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CASE REPORTS

ASSESSMENT AND EMPIRICAL TREATMENT OF CHRONIC ABDOMINAL PAIN FROM SUSPECTED *HELICOBACTER PYLORI* INFECTION IN A REMOTE SETTING: A CASE STUDY

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ABSTRACT

This is a case study that discusses the application of empirical treatment of symptomatic *Helicobacter pylori* (*H. pylori*) in a remote clinical setting with no access to primary or secondary diagnostic testing. The prevalence of *H. pylori* remains globally high, with an estimated 50% of the world's population believed to be infected. Despite the continually high incident rates of infection, 90% of those infected remain asymptomatic. *H. pylori* is a gram-negative, microaerophilic bacteria, mostly found in the stomachs of affected individuals, that causes inflammation and ulceration. Definitive routes of transmission and subsequent infection are still debated. The most likely mechanism of transmission is thought to be intrafamilial; this encapsulates fecal-oral, gastric-oral, oral-oral, and sexual vectors. Contaminated foods and water sources are also highly likely mechanisms of transmission. Therefore, developing countries with poor sanitation, potentially contaminated water sources, and regions with socio-economic hardship experience increased symptomatic cases of *H. pylori*.

INTRODUCTION

The case study pertains to a member of a security team operating in the Middle East. The patient initially presented to the role 1 medical facility (primary healthcare) complaining of a two-day history of worsening abdominal discomfort. Symptoms were not alleviated with the over-the-counter (OTC) medication Gaviscon (Sodium Alginate & Potassium Bicarbonate).

The patient reported previous episodes over several weeks prior. The patient has been self-managed and had initially responded to OTC medications.

The patient was part of a four-man armed security team employed over a range of tasks across the area of operations. The pertinent social background for this case is the patient living in close quarters with all other security personnel, sharing ablutions and gym facilities, and a single common dining facility.

The main water source is bottled local mineral water with locally sourced food that is prepared on-site. The patient partakes in a daily intense physical routine with various natural dietary supplements to support training.

As is common across these roles, the majority of personnel are military veterans who have spent significant amounts of time operating in the Middle East and other undeveloped countries.

PATIENT INFORMATION

The presenting patient is a 40-year-old male who is normally fit and well with exceptional fitness. There is no reported or documented chronic illness and no ongoing prescribed medications. The patient has a documented allergy to penicillin.

The patient initially presented with abdominal discomfort that he described as a burning sensation—also complaining of acid reflux that was not responding to OTC medications.

The patient takes regular dietary supplements including creatine, protein supplements, thermogenic supplements to further support fat loss, and multi-vitamins. All supplements support additional fat loss and muscle growth.

CLINICAL FINDINGS

Primary Clinic Attendance

The patient attended with worsening intermittent abdominal pain that was described as burning with epigastric cramps and worsening dyspepsia with nausea. The patient denied vomiting. No change in bowel habits and denied any episodes of diarrhea. He also reported a slight reduction in appetite.

Assessment Findings & Therapeutic Intervention:

Vital signs/observations all within normal range. Abdomen: No abnormalities present. Normal in appearance with no distension or bruising. On palpation, the abdomen was soft and non-tender—no palpable masses. No pain or discomfort was elicited. There was no flank, groin, chest, or back pain. Normal bowel sounds were heard.

The patient was prescribed and advised:

- 10mg Hyoscine butylbromide (Buscopan) orał TDS.
- 20mg Omperzaole oral OD. (View to increase to 40mg daily if no effect.)
- Maintain fluid intake.
- Stop all dietary supplements, including thermogenics.
- Advice was given if symptoms worsened and for clinical review in seven days.

Secondary Clinic Attendance:

Five days after the patient's primary visit, the patient reported to the role 1 facility with an exacerbation of the symptoms described in the primary attendance. On this occasion the pain was described as epigastric pain that scored 10/10 and was radiating into the left and right flank and chest/xiphoid process.

The patient complained of worsening and constant dyspepsia and feeling bloated. On this occasion, he had been experiencing symptoms constantly for five hours with a small amount of food intake due to bloating and nausea.

