# When Strep Throat Gets Complicated

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*Writer's Comment: My freshman year of college, February 2020, I was in the hospital for 14 days fighting an extremely rare complication of strep throat called Lemierre's Syndrome. Ever since this experience, I have been curious how this infection happened and how all the events leading up to my hospital stay affected my health. When Professor Stark assigned the Case Study paper, I immediately had the idea to research the infection that threatened my life. I have so much curiosity surrounding the mechanisms of infection and I thought this would be the perfect opportunity for me to research Lemierre's Syndrome to educate myself and the people who read my paper. Additionally, I learned a lot of important lessons from my experiences that I'm happy to share with others. Timely medical care can be the difference between life and death and you should never be afraid to seek a second opinion.*

*Instructor's Comment: Written for a lay audience, Amber's case study documents her near death experience having Lemierre's Syndrome, a rare illness. Through her detailed writing, we learn about the dangers of infections, how difficult it is for doctors to diagnose and treat novel illnesses, and how it's vital that we know symptoms of a medical emergency. Through her clear story telling and research information, Amber's prose takes us on an unforgettable medical journey, a testimony of the dangers of delayed medical treatment and a reminder that medical complications don't discriminate by age. Amber's story is one of the most compelling first person accounts I have read for UWP 104F*

*(Writing in the Health Professions) and represents a prime example of why I value first person patient case studies.*

*—Agnes Stark, University Writing Program*

"Strep throat gone wrong." That was the text I sent from my ICU bed, unable to get up, as friends and family flooded my phone asking what happened. For most people, strep throat is a very common illness that is relieved with a course of common antibiotics and resolves within a few days. I was an exception. In my freshman year of college, I was diagnosed with one of the nastiest complications of strep throat known as Lemierre's syndrome. The incidence rate of Lemierre's syndrome is one case per million yearly (Giubelan). Lemierre's syndrome is characterized by septic thrombosis of the jugular vein, blood clots that block the vein during inflammation and infection (Lipe et al.), caused by the gram negative bacteria, Fusobacterium necrophorum, which develops as a complication of a localized tonsil infection (Valerio 495). In simpler terms, after someone has a some sort of tonsil infection (in my case it was strep throat), the bacteria enters their bloodstream and forms a blood clot in the jugular vein, a vein in your neck that provides the main blood supply from your heart to your brain, neck and face (Rivard et al.). Bacteria circulating the bloodstream results in sepsis or someone's blood becoming toxic and infiltrating their organs. In February of 2020, I was the one in a million.

My freshman year of college was at the dawn of the COVID-19 pandemic; right before our world fell apart, mine almost did. Two weeks before my trip to the emergency room, I was diagnosed with strep throat and completed the 10 day antibiotic course. About 3 days later, my condition started to rapidly decline. I had a 102 fever, and I thought I had an ear infection because I had a radiating pain just below my ear.

I decided to go to the Student Health Center where they tested me for strep, mono, the flu, and an ear infection, which all came back negative. The doctor sent me home and told me I probably

had a virus. The next day my fever went up to 104, I was throwing up blood, and my whole body felt weak. I continued to feel worse so I made a trip back to the Student Health Center where, once again, the same doctor told me I probably had a virus and was dehydrated. He had me finish a gatorade then sent me home.

According to UChicagoMedicine, people should be advised to go to the emergency room if they are experiencing an illness that is affecting their entire body, have a high fever that won't break, vomiting blood, etc. (Spiegel). According to these guidelines and the symptoms I was presenting with, I should have been told to go to the ER. Delaying my visit to the hospital made my condition much worse. Studies have shown that a lack of social support is associated with patients being less likely to go to the ER in a timely manner which, in turn, leads to worse health outcomes (Reisinger et al). The staff at the Student Health Center didn't provide me the social support I needed to seek further care which worsened my condition. According to the study, 22% of people reported delaying their trip to the ER when they felt they should have gone sooner (Reisinger et al).

When I woke in the morning, I was hardly able to stand and decided to call an Uber to go to the ER. The whole time I felt imposter syndrome and like I would just be wasting the ER doctor's time because according to the student health center doctor, "I just had a virus and should sleep it off." It's a good thing I listened to my body. When the medical assistant initially took my vitals at the ER, my fever was 104.2, my blood pressure was 80/50 and my heart rate was 140 bpm. To put that in perspective, normal vital signs, as stated by John Hopkins Medicine, are 98 degree temperature, a blood pressure of 120/80, and heart rate between 60-100 bpm.

There were a lot of people in the ER that morning and I was expecting to wait for a long time but I skipped the whole line and was immediately given a bed. The hospital staff frantically inserted IVs into me and started pushing fluids. After test results began coming back, it was deemed I was in septic shock (meaning I had been septic for at least a few days prior); the doctors were

questioning how I was still conscious. According to the National Institute of Health, sepsis is one of the top 10 leading causes of death in the U.S. and kills 1 in 5 people ("Surviving Sepsis"). I didn't realize how bad my condition was until I FaceTimed my uncle who works at UCLA Medical Center and I saw the look on his face when the doctors were reading him my test results. The doctors' told me if I even waited a few more hours to come in, things wouldn't have ended well.

I was admitted to the ICU at Sutter Davis and stayed there for three days. They seemed to be trying to do anything they could to get a diagnosis and keep me alive. I started developing a really bad pneumonia because they were pumping my body with so much fluid and my lungs started to retain that fluid. It got to the point where I couldn't lay down because fluid would fill my lungs and any time I moved I would cough so hard I would throw up. I was in the most vulnerable condition I had ever been in my life. I couldn't walk, I couldn't go to the bathroom by myself, I was on high flow oxygen, everyone had to help me with everything.

