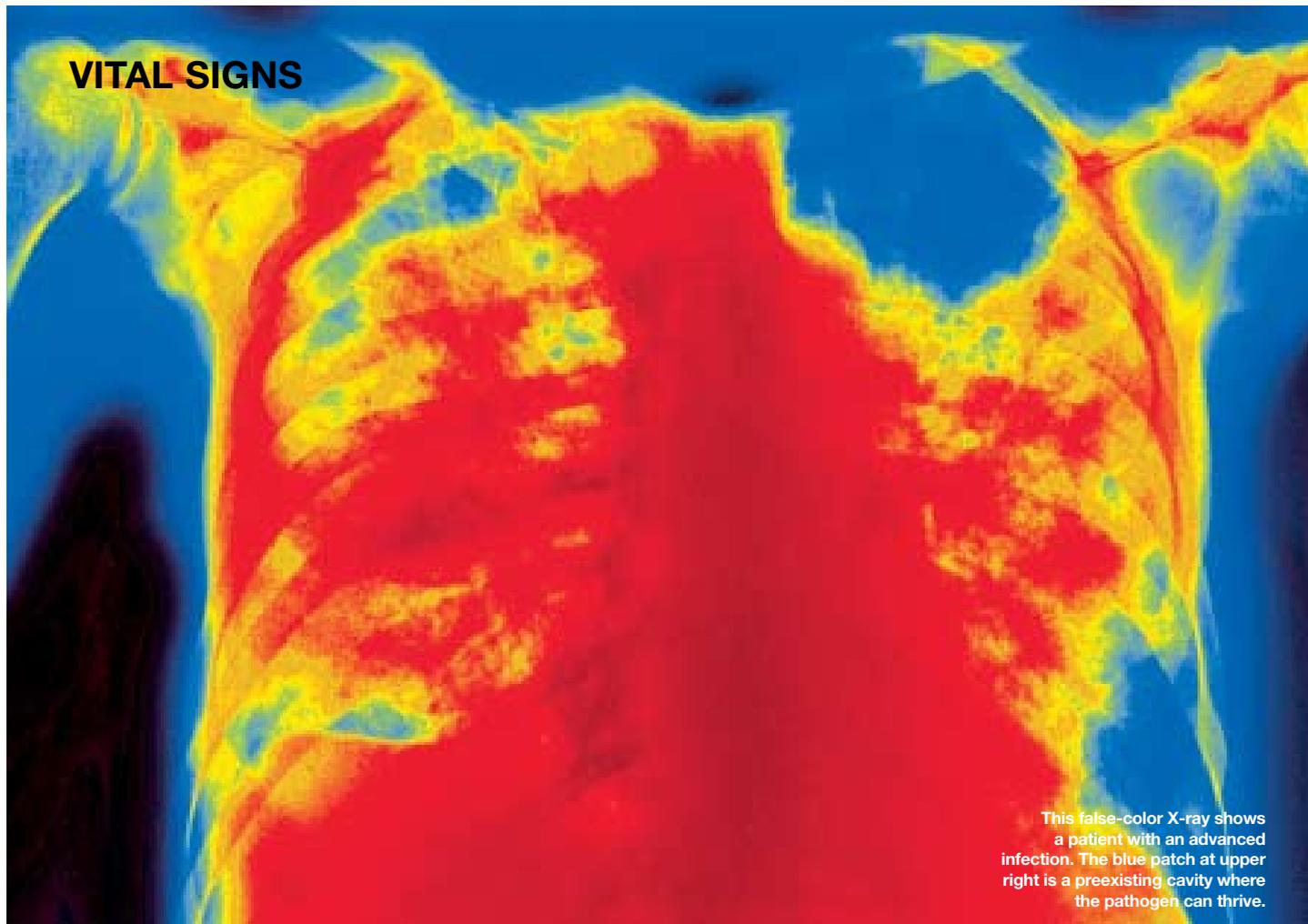


VITAL SIGNS



This false-color X-ray shows a patient with an advanced infection. The blue patch at upper right is a preexisting cavity where the pathogen can thrive.

A task in the yard turns lethal. By Claire Panosian Dunavan

My husband and I live in a cottage in the foothills of Los Angeles, where nature feels very close. Beyond our front door, an ancient flowering vine overhangs a brick porch. Tangled up within the vine is a whole world in miniature: abandoned birds' nests, dangling spiderwebs, powdery organic deposits. For years, we marveled at the vine's ecosphere—but we never grasped its intense biological power until one spring morning I will never forget.

"I'm going outside," my husband said. "I feel like pruning."

After finding his clippers, Patrick started to yank and trim the tangled greenery. Then I heard a loud, strangled cough. "Yech!" he exclaimed, violently stomping and shaking himself. "I feel like I just inhaled toxic waste—my lungs are on fire!"

Because Patrick has asthma, sudden fits of wheezing and shortness of breath are nothing new to him. This was different. Some dusty emanation from the vine had triggered a fierce pain from his trachea to

the deepest culs-de-sac of his lungs. An hour after his noxious gulp of air, though, he felt better. I figured the worst was over.

Another day passed, and my husband's nose began to run. He was also clearing his throat more than usual. He was coming down with a cold, we decided. My main concern was its timing: Later that week, we were supposed to leave for New York.

Before our departure, Patrick armed himself with antihistamines and an inhaler. He felt OK on the flight, but the next day he was tired after walking just a few blocks. We chalked it up to the bustle of Manhattan and rushing to make the curtain of a play.

