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Learning Objectives

- Recognize that, although travel testing and restrictions are in place at many borders due to covid, endemic diarrheal illness should be considered on a regional basis.
- Consider early antibiotics for severe diarrheal illness presenting from endemic regions.
- Use of metabolic derangement pattern to guide diagnosis and therefore treatment.

Initial Presentation

- A 61-year-old female with no relevant past medical history presented to the emergency department complaining of three days of profuse, watery, dark diarrhea.
- The diarrhea was occurring 8 times a day and started the day she returned home to Connecticut after traveling to Pakistan.
- She reported drinking primarily store-bought water but had used tap water to cook at times.
- She presented after seeing her primary provider for concern of a GI bleed due to dark stool and hypovolemia. On initial assessment, she was lethargic and hypovolemic with a diffusely tender abdomen and hyperactive bowel sounds.
- Lab work revealed significant acute kidney injury, hypokalemia, and a mild metabolic acidosis. Stool hemocult was negative for occult bleeding.

Work Up

- **Abnormal labs:** leukocytosis of 12.9 with 72% neutrophils, potassium 3.5, chloride 112, bicarbonate 18, anion gap 12, BUN 38, and creatinine 2.40 (baseline 1.3). Her stool was tested for heme and clostridium difficile toxins A&B which were negative.