Assessment Findings and Therapeutic Intervention:

- Vital signs/observations:
  - Pain 10/10, reducing slightly to 8/10 during assessment and with treatment.
  - ECG: Unremarkable
  - Urine: NAD
  - Apyretic
  - BP: Normal range
  - SpO2: 100%
  - HR: 87 radial and regular at rest.
- Abdomen appeared normal in appearance with no distension or bruising.
- Epigastric Pain + on palpation, all other regions NAD. Neg palpable masses. Some relief when lying supine.
- The patient was prescribed and advised:
  - Paracetamol, 1 g, IV Stat.
  - Metronizadole, 500 mg, IV
  - Omeprazole, 40 mg, BID (TTO 14 days)
  - Clarithromyocin, 500 mg, BID (TTO 14 days)
  - Metronizadole, 500 mg, TDD (TTO 14 Days)
- The patient was given 48hrs of light duties, worsening advice, and 24hr follow-up. The patient was advised to return if symptoms worsen before review.

Timeframes

The patient experienced gastrointestinal symptoms for several months, leading up to the need for empirical treatment. The first consultation occurred following exacerbation of symptoms for one week. A follow-up was planned seven days post initial treatment.

The patient represented with worsening of symptoms five days post initial consultation. Follow-ups planned for 12hrs, 24hrs, seven days, and 14-day post treatment. He required an eradication test upon return to his home country.

The 24hr, seven, and 14 day follow-ups indicated that treatment was effective due to a reduction in symptoms and the patient feeling he had returned to normal.

Diagnostic Assessment

Despite best practice guidelines (NICE, 2014) being available and providing clarity, the required and suggested testing was not possible in the region where the patient was operating, and eradication follow-up testing was also not available. Therefore, diagnostic assessment relied on patient history, thorough questioning, and clinical examination.

Therapeutic Intervention

International and national level guidance (NICE, 2014) can vary slightly with regard to methods of detection and re-testing for eradication post-treatment. The generally accept-

ed method for testing is the Urea Breath Test (UBT), with a sensitivity of 0.80-0.95 and a sensitivity of 0.90-0.96 (Larrson et al., 2022).

In comparison, a focused physical examination with patient history yields a sensitivity and specificity of 0.25 and 0.92, respectively (Larsson et al., 2022). Thus demonstrating the difficulty in providing an accurate diagnosis in a setting where diagnostic equipment and laboratory analysis is sparse or unavailable (Osterwalder et al., 2023).

The lack of diagnostic resources and hospital-based care (Role 2) made definitive diagnosis for this patient impossible. Therefore, considering the patent's presenting complaint, history, physical assessment findings, and significant social history regarding living conditions and being exposed to potentially multiple vectors for infection (Hooi et al., 2017). In addition, considering operating in a developing region with multiple sources of transmission and prolonged employment in developing regions is an additional component to considering symptomatic *H. pylori* as a diagnosis (Aziz et al., 2013). Therefore, the decision was made to instigate empirical treatment for symptomatic *H. pylori* infection.

In order to monitor the effectiveness of treatment for this patent, follow-ups were increased to daily for the first seven days with a view to amending treatment if required, which included second-line medications. Consideration of the patient's penicillin allergy and the limited medications available to the role one medics is a factor in further planning.

If the patient saw minimal improvement or a plateau in symptoms and a secondary drug regime would be actioned, again with no testing available, this would be a case of empirical treatment. Medications planned (NICE, 2014):

- PPI (Omeprazole)
- Bismuth
- Metronidazdole
- Tetracycline

If no improvement was seen or the condition worsened, a decision would have to be made to undertake medical evacuation to a location capable of greater diagnostics and treatment.

Minimal current evidence exists to support empirical treatment of suspected *H. pylori*. Bytzer et al. (as cited by NICE, 2014) found no statistical difference in the reduction of symptoms 52 weeks follow-up post care. There was no documented difference in treatment or strategy failure.