Finally, while we were seated in our hotel room later that night, alarm bells went off. My husband's face was flushed, his pulse was fast, and he said he felt as if he was breathing through "a barrel of phlegm." Could he have pneumonia? How had I overlooked such an obvious possibility?

"I'd better listen to you," I said quietly.

I pressed the side of my head against

Patrick's back to listen as he breathed in and out. The racket on both sides—like the groan of a low-pitched, badly played accordion—was unlike any sound I remembered from previous asthma attacks. Through the cartilage of my ear, I could practically feel the rattle of secretions in his airways. Think again, my doctor brain commanded. Whatever was making my husband sick, it was no ordinary wheezing, cold, or even pneumonia.

We pondered our next move. Should we hunt down a doctor? Weighing the pros and cons of visiting a strange local emergency room versus limping back home to Los Angeles, we opted for the latter. Meanwhile, Patrick doubled his standard asthma doses while I lined up an urgent medical appointment. En route to JFK Airport, I almost asked the taxi driver to turn around. But Patrick shook his head.

At last, we sat face to face with Roy Young, our internist in Los Angeles. A seasoned pro, he quickly listened to the din in

Patrick's chest. Then he pulled out his prescription pad.

"We'll get a chest X-ray and blood work, of course, but you're starting on steroids right now," Roy said. "And azithromycin."

"What about this stuff I'm coughing up?" By then, Patrick was producing tablespoonfuls of thick sputum.

"Let's do a culture," Roy replied. "It might show something interesting."

Two days later, the agar plates streaked with Patrick's sputum began to sport not some nasty strain of lung-loving bacteria but rough patches of gray-green mold. Viewed through a microscope, the slim branching stalks topped by swollen vesicles and spores answered our burning question. My husband's airways had become a hothouse for a fungus named *Aspergillus fumigatus*.

Allergic bronchopulmonary aspergillosis—ABPA for short—is extremely rare. While most people can inhale the fungus without the slightest discomfort, one subgroup is particularly vulnerable: chronic asthmatics. Something about the mucus in their lungs fuels the growth of the hardy, ubiquitous fungus for which the syndrome is named.

Once *Aspergillus* starts to thrive in the bronchial tree of an asthmatic, it spurs the production of even more mucus. This, in

THE LUNGS CAN BECOME RIDDLED WITH TANGLES OF FUNGAL FILAMENTS THE SIZE OF GOLF BALLS.

turn, worsens the victim's airway spasms. If the fungus is not quashed by powerful anti-inflammatory drugs, this vicious cycle can go on for months. Even then, in some sufferers, the inflammation triggered by the fungus continues to damage the normal spongy lacework of the lungs.

You could say that isolating *Aspergillus* from Patrick's sputum within days of his falling ill was a great stroke of luck; after all, most ABPA patients wait much longer before they are diagnosed. But to me, it was also sobering. As an infectious diseases doctor, I knew *Aspergillus*'s nasty handiwork. In immunocompromised patients (leukemics or organ transplant recipients, for example), the fungus can eat into lung tissue and blood vessels. The resulting hemorrhagic pneumonia—bleeding in the lungs—is often fatal. In some patients, the lungs become scarred or riddled with "fungus balls"—tangles of fungal filaments the size of golf balls. Major thoracic surgery may be required to remove them.

ABPA is far less threatening, but it still requires patience and expertise. As soon as he suspected the diagnosis, our internist referred Patrick to a pulmonary specialist, Mike Roth, who then ordered a CAT scan and a blood test of his immunoglobulin E (IgE) levels to determine the intensity of the immune response. The CAT scan showed the thickened, distorted airways and cloudy patches that are hallmarks of the syndrome. The serum IgE—a direct measure of allergy-induced antibodies—was also up, confirming a pattern typical of immune activation.

Now with all the evidence he needed before him, Mike calmly explained that a full-bore attack on the ABPA inflammation and its root cause offered the best chance for complete recovery. He extended the course of steroids to three months, warning Patrick about side effects like jangled nerves, insomnia, and fluid retention. In addition, he prescribed a month's worth of an antifungal drug that produced an even more exotic reaction: It gave Patrick's vision a temporary blue-green sheen.

Week by week, Patrick's airways slowly cleared. The final proof came later that year when he returned to spending long, hard days on his feet as a film director. Today his

energy is high, his asthma is back to baseline, and his chest is quiet once more.

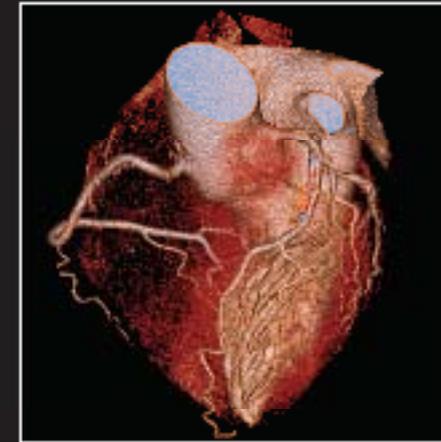
As for grooming the vine, that is permanently off his list of chores. Patrick is also cautious about other risky pastimes—like mowing the lawn, chopping wood, or hanging out in a damp basement—that might reexpose him to *Aspergillus* spores. Once an ABPA victim, always an ABPA victim, some experts say. In other words, rather than inducing protective resistance, repeat encounters with the fungus often trigger the same illness all over again.

When I recently took a whack at vine pruning, I could feel my chest begin to burn. Thank goodness I don't have asthma, I thought, vowing to bring home a mask to wear the next time I got the urge. ■

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