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Confirmation Bias and Restorative Justice in The Setting of a Missed Diagnosis

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Abstract

Background: One factor underlying medical errors in "confirmation bias," the tendency to interpret new evidence as confirmation of one's existing beliefs or theories. When a medical error occurs, the physician has a moral duty to examine the factors which lead to its occurrence, to discuss these factors with the patient who suffered the error, and to perform their due diligence to prevent the error from occurring again. Restorative Justice is a form of collaborative decision-making including all parties involved in a precipitating event, including the perpetrators, victims, and stakeholders. We report on a case in which confirmation bias played a major role in misdiagnosis followed by the application of Restorative Justice principles to address the consequent mistrust between the physician and patient.

Discussion of medical error with the suffering patient is an important part of achieving resolution in the unfortunate circumstance of a missed diagnosis. Application of restorative justice principles may assist medical providers in approaching this discussion, helping to reestablish the patient's trust in the medical establishment, and to seek a positive resolution in which all parties have the opportunity to speak their mind and move forward together.

Keywords: Missed Diagnosis, Restorative Justice, Confirmation Bias, Medical Error

Abbreviations: CT: Computerized Tomography

Introduction

Missed diagnoses are an unfortunate reality of medical practice [1]. One cause is confirmation bias, the tendency to interpret new evidence as confirming of one's existing beliefs or theories [2]. But what is the physician's responsibility to reflect and learn from the error and share findings with the patient when such a misdiagnosis is found? The manner in which the error is disclosed to the patient can severely impact the patient's perception of the error which occurred, further affecting their trust in the provider, the health system, and medical industry at large. According to leading medical ethicists and the American Medical Association, physicians have a moral duty to disclose medical errors to patients promptly and carefully, particularly when they are underserved [3, 4]. Therefore, it is prudent to examine best models and practices in disclosing medical errors which may promote greater trust between the patient and provider. Herein we describe using principles of restorative justice when discussing a missed diagnosis with the patient, as well as an examination of factors which may have led to the missed diagnosis.

Restorative Justice is a process of bringing together victims, offenders, and other stakeholders together to reach a form of justice that is based upon restoration of damage and growth, rather than being based in punishment. Originating in criminal justice, it is now widely used in schools, offices, and academia. The process aims to have the offending party accept responsibility for the event, repair the harm to the best of their ability, and work to reduce the risk of recurrence of the same event. By applying these principles to a missed diagnosis, we may help to better mend the damage done to the relationship between the patient, the provider, and institution at large [5].

Case Report

A 39-year-old woman with a past medical history of migraine headaches, irritable bowel syndrome, chronic nausea, anxiety, hemolytic anemia, juvenile rheumatoid arthritis, and "long covid" presents to clinic as an acute visit with complaints of debilitating headaches, pain with chewing, nausea, and two days of left submandibular swelling. Patient had been seen at this clinic previously with her primary care provider for workup of migraine headaches which significantly worsened following infection with COVID-19, resulting in suspected long-COVID. She had received an MRI of the brain one week before which showed normal findings. The patient also had an appointment with her dentist one week prior, with no abnormal findings.

On clinic presentation, the patient had persistent left facial pain and a self-perceived left facial swelling. Her vital signs included a temperature of 36.9 degrees Celsius, a respiratory rate of 18, a heart rate of 84, blood pressure of 93/68, and an oxygen saturation of 97 on room air. Physical exam was significant for an anxious and tearful affect, and a small, solitary, slightly tender left submandibular lymph node without visible, overlying swelling or erythema noted. Neurologic exam was normal.

The primary care physician diagnosed an acute exacerbation of chronic migraine headaches, in addition to regional lymphadenopathy of the left submandibular region. The patient was instructed to return in one week if the lymphadenopathy did not resolve. One week later, the patient presented to this institution's urgent care center for complaints of "the worst headache of my life", and was subsequently sent to the emergency department, where she was discharged after administration of intravenous pain medication. The patient then travelled to be seen in an affiliated hospital emergency department in a neighboring city, whereupon she was again discharged with a diagnosis of acute migraine. Concerned that all providers the patient had seen were in the same hospital system, and were likely influencing each other by reading the same medical records, the patient's husband, frustrated, brought the patient to an emergency department in the same city but not affiliated with the original hospital system.

At reevaluation, vitals were significant for tachycardia at a rate of 106 beats per minute, with physical exam significant for tender left submandibular swelling. Laboratory values were significant for elevated C-reactive protein measured at 7.7, and low hemoglobin at 11.5. A CT without contrast of the head was negative for significant findings, while a CT without contrast of the neck was significant for a moth-eaten appearance of the left mandible—a possible osteomyelitis, with no visualized soft tissue abscess. Patient was admitted immediately and received a maxillofacial consultation. Patient recievied intravenous antibiotics for four days admitted

and received intravenous antibiotics for four days, with resulting cultures positive for *B. Henselae.* Surgical exploration of the site was significant for a purulent accumulation in the left oral cavity, possibly related to but not clearly in contact with the previously mentioned site of possible osteomyelitis.

