Pandora’s Poison

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From the report which the hospital had sent Doctor Frank Skorzeny, he knew that the patient evacuated from the Grand Canyon had been admitted with swollen lymph nodes forming the incipient buboes in his groin which were typical of bubonic plague. But the bacteria had already escaped from the lymphatic system into his bloodstream. On his tablet, Frank paged through the last update he had received before boarding the plane in Atlanta. The victim was suffering from multiple organ failure from septicemic plague. It was unlikely he would still be alive when Frank disembarked in Flagstaff. The son, James Carter, had presented asymptomatic, but as a precaution had been given the same course of antibiotics as his father. Both of them had been placed in isolation units.

Frank had seen plague cases before, and knew that this was most likely an isolated event which would in all likelihood end with just these patients, whether they lived or died. But as a CDC epidemiologist he was aware of the potential for a more serious outbreak. He always had in the back of his mind the tracks an epidemic could take. If the pathogen were particularly virulent it might kill too quickly to find new hosts to infect. Then it would fade away, perhaps leaving less deadly strains, which would result in low level infections that might kill more slowly or just become chronic diseases. After the epidemics run their course, they disappear from the areas which they had invaded and remain only in those pockets where they are endemic, infecting hosts which have evolved immunity until the opportunity comes to break out once again into the wider, more vulnerable population. In the age of antibiotics, such outbreaks were almost exclusively viral, such as sporadically occur with hemorrhagic viruses such as Ebola, Lassa and Marburg. The once deadly epidemics caused by bacteria, such as plague, could in modern times always be quelled with antibiotics.

As his plane approached Flagstaff, Frank looked out over the barren brown desert. This was one of those reservoirs where plague was endemic and which served as the source of almost all of the dozen or so cases occurring in the United States annually. Even when there were no infections occurring among the residents of the area, the bacteria was always lurking within those hosts which it did not actually sicken. Frank pushed his tablet to the side to allow the flight attendant to place a cup of water on his tray. He liked to stay hydrated on flights, aware that the cabin atmosphere contributed to drying the nasal passages. He had seen too many cases of respiratory disease outbreaks disseminated through airline passengers. That was one of the main paths by which new flu strains found their way around the planet.

When Frank felt the plane bank and start to descend, he looked up from his tablet to see that the flight attendant was coming down the aisle to collect the trash. She was in exactly that age range which piqued his curiosity. Frank stared at her for a few seconds trying to guess which side of that historical divide she fell on. As she approached, he glanced quickly back down at his tablet and pushed his empty water cup to the window side of his tray so she would have to lean across him to reach it. When her blouse sleeve slid up her outstretched arm, he had his answer. She had been vaccinated against small pox.

“Excuse me,” she smiled politely, “you’ll have to stow that away now and put your tray table upright as we prepare to land.”

So they were in the same cohort, he thought, born before nineteen seventy-two when the United States stopped routinely giving small pox vaccinations, possibly later if she was born outside the country. They might be lucky in the event of a weaponized small pox event and have enough residual immunity to provide protection. She looked younger, he thought, running his hand over his own graying head. There were even some white hairs in his eyebrows now. Slipping the tablet back into his bag, he gazed out the window at the desert landscape, wondering how many creatures beneath him were harboring Yersinia pestis, the plague bacteria. He knew of at least two.

Doctor Suresh Sunder met Frank at the Flagstaff Medical Center and debriefed him on the patients as they prepared to enter the isolation areas. The first examination would be in a section of the morgue since Peter Carter had already succumbed to the infection.

“Streptomycin was administered immediately to both patients, but it was too late for the older man,” Doctor Sunder offered the chart to Frank.

“Did they both become symptomatic?” Frank asked.

“Not the son, but we were able to culture a small amount of Yersinia pestis from the area around what looked like a flea bite on his back.”

“Anywhere else?” Frank slipped into the protective gown and tied the back.

“No. And after twenty-four hours of the streptomycin treatment there was no trace of the bacteria anywhere in his body. The father had it in his lymphatic system as well as in his blood. The antibiotic did not act in time before he died.”