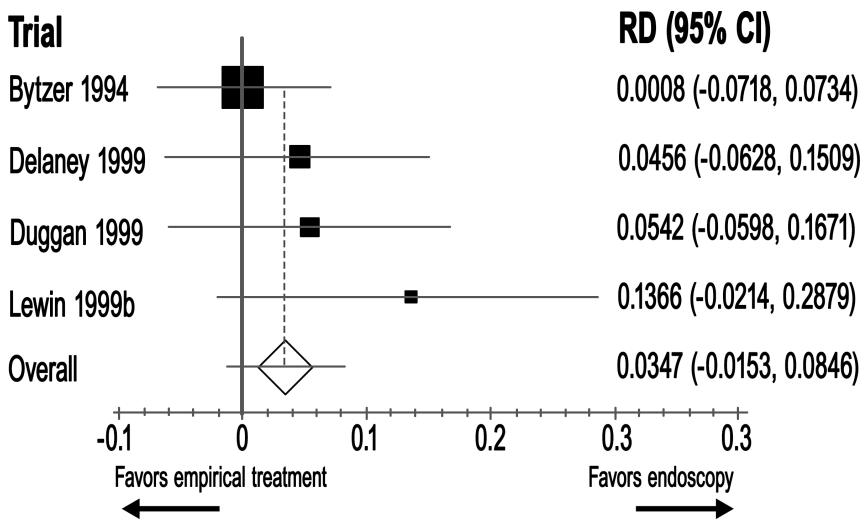

Figure 1. Empirical treatment versus endoscopy (NICE, 2014).

Follow-up & Outcomes

- 12hr follow-up: The patient stated that the 'burning' sensation had improved but was still present.
- 24hr follow-up: The patient was feeling well and noticed an improved appetite. There was no recurrence of pain, and minimal episodes of reflux—returned to normal working duty.
- 1-7 day follow-up: The patient was well with no reported symptoms, and minimal dyspepsia post food by day seven.
- 14 day follow-up: The patient was asymptomatic with no reported dyspepsia or pain, and their appetite returned to normal.

The patient was advised to attend an appointment with his primary care provider upon returning home. In keeping with best practice guidance he should undertake investigations to ensure the irradiation of *H. pylori* bacteria or to direct further treatment as needed.

DISCUSSION

According to recent studies, patients experiencing 'abdominal pain' are the 5th most frequent presentation to the Emergency Department (ED) and account for 3.6% of EMS calls. Of these, 6% required direct hospital admission and those discharged on scene under self-care (12%), and 16% presented to the ED or EMS service as representation within 96 hours (Larsson et al., 2022).

The above indicates that pre-hospital assessment of the patient presenting with abdominal pain can be difficult with regard to both assessment and determining a clear differential diagnosis (Larsson et al., 2022).

Current pedagogy relating to abdominal assessment varies between both educational institutions and levels of clinical training. This is further compounded by the individual's clinical exposure and field of work (Mansour et al., 2019). Recent studies considering the presentation of abdominal pain (AP) revealed that the most common differential diagnoses in patients under 65 years of age are gastroenteritis (15%), non-specific AP (14%), and urolithiasis (6%). The same study recognized that patients presenting with AP received more than 150 diagnoses (Osterwalder et al., 2023). This again highlights the complexity of assessing and providing a reliable differential diagnosis.

In relation to the accepted 'common diagnosis' for AP, clinicians operating in remote locations with limited access to diagnostic testing should consider alternative causes—extra-abdominal causes or "off-hour" presentations—during the course of their clinical patient interactions (Osterwalder et al., 2023).

Clinical providers and support services should consider the need for a defined, structured, and circulated abdominal assessment guidance in developed systems and by those providing off-site remote medical care. These should consider extra-abdominal presentations (Larsson et al., 2022; Osterwalder et al., 2023; Innes et al., 2018).

Additional factors also need to be considered about the working environment and social background of the patients. These include, but are not limited to, dietary supplements that can cause gastrointestinal agitation, increased incidents of potential contamination

of food and water sources, close living circumstances, and prolonged periods of work in under-developed regions (Hooi et al., 2017; Malfertheiner et al., 2023).

