Strategy in the Use of Biological Markers
in Regranting of Driving Licences

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Introduction

Driving under the influence of alcohol is now the first cause of penal sanction in France, before robbery and other offences. Beyond the penal sanctions, the society now requires a careful checking of the population of drivers before regranting their driving licence. But, if this wish of “cleaning” the roads of drunken drivers is a common objective for us, we must note that the administrative and technical tools are not well adapted to the request of the regulators.

Driving under the influence of alcohol (D.U.I.) is still often confused, in people’s mind, with alcoholism, even, if the scientists know that an important part of alcohol related accidents are due to acute use of alcohol in non alcoholic peoples.

The use of biological markers does not escape to this confusion. It seems now necessary, with the arrival of new markers of alcohol consumption, to define a strategy of use of those biological markers to improve the quality of medical assessments for drivers.

Medical assessments for drunker drivers in France

In France as in many countries, primary medical commissions are asked for evaluations on the suitability of issuing licences. Particularly to discriminate acute alcohol use and chronic use, the administration entrusts to primary medical commissions, the responsibility of giving a medical advice on driver’s fitness

- Prior to be obtaining or regranting of special driving licences (trucks, buses, taxicabs).
- Prior to be realising or to the regranting of the licence after revocation for DWI or serious driving offence.
The primary medical commissions have complete authority to ask for a biological control of alcohol consumption for any driver coming forward. This biological control demand can be based on the offence or on a simple clinical suspicion.

Concerning the medical examination prior to the regranting of driving licence after DWI, the offender’s appearance in front of the medical commission, generally, takes place after the revocation period.

The regulation of medical commissions establishes, in this case, a distinction between occasional use and chronic abuse for the releasing of licences.

- In case of occasional use, the licence is regranted for a probationary period of one year, followed by a new medical assessment before final reinstatement.
- In case of chronic use, the driving licence is released only after detoxification and normalization of clinical and biological symptoms. Therefore, it appears that biological markers are necessary for the medical commissions to establish:
  - if a subject shows signs of regular alcohol consumption after DWI
  - if a subject is effectively abstinent.

**Biological markers**

- Mainly based on the traditions in occupational medicine, many biological markers have been proposed to evaluate alcohol consumption or consequences on physical fitness:
  - Mean Corpuscular Volume (MCV), Aspartate Aminotransferase (ASAT), Alanine Amino Transferase (ALAT) and, of course, Gammaglutamyl Transferase (GGT) have been related with chronic alcohol consumption, but have a lack of specificity and sensitivity, especially to evaluate quickly changes in drinking habits.
  - Recently, the introduction of the testing of Carbohydrate Deficient Transferrine (CDT) as brought a new approach in the evaluation of alcohol consumption.

**Main characteristics of CDT**

This marker seems to be independent of hepatic disorders, to have a high level of sensitivity (82%) and of specificity (97%) in the study led by H. Stibler on 2500 individuals. The CDT level increases after 2 weeks of drinking with quantities of alcohol over 50-80 g/day of ethanol and it
decreases after 4 or 8 weeks of abstinence.

Some false positives have been reported in genetic variants of transferrine, severe liver diseases (primary biliary cirrhosis, hepatic tumors, hepatitis C), but with no comparison with GGT in term of specificity.

The different types of problems

- With a high level of GGT

GGT is a better marker of hepatic disorders than of alcohol consumption. The interest of a specific marker, which positivity can be related to an important and daily consumption of alcohol rests in a better answer to the request of the administration by noting:

- an effective abstinence in patients whose hepatic parameters are changed by an other pathology than alcohol (hepatitis, medicinal drugs’ toxicity) or with a MCV increased by hematological problems non related to alcohol.

In this case, a low level of CDT allows to regrant the licence for a probatory period.

- a persistent consumption of high quantities of alcohol in patients who try to justify a high level of GGT with the same sorts of pathologies.

In this case, a high level of CDT can justify the refuse of regranting the driving licence and can allow a strong advice for a therapy.

In those two situations, CDT can be considered as a second intention marker.

- With a normal level of GGT

If the patient seems to have a problem of alcohol consumption, a high value of CDT can be related to a bordeline state of chronic use and can lead to an earlier therapy before chronic alcoholism. This situation interests specialists in alcohol therapy and bring us to discuss a use of CDT in first intention when patients are supposed to drink often and to be a better target for therapy.
Conclusion

Beside the classical markers of alcoholism, CDT can be proposed to the practitioners working in medical commissions for driving licences as a specific and sensitive marker, able to clearly answer to the requirement of the administrative authority about chronic or acute use of alcohol, without adding an administrative sanction unjustified, if the patient is effectively abstinent.

CDT belongs, in this case, to a second level test battery.

CDT can be also be proposed to detect earlier the patients with a borderline state of relationship with alcohol.

A good clinical examination and a clinical evaluation of alcohol consumption can lead, in first intention, to the prescription of a CDT in the aim of a early therapy.

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