Frank looked at Sunder, “How do you know it did not act in time?”

“Because the patient died,” Sunder replied.

“Was the bacteria level reduced?” Frank adjusted the protective hood.

“No, it was still high even at the time of death.”

“But it had fallen in the son.”

“That’s right,” Doctor Sunder acknowledged Frank’s point. If it was the same microbe, the streptomycin should have either worked for both or for neither. Even if the father had died because the treatment had been given too late, there should have been a reduction in the microbe count.

“How about in the sputum?”

“No,” Doctor Sunder was already sliding down the clear protective face shield, “It seems not to have been pneumonic.”

Frank was relieved that it had not been found in the airway. Pneumonic plague can spread through coughing as easily as a cold and would have amounted to a completely different ball game.

Peter Carter’s body showed traces of the purpura spots which generally accompany septicemia. There were also swelling blue buboes in the groin, though they were not extremely large. In septicemic plague the patient often died so quickly that the buboes did not even have time to form. The area around the squirrel bite was not very inflamed, and if that had indeed been the entry point for the plague bacillus, the septicemia would likely have proceeded quickly enough so that there would be no buboes. This all suggested to Frank that the septicemia had been secondary to the lymph infection. Careful examination of the body also revealed what could have been a flea bite, further supporting Frank’s initial conjecture. Internally the clotting of the blood often associated with septicemic plague was present. The lungs were clear, which was consistent with Doctor Sunder’s statement that no Yersinia pestis could be cultured from the sputum. Frank nevertheless took samples of lung tissue along with lymph, blood and other organ sections for further analysis. He also asked Doctor Sunder to provide him with specimens of the bacteria cultures taken from the lymph nodes and blood.

When he had finished examining Peter Carter, Frank cleaned up and disinfected his hands.

“Let’s go have a look at the son.” Doctor Sunder said as he led him out of the morgue.

One of the reasons Frank Skorzeny had gravitated to epidemiology after medical school was that he was not a people person. During his internship he loved the science of medicine but did not like dealing with patients, an aversion which had only grown stronger since his wife’s tragic death. He was far more comfortable working with cadavers than interviewing a live sick patient. But he needed to leave his comfort zone now as he went from the dead father to the living son. The protective suit lent Frank some personal isolation and also insulated him from pathogens. Whenever he put it on he was reminded of the medieval sketches of plague doctors wearing long beaks. Those were also a form of protection as the beaks were stuffed full of herbs and spices meant to filter any bad air ‘miasma’ out of the doctor’s nose. The impression on the patient must have been similar to that which Frank would now be making on the son.

“How are you feeling?”

Jim Carter was perhaps thirty years old. He needed a shave and his blue eyes were puffy. Probably from crying.

“Physically okay,” he played with the intravenous line, “I have to arrange to send Dad’s body home.”

“We will need to keep him here a few more days as a precaution,” Frank gently pulled back the sheet and palpitated under Jim’s arms and the groin area. There was no sign of swelling.

“Your surname, Carter, is that English?” Frank asked.

“It is,” Jim answered, “both my parents came from Sheffield.”

“Have you felt feverish or achy?”

Jim shook his head, “just from the hike. I understand I was exposed to the bacteria too.”

“Yes,” Frank examined the insect bite Doctor Sunder had told him about. It was a little red but did not appear infected.

“Was your father the only one bitten by the squirrel?” Frank asked.

Jim nodded.

“I hope you were able to get all your equipment out of the canyon,” Frank said.

“I took some of it which I was allowed to bring on the helicopter. I left the rest with Mike.”

“Mike?” Frank looked at Sunder who raised his eyebrows and shook his head in ignorance.

“My cousin,” Jim said, “he was with us on the hike.”

Frank, and apparently Sunder, had not heard about Mike.

“Where is he now?” Sunder asked Jim.

“He went home,” Jim answered.

“Which is?” Frank asked.

“New York City. He lives in Manhattan.”