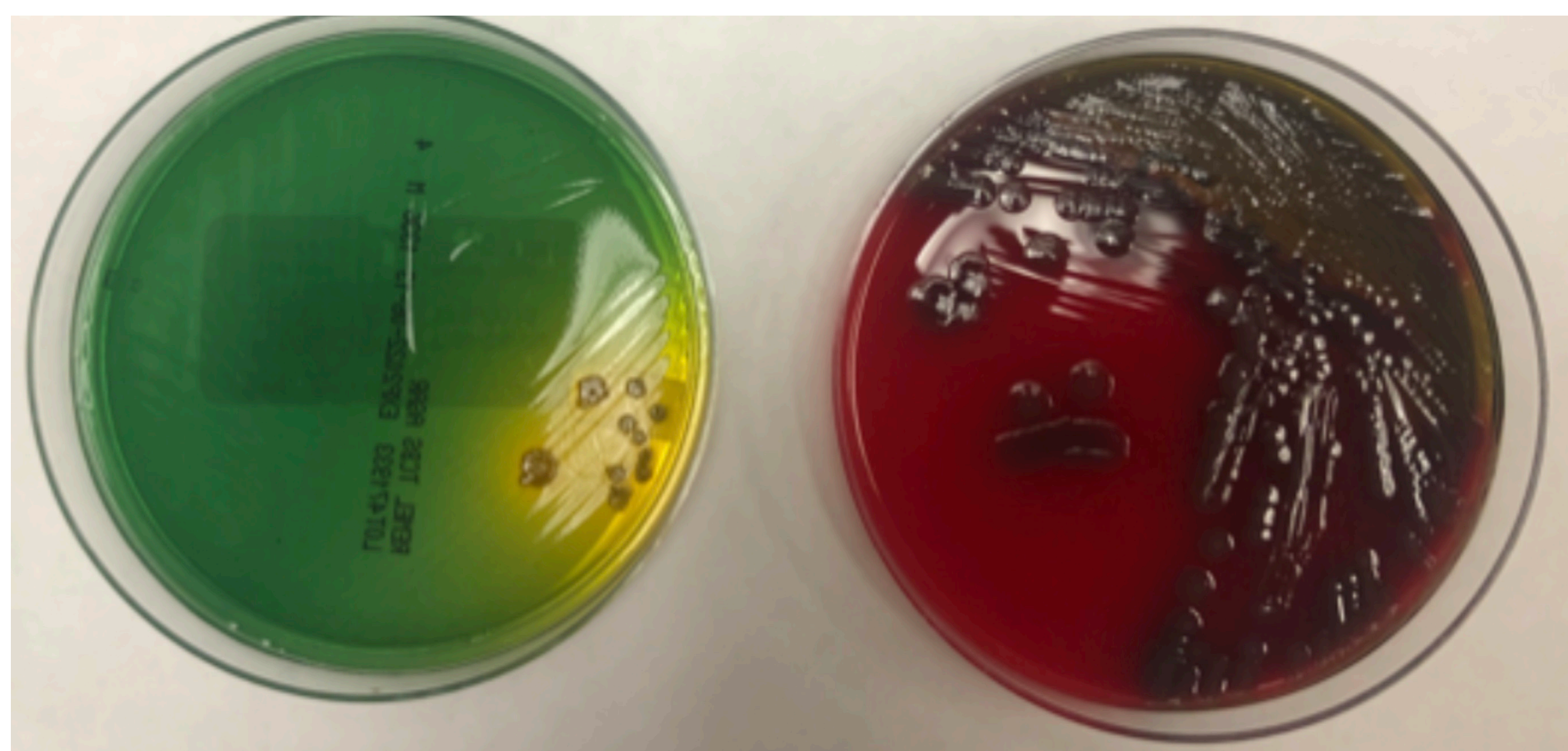


Figure 1 Left: *Vibrio cholerae* on TCBS agar turning yellow because of fermented sucrose.

Figure 1 Right: *Vibrio cholerae* on blood agar showing initial greening and early evidence of clearing.

