness, night sweating, decreased appetite, anorexia, nausea, vomiting and diarrhea.

No fever, abdominal pain or prominent respiratory complaints were reported.
No History of

- Blood transfusion
- Smoking
- Alcohol abuse
- Aspirin or NSAIDs
- Physical or mental stress
History

• Ambulatory CXR - susp. LLL consolidation
  – Treated with Cefuroxime and Roxithromycin

• 8.11.15 - CMV IgM - positive, IgG - 39
• 23.11.15 - CMV IgM – weak positive, IgG – 78
Physical examination

- Weak and ill
- Vital signs- normal
- Scant petechial skin eruption
- Abdomen- normal
**WBC** | 11.10 | H | X10^3/MM^3 | 4.00 - 11.00 | **[......]**
---|---|---|---|---|---
**RBC** | 5.10 | | X10^6/MM^3 | 4.50 - 6.50 | **[......]**
**HGB** | 15.00 | | GR/DL | 13.50 - 17.50 | **[......]**
**HCT** | 46.00 | | % | 40.00 - 52.00 | **[......]**
**MCV** | 90.20 | | FL | 80.00 - 95.00 | **[......]**
**MCH** | 29.40 | | pg | 27.00 - 32.00 | **[......]**
**MCHC** | 32.60 | | g/dl | 31.00 - 35.00 | **[......]**
**RDW** | 11.90 | | | 11.50 - 14.50 | **[......]**
**PLT** | 341.00 | | X10^3/MM^3 | 150.00 - 400.00 | **[......]**
**MPV** | 6.38 | L | FL | 7.00 - 10.00 | **[......]**
**NEUTRO%** | 68.50 | | % | 40.00 - 75.00 | **[......]**
**LYMPHO%** | 25.50 | | % | 20.00 - 45.00 | **[......]**
**MONO%** | 5.37 | | % | 2.00 - 10.00 | **[......]**
**EOS%** | 0.51 | L | % | 1.00 - 6.00 | **[......]**
**BASO%** | 0.13 | | % | < 1.00 | **[......]**
**Abs. Neutro.count** | 7.57 | | X10^3/MM^3 | | **[......]**
**IRF** | --- | | | | |
### BLOOD CHEMISTRY

<table>
<thead>
<tr>
<th>בדיקה</th>
<th>תוצאה</th>
<th>ידידה</th>
<th>ערכים נורמליים</th>
<th>סימון</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose-B</td>
<td>100</td>
<td>MGR/DL</td>
<td>70 - 105</td>
<td>[.....*]</td>
</tr>
<tr>
<td>Urea-B</td>
<td>33</td>
<td>MGR/DL</td>
<td>15 - 40</td>
<td>[.....*]</td>
</tr>
<tr>
<td>Creatinine-B</td>
<td>1.4</td>
<td>H</td>
<td>0.7 - 1.3</td>
<td>[.....]*</td>
</tr>
<tr>
<td>Sodium-B</td>
<td>137</td>
<td>MEQ/L</td>
<td>135 - 145</td>
<td>[.....*]</td>
</tr>
<tr>
<td>Potassium-B</td>
<td>5.1</td>
<td>MEQ/L</td>
<td>3.5 - 5.1</td>
<td>[.....*]</td>
</tr>
<tr>
<td>Chloride-B</td>
<td>99</td>
<td>MEQ/L</td>
<td>98 - 107</td>
<td>[.....*]</td>
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<tr>
<td>Bilirubin, total-B</td>
<td>0.9</td>
<td>MGR/DL</td>
<td>0.2 - 1.2</td>
<td>[.....*]</td>
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<tr>
<td>AST(GOT)-B</td>
<td>16</td>
<td>U/L</td>
<td>8 - 38</td>
<td>[.....*]</td>
</tr>
<tr>
<td>ALT(GPT)-B</td>
<td>20</td>
<td>U/L</td>
<td>8 - 41</td>
<td>[.....*]</td>
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<tr>
<td>Alkaline Phosphatase-B</td>
<td>92</td>
<td>U/L</td>
<td>40 - 129</td>
<td>[.....*]</td>
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<tr>
<td>Gamma Glutmine Transaminase -B</td>
<td>21</td>
<td>U/L</td>
<td>11 - 50</td>
<td>[.....*]</td>
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<tr>
<td>Amylase-B</td>
<td>106</td>
<td>H</td>
<td>30 - 100</td>
<td>[.....]*</td>
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<tr>
<td>C-reactive protein-B</td>
<td>16.7</td>
<td>H</td>
<td>&lt; 6.0</td>
<td>[.....]*</td>
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</tbody>
</table>

