An Atypically Atypical Pneumonia: Breaking Down Cognitive Biases of Breathing
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Introduction

A 25 y/o male patient presents to the ED in November 2017 with a chief complaint of dyspnea and cough. He was previously healthy. One week prior to this ED visit, he began feeling malaise, fatigue, and diaphoresis. He presented with a cough productive of clear secretions. He was afebrile. He was admitted to the hospital for observation. The hospital course was unremarkable except for the patient continuing to have dyspnea and cough productive of clear secretions. The patient was noted to have a slight decrease in his COO on the chest X-ray performed the day of admission. He was discharged home on the second hospital day with metoprolol, spironolactone, and a plan to implant an internal defibrillator to decrease the risk of syncope. The patient was referred to cardiology for further evaluation. Cardiology initiated several labs and a plan of care. The patient’s cardiologist was reluctant to implant the internal defibrillator due to the patient’s negative cardiac isoenzymes, good LVEF, and well-being. The patient was continued on metoprolol and spironolactone, with cardiac imaging scheduled for later in the week.

Case Description

HPI from ED intake:
- CC: “Dyspnea and cough”
- Productive cough started five days ago
- Went to PCP and was started on Zpak (Azithromycin)
- No relief of symptoms. More difficult to breathe secondary to fluid in lungs
- Past medical history includes hypertension and hyperlipidemia
- Allergies: penicillin, metronidazole
- ROS: Normal range of motion. Neck supple, no masses or lymphadenopathy
- PMH: Previously healthy 25 y/o with SOB and history of PNA
- Medications: metoprolol, spironolactone, and a plan to implant an internal defibrillator
- Pertinent family history or surgical history, denies smoking, and reports rare alcohol use. Past medical history indicates anxiety, chronic abdominal pain, eczema, meningitis due to adenovirus, and multiple bouts of pneumonia. After HPI, physical exam, lab work, and imaging, the ED also diagnosed the patient with atypical pneumonia due to an infectious organism and planned on releasing him later that day contingent on improvement of his mid-80% SpO2 from administering oxygen. The patient did not improve, and the staff did not know why. Our previously healthy patient was discharged from cardiology weeks later with cardiomyopathy. This report attempts to discuss this within the context of EM management, and show the importance of cognitive debiasing in EM.

Initial CBC and BMP Lab Results

<table>
<thead>
<tr>
<th>Patient CBC</th>
<th>Patient BMP</th>
</tr>
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<tbody>
<tr>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>PCV</td>
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</tr>
<tr>
<td>Hgb</td>
<td>10.0</td>
</tr>
<tr>
<td>WBC</td>
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</tr>
<tr>
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<tr>
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<td>Hct</td>
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<tr>
<td>Neutrophil</td>
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<td>Lymphocyte</td>
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<tr>
<td>Monocyte</td>
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<tr>
<td>Band</td>
<td>2%</td>
</tr>
<tr>
<td>Eosinophil</td>
<td>2%</td>
</tr>
</tbody>
</table>

Follow-Up PA and Lateral Chest X-Ray

- Figure 1 and 2 show the follow-up PA and Lateral Chest X-Rays. The patient had a history of PNA and was noted to have respiratory distress and decreased SpO2. The chest X-Rays demonstrated a cardiomegaly, and the hilar and mediastinal contours were unchanged from prior. There was no evidence of fluid in the lungs. There was no evidence of pulmonary edema or pleural effusion. The cardiomegaly was attributed to dilated cardiomyopathy.

Discussion

This case illustrates that while having expectations about particular presentations are important in patient care, our brains may cloud our decision making capabilities. After the null hypothesis of the ED team was proven (negative for PNA), cognitive biases took over. Even when the patient’s age and dyspnea, other etiologies were not considered, and the patient was not treated for this true illness. Debiasing principles, such as being aware of one’s biases, may have prevented this “representative bias” that occurred—while taking into account the dyspnea, past history, and periphrastic haze, the heuristics used by the medical staff bypassed important observations that may have led to improved patient outcomes.

Acknowledgements: Thank you to the patient for allowing the use of this case for presentation. Dr. Thomas Benzioni (DMU/UnityPoint Health) for his valuable guidance and input, and to the Louisiana and Rhode Island based EM physicians for their insights and perspectives on the case.

References


Learning Points

- Cognitive Debiasing
- A number of factors about this case led the medical team to the diagnosis of pneumonia. The patient history, imaging, and presentation were almost textbook, and the patient should have improved with treatment. However, because the team was so confident in their diagnosis, they failed to consider other possibilities and were not able to make the correct diagnosis. This highlights the importance of being open to new possibilities and keeping an open mind.
- Earlier EM may have led to a different outcome. As future EM physicians, we should always examine cases with an open mind and continue to look for clues that may add to our differential. Recognizing our own cognitive biases will prevent us from falling into the same trap that led the medical team to overlook important information about our patients’ illnesses. This recognition would have allowed for...
- Justice versus Beneficence
- As stated elsewhere, viral respiratory-illnesses are known to cause cardiac issues. Even though this patient was a previously healthy 25 y/o, some EM physicians have this perception to be true and do an EQ for presentations like this, no matter the patient history. However...

Conclusion

Given negative cultures and subsequent lack of improvement from antibiotics, focus was shifted from bacterial to viral etiology. 2L of 94% O2 was given in attempt to resolve SOB and improve SpO2. However after observation and management, only marginal improvement was seen in the patient, and X-Ray showed...

Methods/Procedure

Cognitive Debiasing: did not improve, and the staff did not know why. Our previously healthy patient was discharged from cardiology weeks later with cardiomyopathy. This report attempts to discuss this within the context of EM management, and show the importance of cognitive debiasing in EM.