Pain Clinic Perspectives

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The Effects of Opioids on Driving Ability in Patients with Chronic Pain

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Opioid medication is intended to provide pain relief, with the expectation that such relief will enhance the patient's daily function. Driving is critical to maintaining independence in today's society; however, opioids often come with warnings of drowsiness, sedation, and danger in operating heavy machinery. The opioid user may or may not be aware of additional legal risks. The penalties for driving while under the influence of a medication determined to affect driving ability often are the same as driving while under the influence of alcohol, regardless of whether the medication was prescribed by a physician. In Georgia, a fatal accident caused by a person taking an opioid could conceivably result in a murder charge.

To drive or not to drive

Given these risks, the patient is likely to ask the physician if it is permissible or wise to drive while taking opioids. The physician then has a dilemma similar to the patient's. If the physician tells the patient that he or she can drive while taking such medication and an accident occurs, the physician conceivably could be sued successfully for malpractice. On the other hand, advising against driving is likely to result in the patient's declining to take medication that might be essential for successful pain management. In many cases, physicians avoid the issue entirely and the patient makes his or her own decision.

Given the importance of the issue, one would hope that some clear guidance would be available from the research literature; however, most evidence related to driving and opioids in patients with chronic nonmalignant pain is indirect. More studies have employed acute or cancer pain participants rather than those with chronic nonmalignant pain, and most have evaluated abilities that likely relate to, but are different from, actual driving in the community.

Time: Dosage and onset

http://www.ampainsoc.org/pub/bulletin/jan01/clin1.htm

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Many studies have addressed cognitive, sensory, and motor functions following administration of opioids in pain patients, non-pain populations, or both. The results are complex and variable, and sometimes differ depending on such factors as the type and dose of opioid studied, the dependent variables measured, and the study participant’s pain level. Two particularly important factors seem to be the period of time elapsed since the last dose of opioid and the duration of time since the patient started opioid therapy. Bruera, Macmillan, Hanson, and MacDonald (1989), for example, found that cancer patients performed worse on four different sensory, motor, or cognitive tests (i.e., finger tapping speed, arithmetic, and verbal and visual memory) following administration of an opioid (usually morphine or hydromorphone) when they had increased their opioid dose within 3 days of testing versus 7 days or more before testing and only if tested 45 minutes after their last dose, rather than immediately before the next one.

A study by Vainio, Ollila, Matikainen, Rosenberg, and Kalso (1995) also is frequently cited as a classic in the field. It revealed few differences between 24 cancer patients on slow-release morphine (averaging 209 mg daily) and 25 cancer patients who were pain free without opioid medication. The dependent measures were those the authors believed would be particularly important to driving, including tests of intelligence, attention, concentration, fluency of motor reactions, peripheral vision, balance with eyes open, and reaction time. The authors concluded that “long-term analgesic medication with stable doses of morphine does not have psychomotor effects of a kind that would clearly be hazardous in traffic” (p. 670).

Another line of research looked at accident rates and characteristics of problem drivers. Poklis, Maginn, and Barr (1987) found that opioids were present in 15 of 184 drug screens of problem drivers who were arrested for driving under the influence, but were found to have no alcohol in their blood; however, in none of the cases in which an opioid was discovered was it found in the absence of other drugs. Several studies reviewed by Zacny (1995) and Starmer (1986) revealed a very low incidence of the presence of opioids in drivers who have experienced serious accidents, and a very small or nonexistent difference in the incidence of driving violations in heroin users maintained on methadone compared with the general community. Taken together, these results suggest that chronic opioid use has little effect on driving skills or that opioid users avoid driving or exercise more care when driving.

Long-term use
The study by Galski, Williams, and Ehle (2000) is one of the few that addressed driving in chronic nonmalignant pain patients on stable long-term opioid therapy. The authors compared the performance of a mixed group of 16 such patients with that of a large
number of cerebral compromised patients, some of whom had passed and some of whom had failed an on-the-road driving test. Dependent measures included results from many tests measuring perceptual and cognitive skills and performance on a driving simulator. The chronic pain patients on opioids generally performed similarly to the controls who had passed the driving test. Unfortunately, no normal controls were tested.

**Direct observation**

Our group at Emory University (Michael Byas-Smith, Barbara Reed, and I) is in the midst of a study designed to fill in the gaps of previous research by directly observing driving in patients with chronic nonmalignant pain. To date, we have tested 49 persons without pain (matched for age with pain patients) and 30 chronic pain patients, 17 of whom were taking opioids, with a mean daily dose equivalent of 90 mg of morphine. Because of consistent findings that benzodiazepines or barbiturates affect sedation and driving, we excluded all participants taking them. All participants taking opioids had been on a stable dose for at least 7 days and were instructed to take their normal dose of oral opioid 90 minutes before testing. Each participant drove his or her own car.

We filmed all participants on a prescribed 15-mile community drive on urban roads, including 4 miles of interstate highway driving. All participants also drove for four trials through five different obstacle courses demarcated with cones or barrels. The placement of the cones or barrels was modified for each individual depending on car size. The courses included parallel parking, driving forward and backward as straight as possible, driving in slalom, and driving in a circle. Participants were instructed to strike or knock down as few cones or barrels as possible and to complete each course as quickly as possible while maintaining safety. The courses were difficult, with virtually every individual striking some cones.

We also tested participants for psychomotor speed and eye-hand coordination using the Digit Symbol Substitution Test from the Wechsler Adult Intelligence Scale, and for reaction time, impulsivity, and vigilance using the computerized Test of Variables of Attention (TOVA) (Tearl, Dupuy, Greenberg, Corman, & Kindtshi, 1996). TOVA measures responses to 648 stimulus presentations during 21.6 minutes. Half the presentations are of a target stimulus demanding a response and half are of a non-target stimulus, for which the study participant is to avoid making a response.

**No difference**

We did not find consistent, significant differences between the non-pain and chronic pain populations, regardless of whether the latter was taking opioids or opioid dose level, for the following dependent measures: driving errors during the community drive,


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