



MEDICAL MYSTERY INVESTIGATION | MARCH 8-APRIL 2, 2021

SCENARIO

Sally is an 18-year-old female in her senior year in high school. Sally plays soccer and tennis. She is also a hard-working and high-achieving student with a 3.8 GPA. Sally is the captain of both the soccer and tennis team, and she is hoping to earn a scholarship to play soccer at Washington State University.

During her junior year of high school, she began experiencing a slight “tight” feeling in her throat and chest area that was also accompanied by some coughing. The symptoms always occurred during exercise. When the uncomfortable symptoms appeared, Sally would take a short break and the symptoms resolved pretty quickly on their own. Although she continued training for her sports throughout the summer months, she did not experience any significant symptoms during this time.

Upon starting her senior year and the competitive soccer season, her symptoms reappeared. The symptoms got progressively worse during the first few weeks of the season, and they usually presented during practice or a game. In one event, Sally experienced acid reflux or a heartburn-like feeling after a particularly intense game.

Most of her symptoms appeared more often during games when she was working hard and feeling stressed or anxious. The symptoms consisted of a very tight, choking-like feeling in the throat and chest, and difficulty breathing. She also described an audible, wheezing-like sound that seemed to originate in her throat or chest.

When her symptoms appeared, Sally stated that she would take short breaks to focus on taking deep, slow breaths, and relaxing as much as possible. In general, this technique would take care of the symptoms within a few minutes. Will Sally have to give up her dream of playing college soccer?

CLUE #1 | MEDICINE

- Recommend workup with an allergist, due to symptoms being present fall-spring and not summer
 - Results: Negative results for all tested allergens
- We would recommend that the following tests be run:
 - Pulmonary Function testing with a flow-volume loop
 - Result: Expiratory loop appears normal, inspiratory loop appears to be flattened
 - Flexible laryngoscopy
 - Result: abnormal vocal cord movement toward the midline during inspiration and/or expiration
 - Arterial Blood Gases measurement
 - Result: Within normal range
 - Serum immunoglobulin E (IgE) assay
 - Result: within normal range
- Nebulizer treatment given in office
 - Result: No noticeable relief
- Chest x-ray ordered
 - Result: shows no present infection

Additional Resources:

- <https://medicine.wsu.edu/md-program/overview-applying-to-medical-school/>
- <https://students-residents.aamc.org/choosing-medical-career/medical-careers/>

CLUE #2 | PHARMACY

- Pharmacist will share information on the heartburn with a nutritionist to see if it can be helped with proper diet
- Prescribe short/long-acting inhaled bronchodilators to be used before exercise
 - Result (short-acting): Helped Sally to not feel as short of breath, but still felt tightness in throat and chest
 - Result (long-acting): no noticeable relief
- Over the counter allergy medication
 - Result: unsuccessful in reducing symptoms
- Acid reflux medication recommended as needed
 - Result: did not relieve symptoms fully
 - Follow-up: contacted nutritionist in addition to prescribing medication

Additional Resources:

- <https://pharmacyforme.org/>
- <https://pharmacy.wsu.edu/doctor-of-pharmacy/admissions/save-a-seat-2/>

CLUE #3 | NUTRITION AND EXERCISE PHYSIOLOGY

Scenario information to address:

- Symptoms: choking feeling in the throat and chest during physical exertion
- Wheezing and coughing present
- Patient reports that slow breathing can help to alleviate symptoms
- Patient reports occasional stomach pain and heartburn post exercise
- Conduct Exercise Evaluation
 - Use breathing techniques to slow down breaths during and after exercise
 - Continue to monitor and measure exercise ability
 - Gave Sally repetitive cardio-based exercises to do while focusing on breathing
- Nutrition Consult
 - Work with Sally on an elimination diet to help minimize her acid reflux and determine what foods might be causing Sally problems

Additional Resources:

- <https://medicine.wsu.edu/dcp/nep-department/clinics-and-facilities/>

CLUE #4 | SPEECH AND HEARING SCIENCES

- Work-up with speech pathologist
 - Looking for history and current findings
- General Practitioner ordered X-Ray
 - Result: normal, clear lungs, ruled out pneumonia
- Sally's signs and symptoms
 - Hoarse voice, noisy breathing, inability to speak loudly
 - Feeling out of breath, choking/coughing, tight feeling in throat and chest, acid reflux
- Anxiety
 - Patient shown breathing techniques to reduce symptoms
 - Relaxed throat breathing
 - Diaphragmatic breathing
- Spirometer
 - Recommendation: exercise training, repetitive practice of exercises
 - Speech Pathologist will speak with NEP to form an exercise routine for Sally

Additional Resources:

- <https://medicine.wsu.edu/speech-hearing-sciences-degree-program/>

CLUE #5 | NURSING

- Vital Signs
 - Temperature: 98.7 degrees Fahrenheit
 - Pulse: 110 beats per minute during practice, 70 beats per minutes resting

- Respiration Rate: 34 breathes per minute during practice, 16 breathes per minute resting
- Blood Pressure: 116/76
- Oxygen Saturation: 98%
- Holy 8+1 Tool
 - Onset: started last year, halted in the summer, restarted in the fall and happens during every practice and game
 - Location: tightness in the throat and chest
 - Quality: very hard to breathe, but is still able to
 - Quantity: 7 (on scale of 1-10)
 - Frequency & Duration: 4-5 times per week, symptoms last until a break is taken
 - Aggravating & Alleviating Factors: stress is an aggravating factor, deep breathing is an alleviating factor
 - Associated Symptoms: weird, loud sound when breathing, heartburn, trouble breathing
 - Course: last year was a little bit of tightness, has gotten worse this year and is now very hard to breathe
 - Why do you think you are having these symptoms?: Sally thought she was just working harder, but now she feels like there is something really wrong.

Additional Resources:

- <https://nursing.wsu.edu/>