rooms. Indeed, we endorse this practice. However, health care institutions should consider removing these agents from rooms occupied by high-risk patients such as those with alcoholism, those who are admitted with acute intoxications, and psychiatrically unstable patients. Indeed, despite one-to-one monitoring, our patient managed to acquire and ingest the sanitizer, perhaps because the health care staff perceived the product to be harmless or nonthreatening as a potential toxin. Our case also affirms the need to repeat toxicology testing in hospitalized patients with abrupt changes in mental status, particularly given that alcohol-based hand sanitizers and other potentially ingestible toxins are ubiquitous in the hospital setting.

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Association Between Priapism and Concurrent Use of Risperidone and *Ginkgo biloba*

To the Editor: Priapism, defined as prolonged and persistent erection of the penis that is not due to sexual stimulation and that is not alleviated by sexual intercourse or masturbation, is a urological emergency that needs timely diagnosis and treatment. Rarely, priapism can be a serious adverse effect of antipsychotic medications; virtually all antipsychotic medications have been reported to cause priapism because of their α-adrenergic antagonism.[1] *Ginkgo biloba* is used worldwide as a complementary medicine for its antioxidant and neuroprotective effects. However, its drug interaction with other medications, including antipsychotic agents, should be considered before it is prescribed for any purpose.

Report of a Case. A 26-year-old man presented to the emergency department of our hospital with a persistent and painful erection of the penis that had lasted for 4 hours. He had a history of paranoid schizophrenia, for which he was treated with 3 mg/d of risperidone for 3 years. He reported no other chronic illness, recent trauma, or use of drugs. He denied any adverse effects due to antipsychotic therapies. Two weeks before admission, he began taking 160 mg/d of generic *Ginkgo biloba* for occasional tinnitus.

On arrival at the emergency department, his blood pressure was 150/88 mm Hg; his pulse rate, 94 beats/min; and his temperature, 35.9°C. Findings on physical examination were normal except for a persistent erection of the penis. His hematocrit was 37%, and no dysmorphic red blood cells were noted on microscopic examination. Color flow Doppler sonography of the penis showed a decreased blood flow in the cavernosal arteries. His priapism was refractory to analgesics and ice packing. Blood gas analysis of the aspired cavernous venous blood revealed a pH value of 6.79, a P_{CO_2} of 114.9 torr, and undetectable P_{O_2}, findings consistent with veno-occlusion (low-flow) priapism. Two hours after corporal irrigation with diluted epinephrine, priapism subsided. The patient was discharged uneventfully and was instructed to discontinue the use of risperidone and *Ginkgo biloba*. On direct questioning, he reported having no prolonged erection or priapism when he was being treated with risperidone. The 3 mg/d dose of risperidone was resumed without adverse effect. On follow-up at 6 months, he reported normal erections with no further episodes of priapism.

Discussion. Priapism has multiple etiologies, including hematologic, neurological, iatrogenic, and pharmacological causes. Drug-induced priapism is usually of the ischemic (low-flow, veno-occlusion) type; arterial (high-flow) priapism is relatively rare and predominantly caused by trauma. An estimated 50% of those who experience drug-induced priapism are taking antipsychotic agents; α-adrenergic antagonism is thought to be the most important underlying mechanism.[2]

Risperidone, an atypical antipsychotic agent used primarily to treat psychosis and schizophrenia, has serotonergic, dopaminergic, and α-adrenergic antagonist properties. Its propensity to cause priapism can be linked to its high affinity for α_1-adrenergic blockade, an affinity higher than that of other atypical antipsychotics such as clozapine and olanzapine.[3]

Ginkgo biloba is extracted from leaves of *Ginkgo biloba* (the maidenhair tree); its most active ingredients are flavonoids (ginkgo-flavone glycosides) and terpenoids (ginkgolides and bilobalide). Because of its vasoregulatory activity and free-radical scavenging properties, *Ginkgo biloba* has been used to treat early-stage Alzheimer disease, vascular dementia, peripheral claudication, and tinnitus of vascular origin. Its use is generally well tolerated, but adverse effects such as gastrointestinal upset, headache, and dizziness have been reported.[4]

