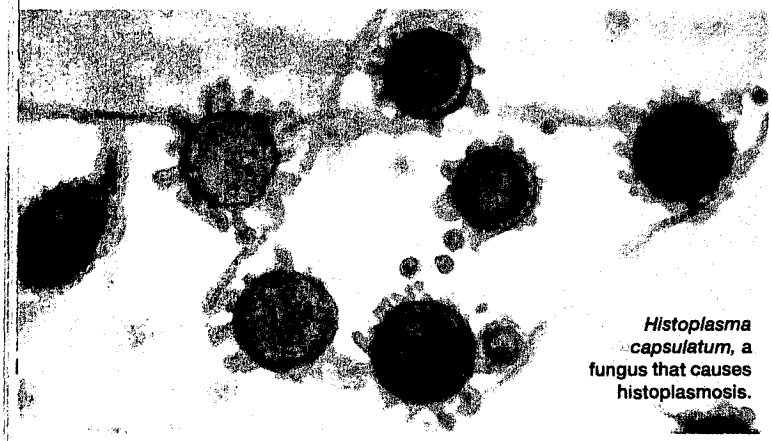
A bad choice made at a young age brings about devastating consequences many years later.

It's funny how songs can trigger memories. For example, when Peggy Lee's "Fever" recently played on my car radio, I thought of a long-ago patient whom I'll call Jerry Rivers.

Jerry had fever, all right—but it wasn't the sizzle of passion. Ten years ago, when I first met him, the trumpeter who helped launch the "cool jazz" movement of the 1950s had been hitting 101 degrees Fahrenheit for weeks. His internist had already sent out routine blood, urine, and stool cultures. No answers there. Nor had abdominal scans revealed a hidden abscess. From the moment we met, I knew Jerry had no ordinary bug.

Across the Formica desk of my small exam room, the frail but animated 74-year-old—his head and torso lightly bobbing—gazed at me, perplexed. "I don't get it," he said. "When that staph infection gave me fevers last year, my doctors figured it out right away."

Jerry's casual comment belied a complex medical history. Decades earlier, like many musicians of his era, he had experimented with heroin and picked up hepatitis C. In the time since then, the virus had silently scarred his liver. More recently, Jerry's spleen had started to destroy red cells and platelets, those minuscule bloodborne bits that stanch bleeding. His doctors concluded that his spleen—large and flecked with calcium deposits—harbored a lymphoma.



***Histoplasma capsulatum*, a fungus that causes histoplasmosis.**

As a result, six months before we met, Jerry underwent a splenectomy, only to suffer a post-operation bout with *Staphylococcus aureus*, that notorious invader of hospital wounds. Fortunately, strong antibiotics quickly cured the infection. Or had they?

To add to my challenge, minus a spleen Jerry was now vulnerable to certain encapsulated bacteria—*Streptococcus pneumoniae* in particular—which are normally coated by antibodies produced by the spleen prior to being eaten by white blood cells. His missing spleen also predisposed him to exotic bugs like the malaria parasite. But truth be told, Jerry's simmering illness didn't suggest an aggressive culprit like staph or pneumococcus, and he had never traveled to any place where he could plausibly have contracted malaria.

Back to basics. As Jerry once again felt his forehead for warmth, I started scanning his chart, so extensive that it filled two large volumes. Most of its notes dealt with his hepatitis C infection, which was rapidly progressing. Of course, I already knew that from Jerry's physical exam, which had revealed classic signs of liver disease: fluid in the abdomen, reddened palms, and small, spidery veins on the skin.

"Hmm, here's something interesting," I said, suddenly looking up. "I just found a CT scan from last year that shows a calcified lymph node near your heart and some pleural scarring. Did you test positive for tuberculosis as a kid?"

"No," Jerry replied. "Not that I remember."

His answer didn't reassure me. Because TB was widespread during the first half of the 20th century, many people in Jerry's age group were unknowingly exposed in their youth. Years later, when old or debilitated, such patients could experience an unfortunate reactivation of long-dormant infections. On the other hand,

Did my patient have lymphoma? No. But was his body harboring a hidden invader? Yes indeed.

if tuberculosis were the cause of Jerry's protracted fever, by now I would have expected more abnormalities to show up on his chest X-ray. The film from a week earlier had been clear.

