Clinical significance of early smoking withdrawal effects and their relationships with nicotine metabolism: preliminary results from a pilot study.

INTRODUCTION: Although the early time course of smoking withdrawal effects has been characterized, the clinical significance of early withdrawal symptoms and their predictors are unknown. This study evaluated the relationships of early smoking withdrawal effects with quit attempt outcomes and the rate of nicotine metabolism.

METHODS: Eleven treatment-seeking smokers abstained from smoking for 4 hr in the laboratory before a quit attempt. Withdrawal measures included heart rate, sustained attention, and self-report. Following baseline assessment, withdrawal measures were administered every 30 min. At the conclusion of the 4-hr early withdrawal session, participants received a brief smoking cessation intervention and then returned 1 week and 12 weeks later for outcome assessments that included biochemically confirmed smoking abstinence, cigarettes smoked in the past 24 hr, and self-reported withdrawal symptoms. The rate of nicotine metabolism was estimated at intake with the nicotine metabolite ratio (trans-3'-hydroxycotinine/cotinine) measured in saliva.

RESULTS: Greater self-reported negative affect and concentration difficulty during early withdrawal, most notably anxiety, were related with poorer quit attempt outcomes. There was...
some indication that although a faster increase in craving and greater hunger during early withdrawal were associated with more favorable outcomes, a greater decrease in heart rate during this time was associated with poorer outcomes. Faster nicotine metabolism was related to a faster increase in anxiety but a slower increase in craving during early withdrawal.

**CONCLUSIONS:** These findings lend support to the clinical significance of early smoking withdrawal effects. The rate of nicotine metabolism may be a useful predictor of early withdrawal symptoms.

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