



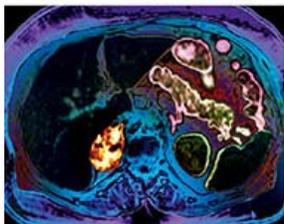
DIAGNOSIS

Mysterious Psychosis

By LISA SANDERS, M.D.
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1. SYMPTOMS

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Top: CNRI/Photo Researchers. Bottom: ISM/Phototake.

The patient was tested for narrowing of the renal artery (top), but her elevated blood pressure might also be a sign of a tumor in the adrenal gland (bottom).

The patient lay on the bed, her eyes wide with fear as she struggled for breath. The nurse at the bedside looked almost as scared. She turned as Dr. Kennedy Cosgrove entered the hospital room and said, "I can't get a [blood pressure](#), doctor — her pressure is too high for me to measure." Cosgrove felt his own blood pressure soar. Most patients in this psychiatric ward of Stevens Hospital in Edmonds, Wash., were physically healthy, and Cosgrove, a psychiatrist, hadn't managed this type of emergency since his internship. He ordered an EKG and quickly phoned the internal-medicine doctor on call.

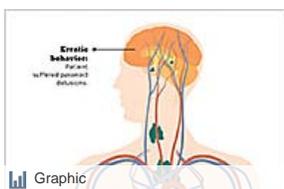
Ten days earlier, the patient was taken to the hospital's emergency room by the police. According to their report, she phoned her teenage son to say goodbye — she was going to take her life. He and the police found her at home, shouting, incoherent, weeping.

When Cosgrove met her later that day, his first thought was that despite her erratic behavior — which wasn't unusual in this ward — she looked different from his other patients. Her hair was well cut. Her nails were clean and manicured. She looked tired and disheveled, but she didn't look chronically mentally ill.

After introducing himself, Cosgrove asked the patient if she knew why she was there. Tears filled her eyes. She couldn't take the disappointment of life anymore, she told him. He nodded sympathetically. She shifted restlessly on the bed. "I've had seven death attempts on me — by the police!" she shouted, suddenly angry. Her eyes narrowed suspiciously. "Have you heard this?" There was a conspiracy against her — organized by the state of Washington and the Boeing Company. Sometimes she could even hear them talking to her — their voices coming from inside her own brain. She laughed giddily and then became angry again. "Get out! Get out! Get out!"

If you have a solved case to share with Dr. Sanders, you can e-mail her at lisa.sandersmd@gmail.com. She is unable to respond to all e-mail messages.

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In the nursing station Cosgrove reviewed the information collected on the patient in the emergency room. She was 39. Divorced. Lived alone. She took two medications for [high blood pressure](#), as well as an antidepressant and a stimulant, Concerta, a long-acting form of [Ritalin](#), for a diagnosis of attention-deficit disorder.

2. INVESTIGATION

It wasn't clear how long she had been on any of these medications, but Cosgrove quickly focused on the stimulant. [Psychosis](#) and mania were rare but documented side effects of Concerta. Was that the cause of her symptoms or was this simply a manic episode in an underlying [bipolar disorder](#)?

Cosgrove stopped the stimulant and tried to start the patient on antipsychotic and mood-stabilizing medications. She refused to take them, so he gave the medication by injection. Slowly her behavior began to change. The wild swings of emotion and outbursts of anger became less frequent. But strangely, her disordered thinking and paranoid delusions persisted. Usually these symptoms improved and worsened together. And now she had this significant spike in blood pressure. **Were the high blood pressure and the psychosis linked?**

Dr. Michelle Gordon, the internist on call, hurried to the patient's bed. She took her blood pressure. It was critically high — 240/110. She quickly transferred the patient to the intensive-care unit.

Gordon ran through the short list of possible causes of this kind of rapid elevation of blood pressure in a young woman already on antihypertensive medications. By far the most common was illegal drugs. It seemed unlikely that she would have access to them in a locked ward, but Gordon would check. A narrowing of the arteries that deliver blood to the kidneys could also cause this kind of intermittent hypertension. While this was usually a disease of the elderly, sometimes, for reasons that are not well understood, it could be seen in younger women as well.

The third possibility on Gordon's list was **a tumor that was secreting too much of one of the hormones that raise blood pressure. Most of these hormones are made in the adrenal glands — tiny organs that sit on top of the kidneys. One hormone, aldosterone, controls the amount of salt in the body.** Too much salt causes blood pressure to rise — sometimes significantly. Or could the patient have a [pheochromocytoma](#) — a rare tumor that causes the adrenal gland to produce too much of its namesake hormone — adrenaline. An excess of this fight-or-flight hormone can also send blood pressure soaring.

In the I.C.U. Gordon started the patient on an intravenous medication that brought her blood pressure back into the normal range. Then she ordered an [ultrasound](#) to assess the blood flow to the kidneys and measure the size of the adrenal glands. These [tumors](#) often cause the gland to enlarge. Gordon stood by the patient as the ultrasound technician ran the transducer over the slender woman's abdomen. He pointed out the blood flowing to the kidneys. It wasn't completely normal, but the arteries didn't appear narrow enough to affect the blood pressure. The fuzzy picture on the monitor shifted as the tech tried to get a good view of the kidney. "Will you look at that?" the tech exclaimed. The right kidney he pointed at looked normal, but the adrenal gland on top of it was hugely enlarged.

Gordon sent off samples of blood and urine to identify which of the key hormones was the culprit. She suspected this was a pheochromocytoma. Though these are very rare tumors and the patient had not complained of the [headache](#), [sweating](#) and rapid [heart rate](#) that are their hallmarks, the surges of adrenaline seen in this disease could account for the spikes in blood pressure. When the results came back the following day they showed that Gordon's hunch was correct — she did have this rare adrenaline-producing tumor.

3. RESOLUTION

As soon as Cosgrove heard about his patient's diagnosis he began to wonder if her **psychiatric symptoms could also be caused by the excess adrenaline.** He had taken her off Concerta, the stimulant, because he knew that it sometimes causes psychosis and

mania. That drug works, in part, by causing an overproduction of adrenaline.

If the drug could sometimes cause psychosis and mania, could this adrenaline-producing tumor do the same thing? Cosgrove found several papers describing patients who, like this woman, had pheochromocytomas as well as mania and psychosis. The symptoms resolved once the tumor was removed. It was unusual, but it had been reported.

The patient was transferred to a larger hospital for the delicate operation to remove the tumor. When she returned to the psychiatric unit, she was still paranoid, still delusional. But Cosgrove was patient — in the papers he read, recovery took time. Over the next several weeks, the patient’s thinking began to clear. Her paranoia ebbed. The mania disappeared. By the time she was discharged, a month after her operation, her blood pressure was normal, and so was she. Her doctors slowly peeled away the medications for her hypertension and mental illness. And finally, after a year and a half, she was medication free and remains so to this day, three years after her surgery.

In speaking with the patient now, it seems clear that symptoms of this tumor started several years before she ended up in that emergency room. But her symptoms were odd and intermittent — a sharp pain in her arms and in her chest, [anxiety](#), transient high blood pressure. The mania and delusions that ultimately led to her hospitalization and diagnosis began after she started taking the medication for attention-deficit disorder the year before. After that, her life became chaotic — her three children could no longer live with her. **The double dose of stimulants — from her tumor and the drug —** seemed to trigger her psychotic break.

The patient says she can barely recognize the person she was before the tumor was removed. After she left the hospital, she sent Cosgrove a note: “Thank you for giving me my life back.”

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