### BLOOD GAS

<table>
<thead>
<tr>
<th>בדיקה</th>
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<th>ידידה</th>
<th>ערכים נורמליים</th>
<th>סימון</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.396</td>
<td></td>
<td>7.350 - 7.450</td>
<td>[.....*]</td>
</tr>
<tr>
<td>pCO2</td>
<td>36.3</td>
<td>mmHg</td>
<td>34.0 - 45.0</td>
<td>[.....*]</td>
</tr>
<tr>
<td>pO2</td>
<td>12.7</td>
<td>L</td>
<td>90.0 - 100.0</td>
<td>[.....*]</td>
</tr>
<tr>
<td>HCO3 bicarbonate</td>
<td>21.8</td>
<td>meq/l</td>
<td>21.0 - 24.0</td>
<td>[.....*]</td>
</tr>
<tr>
<td>ABE</td>
<td>-4.6</td>
<td>mmol/l</td>
<td>(-3) - (+3)</td>
<td>[.....*]</td>
</tr>
<tr>
<td>sO2</td>
<td>13.9</td>
<td>L</td>
<td>95.0 - 100.0</td>
<td>[.....*]</td>
</tr>
</tbody>
</table>
Typhoid
Brucella
Q Fever
Legionella
Strongyloides
Leptospira
Fasciola
Campylobacter
Yersenia
Other
Course of Admission

• Continuous and refractory vomiting

• 24.11.15 - Melena
Upper GI endoscopy
<p>| | |</p>
<table>
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</tr>
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<td>Yersenia</td>
<td>Gastric adenoca</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>Peptic ulcer</td>
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GI Endoscopy\n
TB CT
Pathology

• Normal appearing gastric mucosa

  Severe chronic active gastritis.
  Helicobacter pylori focally positive.
  See report 15-13991, 15-13992.

• Gastric ulcer

  Severe chronic active gastritis with ulceration and scattered large cells with inclusions of CMV.
  Immunostain with CMV marker is positive.
  Immunostain with cytokeratin does not reveal additional findings.
  No tumor seen.
  Conclusion: CMV positive gastritis with ulceration.
  Helicobacter pylori focally positive.

• Duodenum

  Duodenal mucosa with moderate scattered cells with inclusions of CMV.
  Conclusion: CMV related duodenitis.
CMV RELATED GASTRO-DUODENITIS IN AN IMMUNOCOMPETENT PATIENT
Spectrum of disease

**Immunocompetent**
- Asymptomatic
- Mononucleosis syndrome
- Organ-specific complications- rare, mainly primary infection

**Immunocompromised**
- Substantial morbidity
- High mortality
Organ specific complications

- Gastrointestinal
  - Colitis
  - Esophagitis
- Hepatic
- Neurologic
  - Encephalitis
  - Guillain-Barré syndrome
- Pulmonary
- Ocular
- Cardiovascular
  - Pericarditis and myocarditis
  - Atherosclerosis
  - Venous thrombosis
CMV gastro-duodenal infection

• Mainly immunocompromised patients
  – Rarely reported in immunocompetent hosts
CMV GD infection

Endoscopic features

• Causes multiple gastric erosions and ulcers
  – Difficult to differentiate from *Helicobacter pylori*- or NSAID-related ulcers

• Irregularly shaped gastric ulcer accompanied by multiple erosions

Obstructive Gastric Pseudotumor Caused by Cytomegalovirus in an AIDS Patient: A Case Report and Review of Surgical Treatment.