After three nights of being in that state at Sutter, they finally found the Fusobacterium necrophorum in my blood cultures. Sutter is a small community hospital, and so they don't have the big research facilities that they do at other big hospitals. As soon as this bacteria was isolated, my doctor at Sutter said he had never seen it in his career and didn't know the best course of treatment. I was then put into an ambulance to UC Davis Medical Center and assigned to one of the head doctors of infectious disease. She said this was only the second case of Lemierre's Syndrome she had seen in her career.

The biggest concern was the pneumonia since it was being exacerbated by such an aggressive bacteria. They aspirated my lungs, but then they discovered that I had pockets of bacteria invading my right lung, so they placed a chest tube into my lung which stayed there for a week to drain the fluid out. Three times a day they would put a concoction of antibiotics and steroids up the tube, directly into my lungs, close off the tube so it could marinate, then

unclamp the tube to let my chest drain. There is no standard care of treatment for Lemierre's syndrome because the infection manifests in a variety of ways in every case, but a cocktail of antibiotics is what is normally prescribed. During my hospital stay, I had a total of 12 doctors and a group of medical students who would come in to ask me questions. All these doctors were essential to my successful outcome because collaboration of infectious disease experts, pulmonologists, radiologists, etc. are essential to creating the most effective form of treatment for Lemierre's Syndrome (Lee). After 14 days in the hospital with many procedures and every test you can imagine, I was finally discharged.

When I left the hospital, I was still on a very intense regimen of antibiotics. I had a PICC line so I could give myself IV antibiotics and I had a nurse who came to my dorm room once a day to do blood work and check my vitals. A PICC line, or peripherally inserted central catheter is an IV they place in your upper arm that connects to your heart, so the antibiotics can be directly pumped throughout your body. Since I hadn't been able to walk for about 10 days, I had accommodations in school. A golf cart would come and take me to class and I had to take elevators instead of the stairs. I'm thankful for the accommodations the UC Davis Student Disability Center gave me in making my return to school easier. The biggest effect it had on me was the pain that persisted in my lungs for about a year and half after. I had sharp pains in my right lung that I felt every time I took a breath. The pain has reduced over time and now I only feel it when I'm in higher elevations or if I'm blowing up a balloon. Because my tonsils have been getting consistently infected ever since this incident, I will be getting my tonsils removed in June.

While my case ended successfully, I needed to seek care sooner. Lemierre's syndrome has so few reported cases and a history of delayed diagnoses resulting in complications and death, giving the infection a legendary status in medicine (Lee). I'm lucky to be okay with the state I entered the ER in and if I would have gone sooner, I probably wouldn't have faced the complications that occurred.

I learned that doctors can make mistakes or give incorrect advice and to that I need to listen to my body. Diagnostic delays in infectious diseases can result in increased mortality and is a public health issue (Suneja, 1). This is partly due to infectious diseases having common, nonspecific symptoms and ordering the wrong tests (Suneja, 6). Since infections can take over the human body so quickly, timely diagnoses are essential, but don't always happen (Suneja,1). Seeking a second opinion is necessary and you shouldn't feel like you're wasting someone else's time for seeking a second opinion because that opinion can be the difference between life and death.

## Works Cited

Giubelan, Lucian, et al. "Lemierre's Syndrome: Case Presentation of a Rare and Possibly Life-Threatening Condition." *Medicina*, vol. 57, no. 10, 2021, p. 1102., https://doi.org/10.3390/medicina57101102.

Lee, Wen-Sen, et al. "Lemierre's Syndrome: A Forgotten and Re-Emerging Infection." *Journal of Microbiology, Immunology and Infection,* vol. 53, no. 4, 2020, pp. 513–517., https://doi.org/10.1016/j.jmii.2020.03.027.

Lipe, Demis N., et al. *Septic Thrombophlebitis - Statpearls - NCBI Bookshelf.* https://www.ncbi.nlm.nih.gov/books/NBK430731/.

Rivard, Allyson B., et al. "Anatomy, Head and Neck, Internal Jugular Vein." *StatPearls*, StatPearls Publishing, 26 July 2021.

Racina, Amber. Personal interview. 15 April 2022.

Reisinger MW, Moss M, Clark BJIs lack of social support associated with a delay in seeking medical care? A cross-sectional study of Minnesota and Tennessee residents using data from the Behavioral Risk Factor Surveillance System*BMJ Open* 2018;8:e018139. doi: 10.1136/bmjopen-2017-018139

"Surviving Sepsis." *National Institutes of Health,* U.S. Department of Health and Human

Services, 8 Sept. 2017, https://newsinhealth.nih.gov/2014/08/surviving-sepsis.

Thomas Spiegel, MD. "When to Go to the Emergency Room vs an Urgent Care Clinic." *UChicago Medicine*, UChicago Medicine, 29 Oct. 2020, https://www.uchicagomedicine.org/forefront/health-and-wellness-articles/when-to-go-to-the-emergency-room-vs-an-urgent-care-clinic.

Valerio, Luca, et al. "Lemierre Syndrome: Current Evidence and Rationale of the

Bacteria-Associated Thrombosis, Thrombophlebitis and Lemierre Syndrome (Battle) Registry." *Thrombosis Research*, vol. 196, 2020, pp. 494–499., https://doi.org/10.1016/j.thromres.2020.10.002.

"Vital Signs (Body Temperature, Pulse Rate, Respiration Rate, Blood Pressure)." *Johns Hopkins Medicine*, 13 Dec. 2021, https://www.hopkinsmedicine.org/health/conditions-and-diseases/vital-signs-body-temperature-pulse-rate-respiration-rate-blood-pressure.