Rosseau's Brainstorm

ONE OF THE COUNTRY'S TOP NEUROSURGEONS WANTS TO GIVE WOMEN WHO HAVE HAD BREAST CANCER A CHANCE TO KNOW THEIR FUTURE. IS SHE DOING THEM A FAVOR?

"It's insane," says Dr. Gail Rosseau of current screening guidelines. "Your quality of life is going to be much better if a tumor is detected at one centimeter instead of five."

Doctor Gail Rosseau had cut a patient's head open; I was standing beside the operating table, peering into the cavity made by the neck muscles she had wrenched apart with two steel spreaders. Earlier I had watched as she drilled two holes, each the size of a dime, at the base of the young woman's skull and then pinched away at the bone with snippers, gradually enlarging the hole to expose the cerebellum in its grayish sac of dura mater. She cut the dura, folded it back and at last revealed the cerebellum itself, sheathed in luminous blood vessels, shimmering beneath the intense surgical lights. She gently lifted one lobe with a smooth, blunt tool to show me a bundle of radiant white nerves. Then she whispered, "Look. They call this the seat of the soul. It controls heartbeat and breathing. I don't touch it unless I have to." Any damage to the thin white fibers and the patient may never wake up again. To open the skull, to touch the brain, is one of the most daring achievements that anyone can undertake. Rosseau calls it "the ultimate trust" between human beings. And she would do it a half-dozen times that week alone.

As I waited for Rosseau in her office at the Neurologic and Orthopedic Institute of Chicago, where she is chair of surgery, I noticed an 8-by-10-inch color photograph on top of a pile of papers. It showed a formal group of about 30 august-looking men with the words "American Board of Neurological Surgery, 2006" at the bottom. In the top row of doctors was a small female face that I recognized as Rosseau's. Just then she walked in, saw me studying the photograph and laughed. "That says it all, doesn't it?" she said.

Rosseau, 50, who teaches neurosurgery at Rush-Presbyterian-St. Luke's Medical Center, is on the staff of several hospitals in the area. A specialist in pituitary brain tumors, she is now turning her attention to breast cancer. She recently announced a pioneering trial screening program aimed at spotting breast cancer that has spread to the brain—before patients show

BY LAURENCE GONZALES

PHOTO: MAX AGUILERA-HELLWEG. HAIR AND MAKEUP: JESSICA WILLIAMS FOR FORD ARTISTS

any symptoms—and treating it with a powerfully effective new scalpel-free technology. If a brain scan reveals a tumor, "you lie on a table, and you have this device put on [your head] while you're awake," she says. "You feel nothing and go home that afternoon."

This year about 170,000 people in the United States will have some type of cancer that spreads to the brain. Between 20 and 30 percent of women who have had breast cancer will be among them. But even as clinics promote full-body "peace of mind" CT scans to perfectly healthy consumers, the lifesaving potential of preemptive scanning for breast-cancer survivors is in dispute.

"Intuitively, the idea of screening makes sense," says Maria Carolina Hinestrosa, executive vice president for programs and planning at the National Breast Cancer Coalition and a survivor of the disease herself. In fact, breast cancer patients used to get all sorts of follow-up scans to see if cancer had spread, or metastasized. The only problem, Hinestrosa and others say, is that scans didn't make a difference in how long people lived. Rosseau is aware of the controversy and that the American Society of Clinical Oncology does not recommend this kind of follow-up. But she argues that, in the case of brain metastases, technology may be changing that picture. And, in any case, shouldn't patients have a chance to decide—if only to improve the quality of their final months or years?

So the questions, ultimately, for all of us, will be: How much do you really want to know, how soon do you want to know it, and will that knowledge actually be helpful?

AN UNCOMFORTABLE SILENCE

When she was 37, my friend Jeanne Giles Hackney was diagnosed with breast cancer. She went through an aggressive course of chemotherapy that made her so sick it almost killed her. Three years later, Jeanne looks as healthy and strong as ever. But she is aware that the cancer could have slipped undetected into her liver, her bones, her lungs, her brain. Even now, a tumor of less than a centimeter, the size of a pea, could be growing. Over the years, others could pop up, increasing in size, pressing against something vital. Like most women who have had breast cancer, Jeanne came to a harsh realization when she finished her treatments. Of course, there are the usual "how am I doing?" visits to her doctor, as well as regular mammograms. But what should a woman who has had breast cancer do when her treatment is over? A period in which she felt she was taking an active role in her own recovery has suddenly ended, and she generally finds herself in a sort of limbo. Even for the many who take drugs such as tamoxifen or Herceptin, a kind of silence descends. And they wait.