A giant gastric ulcer mimicking carcinoma in a renal transplant recipient with CMV infection.
Lin CJ, Pan CF, Wu CJ, Chen HH, Kao CR, Lee CC.
Cytomegalovirus-associated gastric ulcer: a side effect of steroid injections for pyloric stenosis.

Mori H, Fujihara S, Nishiyama N, Kobara H, Oryu M, Kato K, Rafiq K, Masaki T.
CMV GD infection

Pathogenesis

• Ill-defined
• "Cytomegalic vasculitis"
  – Endothelial cells are involvement causing an ischemic injury


CMV GD infection

Clinical features

• Most cases were accompanied by low grade fever, fatigue and other systemic inflammatory responses
CMV GD infection
Diagnosis

• Not easily ascertained
  – Rare
  – Absence of distinct morphological characteristics

• If CMV ulcers are suspected, it is important to examine the biopsy specimens for inclusion bodies using hematoxylin-eosin staining or CMV immunohistochemistry
Inclusion bodies
- "Owl eye" appearance
- Aggregations of the virus particles
- Typically basophilic intranuclear
- Eosinophilic cytoplasmic inclusions may also be seen
Immunohistochemistry was found to have a higher sensitivity value than H&E staining

CMV GD infection

Differential Diagnosis

- H. Pylori
- NSAIDS
- Other
- Advanced gastric cancer
- Primary gastric lymphoma
• CMV causes the gastric ulcerations?
• CMV colocalizes the gastric lesions?
31 immunocompetent patients who underwent UGI endoscopy because of dyspeptic symptoms

No gastric CMV-infection was found

19% of duodenal biopsies revealed CMV-positive cells

The histopathological findings were nonspecific and mild
A prospective study

Examined 38 immunocompetent patients with gastroduodenal ulcerations for the incidence of CMV infection

Failed to document any evidence of CMV

- By light microscopy, viral cultures, or monoclonal antibody testing

Even within areas of previous mucosal injury induced by peptic factors or NSAIDs, no evidence of CMV "super-infection" was found.
CMV GD infection
Treatment and prognosis

• Self-limiting course in immunocompetent hosts
  – In contrast to the case in immunocompromised patients
• Ulcers were usually healed with oral PPI’s
• Anti-viral therapy was not required
  – Except in one case of an ulcer refractory to anti-secretor treatment, and other case evolved to pyloric stenosis requiring surgery\(^1\)
• The speed of healing was similar of H. pylori-related ulcers, ranging around 10 weeks\(^2\)

(1) Vergara M, Herrero J, de Torres I, Armengol JR, Saperas E, Malagelada JR. [Gastric ulcers as the only manifestation of infection by cytomegalovirus in immunocompetent patients]. *Gastroenterol y Hepatol*. 21(7):332-334.
Follow-up endoscopy on day 50

Pathology: Gastric mucosa with chronic inflammation and faveolar hypeplasia
Follow-up endoscopy on day 50

Pathology: Normal Duodenal mucosa
In the present case

• We could not document any other potential causative agent.

• The paucity of the H. pylori bacteriaceae in the gastroduodenal biopsies plays against its role in the pathogenesis of the ulcer.

• Inclusion bodies had disappeared in the specimens obtained from the healing lesion.

• Hence, we concluded that CMV infection itself contributed to the gastric ulceration.
Typhoid  Brucella  Q Fever  Legionella  Strongyloides  Leptospira  Fasciola  Campylobacter

CMV

Inclusion Bodies in Biopsies (H&E, IHC)
CMV PCR, Blood - Positive 1278 IU/ml

Yersenia  Gastric adenoca  Lymphoma  Peptic ulcer
• CMV-related gastro-duodenitis and gastric ulceration may rarely be encountered in healthy immunocompetent individuals

• Whether its discovery should lead to a search for an immunocompromised state is unknown

• It is usually a self-limited disease and PPI therapy was adequate for complete healing in most cases
DISCUSSION

Time for