

Now genetic testing guides the treatment decision. Patients with *BRCA* mutations (5 to 10% of patients with breast cancer) may benefit more from bilateral mastectomy than from breast-conserving therapy. They can be spared the late adverse effects of radiotherapy in the heart, lung, and contralateral breast.⁴ Women with early disease are at low risk for distant recurrence and have a good prognosis. Preventing local recurrences in the ipsilateral or contralateral breast, which may be the first isolated events, is a priority. Bilateral mastectomy with a good cosmetic result by means of appropriate reconstruction should be considered in patients with *BRCA* mutations.⁵

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THE AUTHOR REPLIES: Hamberger is correct in stating that radiation treatments change the skin and soft tissues of the breast. It is important for primary care physicians to recognize that hyperpigmentation of the skin and breast edema are expected, normal tissue reactions. As stated in the article, these signs and symptoms resolve over time in the majority of patients. Some patients have subtle residual pigmentation changes that last a lifetime, and others have permanent loss of

breast volume related to the surgical resection and the adjuvant irradiation.

Roukos raises the important consideration of how best to manage breast cancer arising in women with a known predisposing germ-line mutation in a tumor-suppressor gene, such as a mutation in *BRCA1* or *BRCA2*. I agree that such patients should be offered the option of bilateral mastectomy (with or without immediate reconstruction) because their lifetime risk of the development of a second breast cancer is high. This risk appears to be significantly lower if they elect to undergo a prophylactic oophorectomy to address the risk of the development of an ovarian cancer.¹

Only 7% of patients with breast cancer have an inherited high-penetrance tumor-suppressor gene mutation. When there is a family history of breast cancer, many physicians and patients overestimate the probability of such a mutation. This overestimation can result in an avoidance of breast-conserving therapy, when it is clearly a safe option. A family history such as that described in the case vignette in the article is not a contraindication for breast-conserving surgery and irradiation. Indeed, despite the positive family history of breast cancer in the patient described, she would be thought to have such a low probability of a germ-line mutation in *BRCA1* or *BRCA2* that genetic screening to detect a mutation would not be indicated, according to the testing criteria of the National Comprehensive Cancer Network.²

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Inappropriate ICD Shocks Caused by External Electrical Noise

TO THE EDITOR: Because of the growing number of patients worldwide who are receiving implantable cardioverter-defibrillators (ICDs)¹ and the increasing number of indications for their use,

physicians and patients need thorough safety guidelines about potential environmental hazards associated with these devices. Patients should be told of the potential risks not only so that they

can make an informed decision about whether to accept the device, but also so that they can take the necessary precautions to prevent the occurrence of inappropriate shocks. Since proarrhythmia due to inappropriate shocks is well known and is potentially lethal,² it is important to minimize the risk of its occurrence.

We recently cared for a patient who, after receiving an ICD for a ventricular tachycardia, was readmitted shortly after hospital discharge because of two shocks delivered while the patient was showering. Analysis of the shock episodes raised suspicion that electrical noise had caused an inappropriate ICD discharge. At our request, an electrician visited the patient's house and found that the shocks were caused by a current leak between the showerhead and bathroom drain, which was attributable to improper wiring.

Current leaks are common and can have many different causes, such as defective grounding.^{1,2} When current leaks are as small as in the above case (i.e., 3.5 to 4.0 mA), they can be unobservable unless they are specifically sought out or they cause interference with medical devices. Most ICDs are programmed to detect ventricular fibrillation at a cycle length of less than approximately 300 msec. Thus, when a current leak

runs through a person with an ICD, it can be interpreted as ventricular fibrillation on the ventricular channel because of electrical activity that is consistent with an alternating current of 50 to 60 Hz.

Inappropriate ICD shocks due to a current leak are not common, but we suspect that they may be underdiagnosed. Shocks due to abnormal ICD sensing should be investigated carefully for potential environmental causes. Safety guidelines for ICDs should address these risks in order to prevent potentially harmful incidents.

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