> Medical centers have spent big money on these screening and treatment devices and are promoting their use.

"I remember sitting in my doctor's office," Jeanne says. "I asked, 'The likelihood that I'll have a local recurrence is extremely slim, correct?'"

Her doctor said yes.

"So what's the obsession with the breast? Are you going to be checking my liver?'"

No.

"'Yearly scans? Anything?'"

No. Nothing.

Breast cancer patients who have four or more positive lymph nodes may be at the greatest risk for having the cancer travel to the brain. But even they are offered no follow-up screening unless they have symptoms.

As part of her practice, Rosseau has removed brain tumors from many of these women. But it wasn't the surgery that brought this issue to her attention. "The scope of the problem is such that we all know someone who has had breast cancer," she says. "It seems that every week I'm hearing about someone whom I know personally—friends, family, neighbors."

When friends of a doctor fall ill, they naturally turn to him or her for advice. They want to know whether the cancer is really gone. They want to know what's next. Rosseau couldn't find an answer. "I was alarmed to find that we don't really have a standard screening protocol," she says. "We just don't know."

In fact, *not* screening for metastases until symptoms appear is considered the standard of care. "It's insane," Rosseau says. "If a patient has a single, nonsymptomatic brain metastasis from breast cancer, wouldn't you think she'd like to know about it before she has a headache or a seizure?"

There was a time when waiting for symptoms to appear may have made sense, because there really was no way to detect or treat those small, early metastases. Now, technologies such MRI, which can easily detect even minuscule tumors, and stereotactic radiosurgery (SRS), which can treat those tumors—even in the brain—without surgery, are readily available. Indeed, the medical centers that have spent big money on these screening and SRS devices need to pay for the new

technology by promoting their use. And in most cases, insurance companies seem willing to cover the cost.

Rosseau recently won a $65,000 grant from the privately funded Chicago Institute of Neurosurgery and Neuroresearch Foundation to establish a trial screening program—as far as she knows, the first of its kind—for women who have had breast cancer. "I'm looking at something that I can treat," she says. "I want to know who's at risk for brain metastasis. In the era when every brain metastasis had to be treated by craniotomy—and if they were multiple, then you were looking at multiple craniotomies—it made sense to kind of close your eyes and hope for the best. But it doesn't anymore, because we have a very good technology now."

The version of SRS that Rosseau uses is called Gamma Knife, but the knife is not a knife at all. A helmetlike device is placed on the patient's head. Then 201 separate beams of high-energy cobalt radiation are emitted from different points through the helmet. Guided by computer, they all meet at the site of the tumor. They pass through healthy tissue on the way there, but because each beam represents less than a half percent of the total dose, they damage no tissue until they converge. There is no pain and no need for general anesthesia.

Rosseau's trial was announced last fall; once under way—the protocol is in the peer-review phase—it's expected to take a year to complete. She will examine and, if necessary, treat, 50 women who have recently been diagnosed with breast cancer and who had four positive lymph nodes and/or known nonbrain metastases.

"We want to establish how often these women will be discovered to have asymptomatic brain cancer, so that we can infer from this group what a screening protocol *should* look like," Rosseau says. "Exciting" is what she calls it. It's also exciting to know that a patient admitted for screening in the morning can be home for dinner, her cancer treated before a full day has passed.

QUALITY OF LIFE

Andrew D. Seidman, MD, a breast cancer specialist at Memorial Sloan-Kettering Cancer Center in New York City, is recognized worldwide for his clinical investigations of new treatments. He is doing research for the U.S. Department of Defense Breast Cancer Research Program on the problem of brain metastases and believes that Herceptin may be doing such a good job of controlling the growth of any cancer that may have metastasized in the rest of the body that it allows women to live long enough to develop brain tumors. (Herceptin doesn't cross the blood-brain barrier and therefore won't work there.)

> "Brain metastasis is one of the most terrifying aspects of the progression of breast cancer."