Frustrated by the simultaneous lack and abundance of clues, I closed Jerry's chart and filled out requisitions for additional blood and urine tests that might detect TB or certain fungal organisms and thus pinpoint the source of his fever. This slow-going approach wasn't my preference, but my original plan—to admit him to the hospital and pursue an aggressive workup—had been vetoed by the patient.

Soon, however, we were back to Plan A. Jerry's fevers had accelerated, his tests again yielded no leads, and he was so weak that he needed a wheelchair to get around our medical center. Declining hospitalization was no longer an option.

Once settled in his room, Jerry received a local anesthetic while a medical resident drew a sample of bone marrow from his posterior ilium, an easily accessed pelvic bone. I had the specimen sent for cultures and pathology. Unlike with some cases, I didn't have to twist any arms to get the procedure done. Jerry's oncologist also wanted the bone marrow exam to rule out recurrent lymphoma.

Three days later, the waiting was over. Did Jerry have lymphoma? No. But was his body harboring a hidden invader? Yes indeed, and one not often found in California. A call from the hospital microbiology lab confirmed that the culprit was indeed a fungus: a yeast (*Histoplasma capsulatum*) that was growing in Jerry's bone marrow and bloodstream. The trumpet player who once crisscrossed the nation with fellow band members had fallen prey to a pathogen common to the Ohio and Mississippi river valleys.

The disease caused by *Histoplasma capsulatum* is traced to soil, usually in a damp environment contaminated by droppings from birds and bats—animals that can carry the agent. From here, fungal spores can be inhaled into human lungs, where they proliferate in lymph nodes in the chest. At this stage, most patients

experience either mild flulike symptoms or no illness at all.

Unfortunately, the outward calm is deceptive. In many cases the invaders do not go away; they simply lie in wait in acidic subspaces within a group of white blood cells called macrophages (large, tissue-based cells whose main job is to engulf and digest intruders). One way the yeast is able to survive is by subtly alkalinizing its hideouts. At the same time, healthy humans mount defenses that keep the fungi at bay. CD4 lymphocytes, the same immune cells that protect HIV-infected individuals from getting full-blown AIDS, are a prime bulwark.

Jerry's problem was this: The loss of his spleen and other illnesses had finally depleted his CD4 troops. That's when his long-silent infection roared back to life, converting his macrophages from disease penitentiaries to factories spewing yeast into his blood and bone marrow. In another histoplasmosis victim, different clinical features might emerge. Some sufferers present with upper-lobe lung cavities—a picture that mimics the X-ray appearance of one form of tuberculosis—or bulky intrathoracic lymph nodes, walnut-size tissue masses straddling the central structures of the chest. Inflammation and fibrosis around the heart are two other signature symptoms, as are painless ulcers (often mistaken for cancer) that may affect the tongue, larynx, gums, and lips.

The standard antifungal treatment for histoplasmosis, a drug called itraconazole, proved tricky to prescribe in Jerry's case because his liver disease altered the drug's metabolism. Once we used serum drug levels to optimize his dose, however, he turned a corner. Within a few weeks his fevers were gone and his fungal blood cultures were clean. When Jerry left the hospital, he was effervescent. From time to time he even played with a group of fellow musicians. He also put together a CD of jazz standards and gave me a copy.

That proved to be a brief interlude, though. Despite our success in beating back Jerry's fungal blight, a few months later hepatitis C caused his already marginal liver to fail. Just one question remained: Was he a candidate for a liver transplant? Some doctors said yes, others argued he was too fragile. Jerry understood that he was standing on a razor's edge, but hope drove him forward. If the transplant doctors were willing, he told me privately, he would take his chances.

Sadly, this story does not end well. Jerry got his liver transplant, but numerous complications ensued. He died two months later, having never left the hospital.

Not long ago I spoke with Jerry's wife, and we reminisced about the man who had played jazz with the greats. To this day she questions the decision to keep him alive during his final, poignant weeks. "He was special in so many ways," she said. "I just hope he didn't suffer too much." I tried to comfort her. In retrospect, who can judge the choices made by a dying patient or his doctors—or those made years earlier by a young artist on the loose?

I'm sure Jerry always rued the day a dirty needle gave him hepatitis C. To his credit, he gave up drugs and alcohol long before he married. But perhaps living the life he loved, jamming who knows where—Kansas City? Louisville? Memphis?—was worth the price he paid long ago for drinking in a breath of fungus-laced air.

At least I like to think so. ◘

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