

MICROBIOLOGY CASE 5-4

Jack and Diane R., a 25-year-old newlywed couple, reported to the emergency room with abdominal pain and diarrhea of 4 days' duration. They stated that they initially thought they "picked up a summer stomach flu" because they recently returned from a 5-day camping trip. Jack added, "We were really roughin' it Doc. It was great until the weather got miserable, rainy, and cold the last 2 days of the trip!"

The symptoms began shortly after their return and included fever, headache, myalgia, and malaise. The diarrhea started the next day and was mild at first with 2 to 3 loose bowel movements per day. The diarrhea became more severe and was up to 7 to 9 watery bowel movements per day with severe cramping. The physician asked many questions about the trip to collect a complete history. The couple denied drinking any water from the lake near their campsite, although after further questioning they admitted to skinny-dipping in the lake one evening "before the weather got bad." Diane mentioned that although this trip was Jack's idea of "roughin' it" they were careful to use only bottled water for drinking. She went on to explain that they bathed and used the sanitary facilities provided at the campsite and used only potable water from that facility for washing dishes and cooking. They described the food they had eaten during their trip, including hamburgers, hot dogs, chicken, roasted corn, canned beans, macaroni salad, and cole slaw (cabbage salad). They transported the meat frozen and were careful to keep all the food on ice as much as possible. Diane mentioned that she thought the chicken they ate for lunch their last day may have been undercooked, but she did not want to make Jack go back out into the rain to cook it longer.

Physical examinations of both Jack and Diane were unremarkable except for slight dehydration and elevated temperature (Jack 100.9°F, Diane 100.2°F). Both patients had slight diffuse abdominal tenderness upon palpation. Stool specimens were collected from both patients and processed for ova and parasite examination. Routine stool culture for bacterial pathogens was also ordered.

Parasitology report: "No ova or parasites seen."

Observation of the bacteriology plates showed many lactose-positive organisms on the gram-negative selective agar. Specialized selective media had only rare colonies of lactose-positive organisms in the area of the primary inoculum. The CAMPY agar plate showed moderate growth.

QUESTIONS

1. Why might the physician suspect that parasites could be a possibility in these patients?

2. What parasites might the physician have suspected?

3. How should a stool culture for routine bacterial pathogens be processed?
Be sure to include appropriate media and atmosphere of incubation.

4. What bacterial pathogens should be included in the screening of a routine stool culture, and how would the clinical laboratory scientist processing the culture recognize these potential pathogens?

5. When a stool specimen is bloody, additional testing is often recommended or suggested to the physician (especially with children or the elderly). What pathogen is of concern in that situation, and how is this specimen processed?

6. Other more unusual bacterial pathogens may also cause diarrheal disease, and physicians may request additional testing for these organisms. What organisms might be suspected, and what media and atmosphere of incubation are used to isolate these organisms?
7. Based on the history and laboratory results presented, what is the most probable cause for the diarrheal disease in these patients?

RECOMMENDED READINGS

- Koneman, Elmer W., et al. (1997). *Color Atlas and Textbook of Diagnostic Microbiology*. 5th ed. Philadelphia: J. B. Lippincott.
- Mahon, Connie R. & Manuselis, George. (1995). *Textbook of Diagnostic Microbiology*. Philadelphia: W. B. Saunders.
- Mandell, Gerald L., et al. (2000). *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 5th ed., vols. 1 & 2. Philadelphia: Churchill Livingstone.
- Murray, Patrick R., et al. (1995). *Manual of Clinical Microbiology*, 6th ed. Washington D.C.: ASM Press.