"There is no prospective study [one that follows patients into the future] that shows a survival advantage for radiologic screening of breast cancer patients before they have headaches or neurological symptoms," Seidman says. "However, saying there's no survival advantage doesn't mean that there's no advantage . . . I have gotten into the habit of doing brain MRI scans on women who are HER-2/neu positive [meaning they are at a higher risk for brain metastases], even in completely asymptomatic women, every six to 12 months or so."

And Seidman does find tumors—sometimes one, sometimes two; they are rarely widespread. He finds them in women who feel well and who have no headaches or other symptoms. He finds them when they would not be found during the usual "how am I doing?" visits.

"With Gamma Knife and SRS, we can reduce neurological morbidity rather than watching and waiting," Seidman says. "We may be able to prevent very disabling symptoms."

The potential trouble with not screening, Seidman says, is that by the time the brain metastases have begun causing symptoms and are discovered, there may be eight rather than the one or two he's finding. "By then, Gamma Knife is not an option. Use of whole-brain radiation is standard at that point," he says. The patients may be left with neurological symptoms from the tumors themselves—ranging from seizures and headaches to loss of balance or paralysis, depending on where the tumors are located—as well as cognitive dysfunction from the radiation. "It's not that dissimilar to patients who have strokes." In other words, it can be crippling. Survival times at that point are in the range of six to 12 months. "We see a very, very different picture when we detect one or two asymptomatic brain metastases and they are treated with localized therapies," Seidman says. "Many of these women will go on to live five and six and seven years with their metastatic disease."

With the movement to know and act preemptively gaining momentum, the number of institutions that are incorporating brain and other organ scans as part of follow-up treatment for

people with known metastases is increasing. There is a spread of technology and a lot of advertising going on: "Get yourself screened; I did, and I'm lucky I found this problem." Screening in general—for everything—is a booming business.

I asked Seidman what women should do. "I would never want to create this illusion of a panacea, where every woman is going to demand that her doctor do an MRI when it hasn't been adequately studied," he says. "But certainly having a low threshold for doing it for high-risk patients who have had breast cancer is good medicine."

THE MIND READER

One day I was in the operating room with Rosseau as she performed a craniotomy on a male patient. When she began to drill into his skull, I noticed how different from the common view real brain surgery is. I had thought of it as a very delicate operation done in a pristine white world of ethereal quiet. But there was the screaming drill, the smoke rising and the wires and tubes snaking everywhere. The work was hard manual labor. The skull is amazingly thick and tough, and getting into it is like tearing up a street. Rosseau is small but powerful, and moves with a sure-footed quickness and confidence that it is difficult to imagine deflecting. She bores in and gets the job done—or gets what she wants—with the sheer force of her personality. And a large part of it is her willingness, even eagerness, to see things from your point of view and use a kind of emotional jujitsu to bring you around to hers.

Frequently the surgery has to take place under a microscope. The images are transmitted to a large monitor and recorded. But one day, the monitor was badly out of focus. Rosseau had summoned a technician, Mike, who stood studying the problem with his arms crossed and a perplexed look on his face. Rosseau never stopped working on the patient, even as she gently went to work on Mike.

"Now, Mike. Mike," she said. "What do you think? That's what I want to know. I mean, what would you do? Have you ever seen anything like this? Because it's perfectly clear in my scope. I can see it over here. But we're just not getting the kind of pictures we need. I can't teach with this. I can't show this to the patient's family. They'll think I'm operating when I can't even see."

> I watched Rosseau put 200 stitches into a patient, one after another and thought, "Even brain surgery can get old."

It was obvious that Mike did not know what the problem was and was reluctant to tear into the high-tech machine, which was draped in sterile plastic and would be a real mess to take apart and put back together with surgery going on. But with gentle, insistent, empathetic pressure, Rosseau wore him down: Watching her get inside of Mike's head was like watching her bore into someone's skull.

Later in her office, she asked me about my work. I told her that I had written magazine articles, books and screenplays. Her face brightened, and she sat up straighter. "Say," she said, "can I pitch you an idea?" Within seconds, I found myself caught up in her movie. "The Black Mozart," she said emphatically, leaning across her desk to trace a marquee in the air with her hands. She went on to describe a slave prodigy from Martinique who was brought to the court of Marie Antoinette.

