

Stimulant danger defused

In "Dangers of stimulant patch misuse" (Letters, Current Psychiatry, March 2007, p. 3) Dr. A. Preston West raises concerns about potential toxic increases in methylphenidate levels if a transdermal patch is not used as directed or if it is scratched or re-attached during use. In support of his argument, Dr. West refers to a transdermal preparation of clonidine, an antihypertensive medication.¹ However, his concerns are based upon the assumption that methylphenidate and clonidine patches use the same technology and have the same pharmacologic properties. There are substantial differences between these delivery systems and their pharmacologic mechanisms.

The clonidine patch uses first-generation patch technology that contains active medication dissolved in a liquid reservoir separated from the skin by a rate-controlling membrane and an adhesive layer.¹ Medication delivery to the skin is determined by the rate-controlling membrane.¹ This creates the possibility of increased administration of medication if the rate-controlling layer is broken.

In comparison, Daytrana (methylphenidate transdermal system) utilizes a dot matrix patch technology. Methylphenidate is mixed with acrylic and then combined with silicone, holding the drug in the patch and skin, respectively.² The drug's adhesive design leads to a semi-solid suspension of microscopic concentrated drug cells evenly dispersed through an uncompromised silicone adhesive.² The rate of medication delivery

is based on the components in the matrix. Therefore, this technology decreases the risk of increased doses of medication when patch integrity is violated.

In terms of pharmacologic effects, clonidine works by stimulation of alpha-2 adrenergic receptors in the brain. Methylphenidate is a stimulant and is thought to act by blocking the reuptake of dopamine and norepinephrine.^{1,3} These 2 chemicals have different pharmacologic properties and different adverse event profiles.

Of course, it is possible to misuse the methylphenidate patch by taking more than the prescribed amount, which could result in adverse events. However, inappropriate usage can be monitored, and patients should be advised of the risks of taking too much stimulant medication.

As with all drugs, take care to choose the most appropriate medication and delivery system for your patient. Although not every patient is a candidate for a transdermal delivery system, it can be an effective means for delivering methylphenidate to treat ADHD symptoms.

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2. Daytrana [package insert]. Wayne, PA: Shire US Inc; 2006.
3. Spencer T, Biederman J, Wilens T. Stimulant treatment of adult attention-deficit/hyperactivity disorder. *Psychiatr Clin North Am* 2004;27(2):361-72.