

CASE REPORTS

## Intravenous Magnesium Sulfate May Relieve Restless Legs Syndrome in Pregnancy

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**Abstract:** We report a case of restless legs syndrome that improved after intravenous magnesium sulfate administration. A 34-year-old gravida 1 para 0 woman, with a 13-year history of restless legs syndrome, was prescribed bed rest due to pre-term labor at 26 weeks. While at rest, the subject experienced severe restless legs syndrome. The subject was later admitted to the hospital for pre-term labor. Treatment for pre-term labor included intravenous magnesium sulfate. RLS symptoms completely resolved during treatment, beginning the first day of administration. Studies involving intravenous magnesium treatment for rest-

less legs syndrome have not included pregnant women. The authors propose that intravenous magnesium sulfate may alleviate restless legs syndrome in some pregnant women.

**Keywords:** Restless legs syndrome, magnesium sulfate, pregnancy, RLS

**Citation:** Bartel S; Zallek S. Intravenous magnesium sulfate may relieve restless legs syndrome in pregnancy. *J Clin Sleep Med* 2006;2(2):187-188.

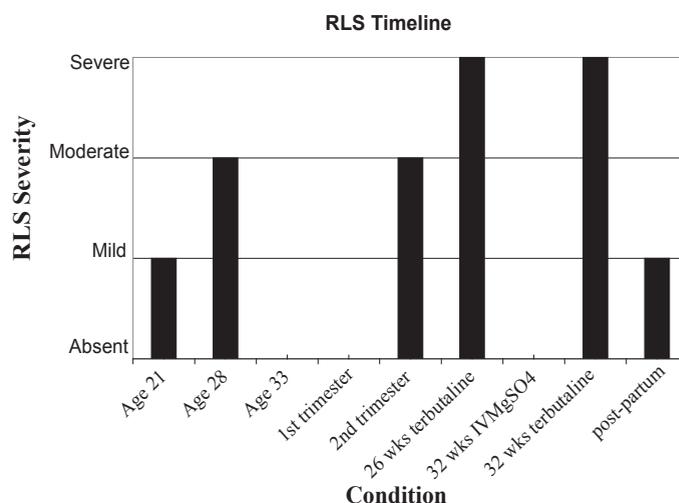
Restless legs syndrome (RLS) affects approximately 10% of the population.<sup>1</sup> This disorder is characterized by uncomfortable sensations that create an irresistible urge to move affected limbs. Symptoms typically worsen during periods of rest and in the evening but temporarily subside with physical activity.<sup>2</sup> Motor restlessness in the evening may hinder one's ability to fall asleep and stay asleep.<sup>3</sup> Caffeine, tobacco, and alcohol may trigger RLS symptoms.<sup>3</sup>

RLS may be primary or secondary. Secondary causes include anemia, pregnancy, and many others. Regardless of RLS history, 11% to 27% of women experience RLS during pregnancy for unclear reasons.<sup>4</sup> Symptoms typically present or worsen during the third trimester. RLS usually returns to its prepregnancy severity postpartum.<sup>2-4</sup>

Treatment of RLS includes dopamine agonists, benzodiazepines, anticonvulsants, and opioids.<sup>3</sup> Pharmacologic treatments, however, are often avoided in pregnant women to minimize risk to the fetus. Since anemia may cause secondary RLS symptoms, alternative treatment includes iron supplementation. This treatment is not always effective.<sup>2</sup>

### REPORT OF CASE

A woman developed RLS symptoms at age 21 (Figure 1). She first noticed symptoms while at rest in the evening only after con-



**Figure 1**—Timeline of the subject's restless legs syndrome symptom severity

suming an alcoholic beverage. At that time, she was asymptomatic if she had not consumed alcohol. RLS did not delay sleep onset. She drank 1 to 2 cups of coffee and occasional other caffeinated beverages each day. Past medical history included only cervical dysplasia.

Her RLS severity and frequency increased with age. By age 28, her restlessness was more severe. It occurred nightly, even without consumption of alcohol. RLS was also worse with sleep deprivation. Caffeine intake had not changed. Iron and ferritin levels were not drawn.

At age 33, she discontinued caffeine use in anticipation of pregnancy. At that time, RLS symptoms essentially resolved. She did not have RLS symptoms even on the rare evenings when she would have an alcoholic beverage. Hemoglobin at that time was 13.3g/dL.

At age 33, she became pregnant for the first time. Medication

### Disclosure Statement

This was not an industry supported study. Dr. Zallek and Ms. Bartel have indicated no financial conflicts of interest.

Submitted for publication August 16, 2005

Accepted for publication December 16, 2005

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prior to pregnancy included only a multivitamin without iron. Oral contraceptives were discontinued 4 months prior to becoming pregnant.

During pregnancy, the subject strictly abstained from alcohol and caffeine. Medication initially consisted only of a multivitamin without iron. In the first trimester, she had no recurrence of RLS symptoms. Hemoglobin at that time was 12.5g/dL. RLS returned in the second trimester, at which time her hemoglobin was 10.5g/dL. Supplemental iron was added. Symptoms occurred during the evening at rest but did not disturb sleep onset.

At 26 weeks, preterm labor developed. The subject was advised to restrict activity in order to help prevent premature delivery. Because contractions became more frequent despite reduced activity, terbutaline 2.5 mg by mouth every 6 hours was started. At that time, the severity of RLS increased. Her International RLS Study Group Severity Scale score was 22 out of 40 on bedrest while taking terbutaline.

Preterm labor worsened despite terbutaline, and the subject was admitted to the hospital at 32 weeks. Terbutaline was discontinued. She was treated for preterm labor with intravenously administered magnesium sulfate (IV MgSO<sub>4</sub>) 2 g per hour for 2 days. The first day off of terbutaline and on MgSO<sub>4</sub>, the patient experienced complete RLS resolution, as confirmed by a score of 0 on the International RLS Study Group Severity Scale. Symptom relief continued for the 2 days of MgSO<sub>4</sub> treatment. Once MgSO<sub>4</sub> was discontinued, oral terbutaline was restarted. The patient's RLS symptoms returned to pre-MgSO<sub>4</sub> treatment severity while she was on bedrest and taking terbutaline.

The patient returned home, restricted to full bedrest. Postpartum, her RLS symptoms returned to those that occurred during the prepregnancy state.

## DISCUSSION

The temporary resolution of this subject's RLS symptoms could be the result of administration of IV MgSO<sub>4</sub> for preterm labor. Had terbutaline discontinuation relieved symptoms, severity would have decreased only to the level prior to terbutaline administration. MgSO<sub>4</sub> administration may have compensated for a preexisting, undocumented magnesium deficiency.

The physiologic role of magnesium as a calcium antagonist depresses excitatory NMDA glutamate receptors in the central nervous system and acetylcholine neurotransmitter release at neuromuscular junctions in the peripheral nervous system. Magnesium deficiency may lead to neuromuscular hyperexcitability and worsen RLS symptoms.<sup>5</sup>

Hornyak et al found that oral magnesium taken over 4 to 6 weeks significantly increased sleep efficiency by 10% and sleep duration by 46 minutes in patients with RLS.<sup>6</sup> However, subjects with secondary RLS, including pregnant women, were excluded from this study.

This case suggests that IV MgSO<sub>4</sub>, typically used to treat preterm labor and eclampsia, may also affect RLS in pregnant women. Further investigation is needed to determine the possible benefit of MgSO<sub>4</sub> on RLS in pregnant and nonpregnant subjects.

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