Doctors tend to focus narrowly, but Rosseau's range of interests is broad. A marathon runner and a voracious reader of history, she believes herself to be "the youngest member of the Chicago chapter of the Churchill Society." She has served as the national spokesperson for medical malpractice tort reform, testifying at a congressional hearing about the "unreasonable, lottery-style awards for pain and suffering that are forcing good doctors to give up the work they love." A native Chicagoan, she was an early supporter of Barack Obama. He's a friend, although the two disagree on tort reform.

It is in the nature of the brain to get used to things. The beautiful painting you hang on your wall today may well be invisible to you a year from now. And as fascinating as it is, even brain surgery could get old. One day I watched Rosseau patiently put 200 stitches into a patient, one after another, and thought that she might well want something more from life.

When I asked her about this, she described what she called the third career. The first career is school, the long years of training that made it possible for her to be where she is now—at the height of her second career. Not long ago this would have been it for a lifetime but, she says, "We live in a time when we hope to be fortunate enough to have a few extra years and a little extra cash to do something past 60 or 65, to do something meaningful and not just live on a golf course." Rosseau is married to an orthopedic surgeon; her children are 12 and 10 now, so she plans to continue with her second career for at least 10 more years. But she **continued on page 94**

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has already started laying the groundwork for the third act. In the mid-1980s, she began taking working vacations in developing countries on three continents, assisting in the training of brain surgeons. "I love that," she says. "That's where I'm headed."

TOO MUCH INFORMATION?

My friend Jeanne is a professional photographer in Portland, Oregon; she recently had an exhibit called "The Circle Project: Images on Breast Cancer." It shows not the patients themselves but life-size portraits of their friends and families. I ask Jeanne, whose cancer had not spread into the lymph nodes, if she would want to have her brain scanned, or for that matter, her liver, lungs and bones. She

> "My visceral response is 'Leave me alone.' I don't want to know. The anxiety is just too hard to deal with."

sighs and pauses, then says, "I keep thinking ignorance is bliss. It's strange. You'd think my response would be an automatic yes, but it's not. It's tied to my experience of doctors always wanting to do something to you. My head says, 'Yeah, that's a great idea.' Obviously you want to get the message as soon as you possibly can. But my visceral response is 'Leave me alone.'"

Sounding weary from the experience of being so recently saved by the inescapable brutality of the medical arts, she says, "I don't know. I don't want to know. The anxiety is just too hard to deal with."

"There's a great big caveat in everything I've said," she adds. "And that is the knowledge of the stats in my case. There's an 85 percent chance that it will not recur, and that's a pretty large number. But if it had already recurred, you'd better believe that I'd be in there every three months getting scanned."

"I worry about this," writes longtime breast cancer activist Susan Love, MD, in response to an e-mail describing Rosseau's trial. "It is possible that some women have asymptomatic brain metastasis and that the surgery will

not change anything. Anyone who has brain metastases from breast cancer has metastases elsewhere in her body and is not curable. The best you can do is reduce symptoms. Therefore you want to only diagnose women with symptoms. Screening for brain metastases will not do this."

"I hope she's right," says Maria Carolina Hinestrosa of Rosseau's attempt to isolate and treat the women most at risk. "Brain metastasis is one of the most terrifying aspects of the progression of breast cancer. But I'm skeptical. Would this be a wise use of resources, to screen people repeatedly for something that hasn't shown symptoms?" This was tried, she notes, and by the mid-1990s, shown to be ineffective. "So having a whole population of people screened [just] increases health care costs and anxiety."

Whether or not her technological one-two punch ultimately increases lifespan, Rosseau believes it's important to give women the option to assess their situation. "Certainly your long-term survival numbers are going to be affected by the fact that you've had a breast cancer metastasis to the brain," she says. "But your quality of life is going to be much better if it's detected at a one-centimeter size rather than if it becomes five centimeters and you can't walk." She hopes that by doing this small pilot program, she'll generate enough interest for a manufacturer of diagnostic equipment to pay for a study that will look at much larger group of women.

"As a neurosurgeon, I have a skewed view," Rosseau admits. "I see the patients who weren't screened. They were doing well, then they were doing terribly. Oncologists for breast cancer are starting to say they want more data on this. Breast cancer happens so commonly, we can't afford to do MRIs on everyone. So the people who have four or more positive nodes—are they the ones with larger tumors? Who are the ones we should be screening early on? Our lack of screening every patient may not be causing excessive death. But it makes sense to find out who the at-risk individuals are.

"We're trying to move into the next phase of prevention." **M**

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