One month after discharge, the patient presented to our office for follow-up. She reported to us that she felt the severity of her symptoms were not believed when she the first primary care provider and then a second provider on the next visit, nor by the emergency department doctors during two visits when her pain was most severe and swelling evident. Sequalae of this missed diagnosis include significant fatigue, emotional distress, pain, facial swelling, and persisting regional numbness secondary to local sensory nerve damage due to accumulation of purulent fluids. In order to rectify this mistake, our staff sought to utilize restorative justice principles in performing a thorough analysis of the case to better understand the patient's story and what signs of illness may have been missed. Further, an attempt was made to explore what could be done in the future to avoid repetition of a similar missed diagnosis, and to communicate our sincere apology to our patient. At her suggestion, we obtained the medical records from the other hospital system and called the maxillofacial surgeon. We then met with the patient, asked her to help us summarize the accuracy of our write-up and review lessons we learned from her case. She was very appreciative and helpful, even sending us "before" and "after" photos of her facial swelling (Figure 1,2).

Figure 1: Patient appearance prior to symptom onset

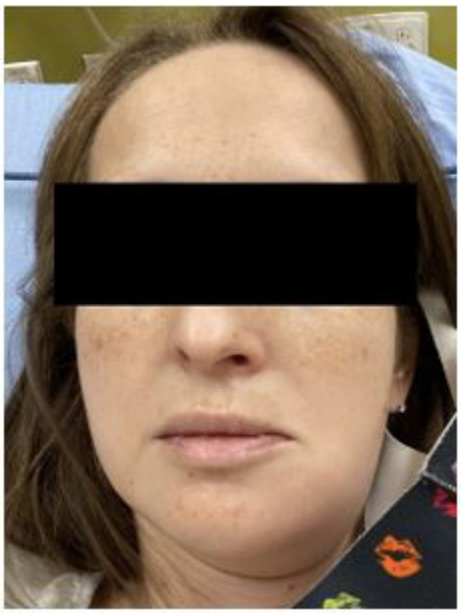

Figure 2: Patient appearance on presentation to our clinic

Discussion

There were multiple confounding factors leading to this patient's repeated presentations, at which each visit her symptoms were dismissed. Some of these possible angles suspected by the patient included subconscious sexism due to patient's gender, with symptoms dismissal due to her presenting with an anxious affect. In addition, the patient received an MRI five days prior to her first visit which was read as normal, except for an enlarged left submandibular lymph node which providers dismissed as incidental. At each visit after this, the providers, reviewing the chart, saw that the patient had been seen multiple times and confirmed the diagnoses made at previous visits without further workup. Yet, this unexplained lymph node should have been a clue for our team that there may have been more to this case than initially met the eye. Particularly due to the patient's immunocompromised history with active steroid treatment, this should have been a warning sign that further workup was indicated.

Confirmation bias, "the tendency to look for confirming evidence to support a diagnosis rather than look for disconfirming evidence to refute it," is an important cause of diagnostic error [6]. Confirmation bias has been implicated in leading to delayed diagnosis, which may impact clinical outcome [7]. This bias may have played a significant role in the delayed diagnosis our patient faced. In presenting to an acute visit at our clinic, her lymphadenopathy was minimized, and her presentation was framed to fit a diagnosis of migraine exacerbation. Subsequently as she was seen by other providers within our health system, this diagnosis led to further attempts to confirm the diagnosis, rather than exploring other potential etiologies. This case serves as a poignant reminder to approach each case with humility, which helps to avoid errors in diagnostic reasoning which may ultimately impact patient outcome.

Approaching the follow-up visit with this patient, we decided to approach the missed diagnosis using principles of restorative justice. This differs from traditional justice models of punishment, rather focusing on a sincere apology offered to the victim (in this case the patient) with a promise for the offender (in this case the provider) to learn and improve in the future. As part of our process for approaching this case from a restorative justice perspective, our team has discussed the case with the patient, who was then invited to become a co-author, our colleague who saw the patient for an acute care visit, and the oral surgeon involved, so as to better not miss these warning signs in the future.

Conclusion

Learning points from our patient include, taking care to not dismiss a patient's pain, avoiding bias towards a case when they have been seen by other providers, understanding that early signs of infection in an immunocompromised patient may be masked by normal vital signs, and approaching missed diagnoses from a restorative justice perspective.

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