Extracts of *Ginkgo biloba* have many ingredients, the pharmacological and pharmacokinetic effects of which can be difficult to ascertain. Different active compounds may exert their pharmacological effects on different sites or organs. In humans, risperidone is mainly metabolized by cytochrome P450 isoform 2D6 (CYP2D6) and cytochrome P450 isoform 3A4 (CYP3A4),[5] both of which enzymes are inhibited by *Ginkgo biloba*.[6] Hence, concurrent use of *Ginkgo biloba* may

increase the serum concentration of risperidone and increase the risk of adverse effects, such as priapism in our patient. The superimposed injectable long-acting preparation of risperidone, which has an additive effect in its oral form, has been postulated to be the cause of paradoxical priapism.[7] The development of prolonged erection or priapism in patients treated with antipsychotic agents has been linked to the following: (1) an increased dose of medication, (2) the restarting of medications after a period of nonadherence, (3) the switch to a different class of drug, or (4) the use of a combination regimen of antipsychotics.[8] Several studies have shown that *Ginkgo biloba* has vessel-dilating properties; it increases nitric oxide activity or acts directly on the endothelium, as for example by inhibiting cyclic adenosine monophosphate phosphodiesterase activity.[9,10] Anecdotal evidence suggests that *Ginkgo biloba* can be used in the treatment of erectile dysfunction.[11] It has also been reported to reverse selective serotonin reuptake inhibitor–induced sexual dysfunction.[12,13] Nonetheless, no evidence has been reported that *Ginkgo biloba* alone can cause priapism. Although our patient did not use *Ginkgo biloba* to treat erectile dysfunction, he may have experienced an additive or synergistic effect between *Ginkgo biloba* and risperidone; however, further studies are needed to clarify this issue. We also could not ascertain why the risperidone-priapism reaction precipitated by *Ginkgo biloba* required 2 weeks. This drug reaction could be either dose dependent or idiosyncratic.

In conclusion, herbal medicines may potentiate the adverse drug effects of preexisting treatment regimens. Clinicians should be aware of the potential adverse effects and drug-drug interactions of a complementary medicine, particularly in patients being treated with antipsychotic agents.

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Bloodstream Infection Prevention Practices

To the Editor: We read with interest the enlightening survey of Krein et al[1] on adherence to the 3 major recommended practices for preventing catheter-related bloodstream infections. In that context, as everyday internists, we also encounter a substantial lack of adherence to other Category 1A recommendations of the CDC.[2] Specifically, Krein et al's research does not address recommendations to: (1) periodically assess the knowledge of persons involved with catheter insertion and management, (2) replace administration sets upon suspicion of infection, (3) clean ports with 70% alcohol before access, (4) avoid routine culture of catheter tips, (5) use designated trained personnel for catheter insertion, (6) promptly remove the intravenous line when it is no longer needed, and (7) assess the risks and benefits of insertion. Expensive lines are often used indiscriminately and for prolonged periods to facilitate convenient blood drawing, a consideration that commonly overrides all others in day-to-day practice. Not mentioned in the CDC recommendation is the potential risk and cost associated with a "dedicated lumen policy," which is in place at many institutions. According to this policy, parenteral nutrition must be administered only through catheter lumens that have not previously been used for other purposes (thus necessitating insertion of a new line if the lumens of an existing line have been used for other purposes).[3]

We believe that, in addition to the research conducted by Krein et al, it is important to survey for these other, less commonly stressed recommendations. Adherence, if found to be suboptimal, may be improved through aggressive education and policies; for example, the completion of a brief risk-benefit assessment checklist could be required when catheter insertion is contemplated.

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