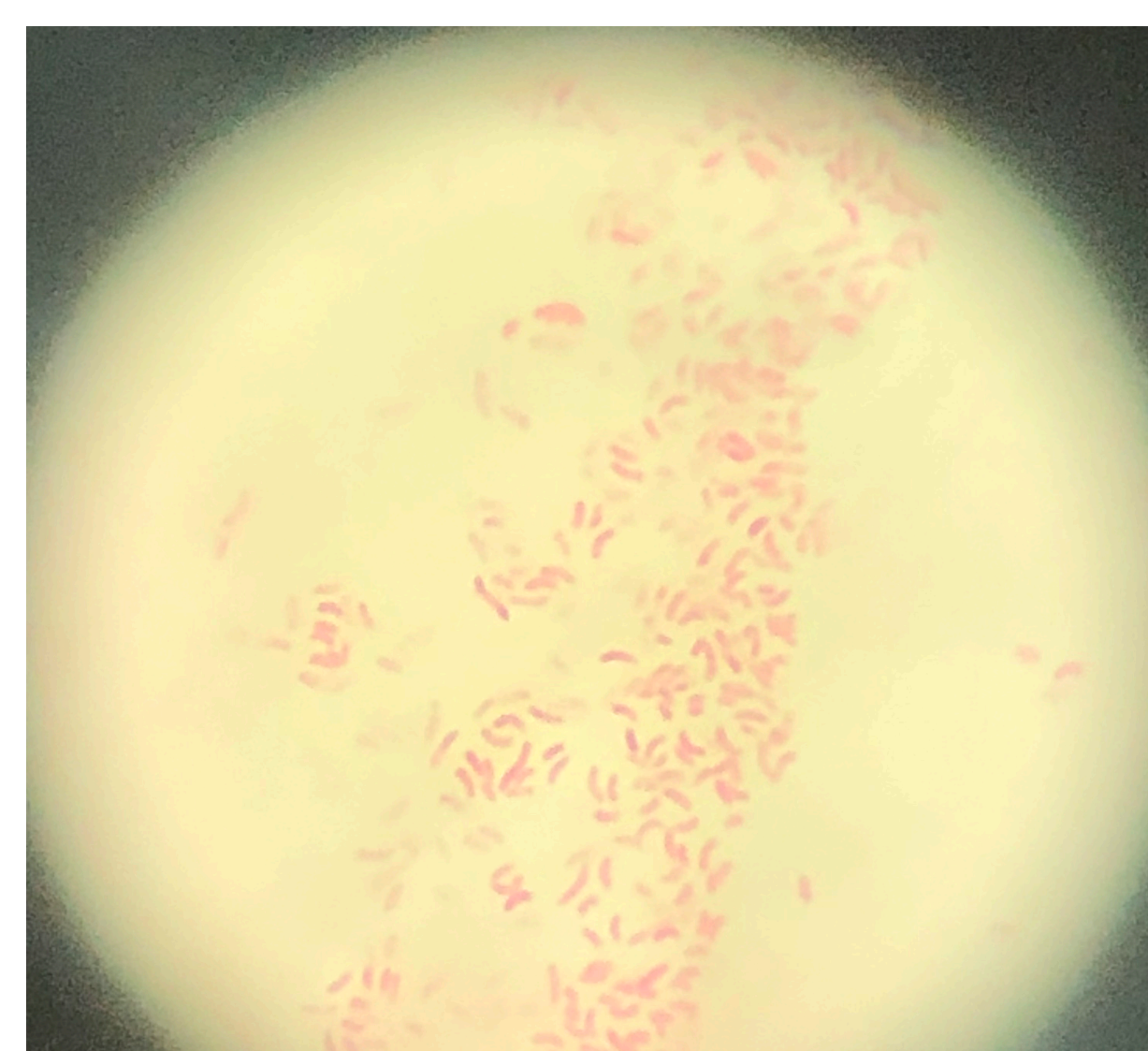


Figure 2: Gram stain showing the presence of numerous flagellated, *Vibrio cholerae*.

Clinical Course

- Although dark stools on presentation gave concern for GI bleed, guiac testing was negative. Patient was initially admitted to medical floors with ongoing diarrhea and lethargy thought to be viral gastritis.
- Abdominal imaging with CT showing liquid stool throughout large bowel without colonic wall thickening.
- Patient's metabolic derangements continued to worsen despite early aggressive IV fluid repletion. She developed altered mental status and was transferred to ICU level care.
- Nephrology was consulted and patient was started on a bicarb drip day three. Day four her blood pH worsened to 7.0 with a bicarbonate nadir of 5.
- On day 6, stool vibrio culture resulted positive and patient was given doxycycline 300mg for one dose in setting of ongoing diarrhea.

Discussion and Conclusion

- During the Covid-19 pandemic and ongoing travel restrictions, cholera is not typically the first infection to come to mind when a patient presents with diarrhea and fatigue.
- Locations where Cholera case-fatality rates were previously dropping in pre-Covid-pandemic-era are now seeing a rise in case-fatalities. This is thought to be from reduced health promotion activities¹.
- In 2019, the Center for Disease Control and Prevention reported a total of 14 cases of *Vibrio cholerae* within the United States². Most of these occurrences were from overseas travel.
- Stool culture with PCR is the gold standard for diagnosis; however, it is pertinent that if cholera is a differential then treatment with isotonic oral rehydration therapy and antibiotics not be delayed.
- In 2022, there has been a demonstrated increase in cholera cases in Pakistan³. Data recognizing this trend is from before overwhelming flooding in the country creating disastrous conditions. Already reports of severe diarrheal illness are being reported out of Sindh province and elsewhere.

References

¹Owaicho, Abechi, and Olwal. Cholera in the era of COVID-19 pandemic: A worrying trend in Africa? *Int J Public Health*. 2021; 66:1604030.

² CDC. National Notifiable Diseases Surveillance System, 2019 Annual Tables of Infectious Disease Data. Atlanta, GA. CDC Division of Health Informatics and Surveillance, 2021.

³ World Health Organization. (n.d.). *Cholera – Pakistan*. World Health Organization. Retrieved October 1, 2022, from <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON391#:~:text=Outbreak%20at%20a%20glance,15%20January%20to%2027%20May>.