Previous to the primary and secondary encounter with the patient, a single consultation was found in the patient's medical record approximately eight months previously, and the patient was diagnosed with acute dyspepsia.

It is important to note that the dyspepsia is a term used to encompass symptoms such as upper abdominal pain or discomfort, heartburn, acid reflux, nausea and/or vomiting. It is not a diagnosis. In addition, dyspepsia is further defined by the above symptoms being present for a period of four weeks or more (NICE, 2014).

Patient Perspective

In discussion with the patient post-treatment and prior to writing this case study, he discussed his belief that he had probably been experiencing active symptoms for several months before he attended the clinic.

Episodes of loose stool have been atributed to stress, returning to operations, and changes in climate. In the study conducted by Osterwalde et al. (2023), somatoform disorders accounted for 1.3% of AP presentations.

The patient also added that he put several symptoms down to supplements that were high in protein, fiber, and a product that due to its thermogenic properties also could suppress appetite and cause stomach cramps.

Retrospectively, he wishes that he had sought medical advice much sooner; however, he feels that given the working environment and the competitive nature of reaching a senior position within the teams, there is a stigma attached with seeking medical help and admitting to being unwell. This point is well discussed as a factor in functioning as part of high-performance teams, military personnel, and male patients (Sharp et al., 2015).

INFORMED CONSENT

The patient gave his unreserved consent for the author to write-up this case study.

REFERENCES

Aziz, R. K., Khalifa, M. M., & Sharaf, R. R. (2015). Contaminated water as a source of *Helicobacter pylori* infection: A review. *Journal of Advanced Research*, 6(1), 539-547. [Online]. Available at: http://dx.doi.org/10.1016/j.jare.2013.07.007 [Accessed 5 June 2023].

Hooi, J. K. Y., Lai, W. Y., Ng, W. K., Suen, M. M. Y., & Underwood, F. E. (2017). Global prevalence of *Helicobacter pylori* infection: Systematic review and meta-analysis. *Gastroenterology*. Epub 2017 Apr 27, 153(2). [Online]. Available at: https://doi.org/10.1053/j.gastro.2017.04.022 [Accessed 10 June 2023].

Larsson, G., Hansson, P., Olsson, E., Herlitz, J., & Hagiwara, M. (2022). Prehospital assessment of patients with abdominal pain triaged to self-care at home: An observational study. *BMC Emergency Medicine*, 22(92), 1-9. [Online]. Available at: https://doi/org/10.1186/s12873-022-00649-x [Accessed 5 June 2023].

Malfertheiner, P., Megraud, F., O'Morain, C., Bazzoli, F., El-Omar, E., Graham, D., & Hunt, R. (2007). Current concepts in the management of *Helicobacter pylori* infection: The Maastricht III Consensus Report. *PubMed*, 56(6). [Online]. Available at: https://doi.org/10.1136/gut.2006.101634 [Accessed 6 June 2023].

Mansour, M. B., & Ahmedana, S. E. (2020). Failure of three recommended regimens to treat a case of gastritis caused by *Helicobacter pylori*. *Journal of Clinical and Diagnostic Research*. https://doi.org/10.7860/JCDR/2020/46170.14209

National Institute for Health and Care Excellence. (2014). Dyspepsia and gastro-oesophageal reflux disease: investigation and management of. Clinical guideline update. UK: *NICE*. pp. 7-25. Retrieved from https://www.nice.org.uk/guidance/cg184

Osterwalder, I., Özkan, M., Malinovska, A., & Nickel, C. H. (2020). Acute abdominal pain: Missed diagnoses, extra-abdominal conditions, and outcomes. *Journal of Clinical Medicine*, 9(4), 899. [Online]. Available at: https://doi.org/10.3390/jcm9040899 [Accessed 8 June 2023].

Sharp, M.-L., Fear, N. T., Rona, R. J., Wessely, S., & Greenber, N. Stigma as a barrier to seeking healthcare among military personnel with mental health problems. *Epidemiology Reviews*, 37(1), 144-162. [Online]. Available at: https://doi.org/10.1093/epirev/mxu012 [Accessed 6 June 2023].