

Risk of involvement in traffic accidents associated with the prescription of medicinal drugs: A registry-based cohort study

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AIMS: There is limited information about the traffic accident risk associated with the use of various medicinal drugs. In the present study we applied a pharmacoepidemiological approach to the problem. By connecting data on individual drug prescriptions with data on individual involvement in traffic accidents, from the national prescription database and the national road accident registry, respectively, we wanted to examine if persons having dispensed certain prescribed medicines were more often involved in accidents as drivers than other persons.

METHODS: Since 2004 the Norwegian Prescription Database (NorPD) covers all prescriptions dispensed outside hospitals at pharmacies to individual patients in ambulatory care. Since 1964 the Norwegian Road Accident Registry (NRAR) included all accidents involving personal injuries obligatory reported to the police. The study covered a 1.5 year period from April 2004 to September 2005 including all Norwegians aged 18-70 years registered in the Norwegian Central Population Registry (NCRP) i.e. 3.1 million people. These data from NCRP were linked with data from NorPD and from drivers in NRAR, based upon the unique 11-digit identification number assigned to all Norwegians. The period of drug usage was assumed to be 7 days, starting at the date of delivery. During this period the person was regarded as “exposed” to the actual drug. The incidence of accidents among exposed subjects was compared with the incidence among unexposed subjects in the same age group of the same sex, by calculation of the standardized incidence ratio (SIR). SIRs above unity indicated an increased risk of being involved in an accident as driver.

RESULTS: During the study period, the 3.1 million study subjects were involved as drivers in 12 865 road accidents with personal injuries. In the total study group 79 % dispensed a prescription, while among the accident drivers this percentage was 82 %. Significantly increased SIRs (value, 95 % CI) were found to accompany prescription of natural opium alkaloids (codeine most important): (3.2, 2.7-3.7), tranquilizing benzodiazepines (3.3, 2.8-3.9), hypnotic benzodiazepines (3.3, 2.1-4.7) and NSAIDS (4.1, 3.6-4.6). Slightly increased or unchanged SIRs were found for selective beta -2-adrenoreceptor agonists (asthmatics) (1.4, 0.9-2.0), calcium receptor antagonists (0.9, 0.5-1.5) and penicillin (1.2, 0.9-1.6). Other drug classes were not studied in the present investigation.

CONCLUSION: The present pharmacoepidemiological approach demonstrated increased risk of being involved in an accident as driver among users of prescribed opiates and benzodiazepines, supporting results from other studies of different design. The present study also indicated an increased risk for users of NSAIDS, a finding which may warrant further investigation. The present model does not allow separation between effects of a medication and the illness as potential causes of an accident. Further it only covers prescribed medicines dispensed outside hospitals. This pharmacoepidemiological model might, however, be useful to identify medicinal drugs of potential risk to traffic safety in populations with prescription and accident registries.

KEYWORDS: *Prescription drugs, Driving, Accidents*

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