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Medications between psychiatric and addictive disorders

Laurence Lalanne [a,d,*], Pierre-Eric Lutz [e,f], Benoit Trojak [c], Jean-Philippe Lang [d], Brigitte L. Kieffer [a,f], Elisabeth Bacon [b]

[a] Translational Medicine and Neurogenetics, Institut de Génétique et de Biologie Molé-culaire et Cellulaire, INSERM U-964, CNRS UMR-7104, Université de Strasbourg, France
[b] Inserm U-1114, Department of Psychiatry, University of Strasbourg, France
[c] Department of Psychiatry and Addictology, University Hospital of Dijon, France, EA 4452, LPPM, University of Burgundy, France
[d] CHRU de Strasbourg-INSERM1114, Department of Psychiatry, University of Strasbourg, France
[e] McGill Group for Suicide Studies, Douglas Mental Health research Centre, McGill University, Montréal, Canada
[f] Douglas Mental Health Research Centre, McGill University, Montréal, Canada

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ABSTRACT

Introduction: Many epidemiological studies have revealed a frequent co-occurrence of psychiatric and substance use disorders. The term used in the literature to refer to this co-occurrence is dual diagnosis. The high prevalence of dual diagnosis has led physicians to observe the effects of medication prescribed to treat psychiatric disorders on the co-occurring substance use disorder and vice versa. The concept of medications between psychiatric and addictive disorders stems from these clinical observations, alongside which, however, it has developed from the observation that both psychiatric and substance use disorders share common neurobiological pathways and trigger common cognitive disorders. This has led researchers to develop medications on the basis of neurobiological and cognitive rationales.
Material and method: In our article, we review peculiar medications based on neurobiological and cognitive rationales and that have an impact in both psychiatric and addictive disorders.
Results: We highlight how interesting these new prescriptions are for clinical observation and for the treatment of patients suffering from dual diagnosis.
Conclusion: We then go on to discuss the interest in them from the perspective of clinical practice and clinical research, in that the development of medications to treat dual diagnosis helps to further our knowledge of both psychiatric and substance use disorders.

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* Corresponding author at: INSERM1114 — Department of Psychiatry, University of Strasbourg, 1 Place de l'hôpital, 67000 Strasbourg, France.
E-mail addresses: laurence.lalanne@chru-strasbourg.fr (L. Lalanne), pierreric.lutz@gmail.com (P.-E. Lutz), benoit.trojak@chu-dijon.fr (B. Trojak), Jean-Philippe.lang@chru-strasbourg.fr (J.-P. Lang), Brigitte.kieffer@douglas.mcgill.ca (B.L. Kieffer), Elisabeth.bacon@unistra.fr (E. Bacon).

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1. Introduction

Over the past few years, many epidemiological studies conducted into substance use disorders have shown a high level of co-morbidities between substance use and psychiatric disorders (Farrell et al., 2001; Grant et al., 2007; Husky et al., 2008; Habibisaravi et al., 2015; Ross and Peselow, 2012; Cottencin, 2009; Ohlmeier et al., 2007). As regards the two main substances used worldwide, namely alcohol and tobacco, studies found a strong comorbidity between drug dependence and mental disorder. In the 2001–2002 American National Epidemiological Survey on Alcohol and Related Conditions (NESARC-USA), the authors pinpointed the existence in the general population of associations between drug use and mood (odds ratio = 3.5, 99% CI = 2.7–4.5), and between alcohol use and anxiety disorders (odds ratio = 2.7, 99% CI = 2.1–3.7) (Grant et al., 2005; Compton et al., 2007). Furthermore, there is a higher risk of suicide in women who smoke more than 25 cigarettes per day (Husky et al., 2008; Tanskanen et al., 1998; Hemenway et al., 1993). Recently, Chen et al. showed in young adults not only that suicide was associated with smoking (OR = 3.69, 95% CI 1.85–7.39), but also that adolescents who were exposed to secondhand smoking showed an increased risk of suicide for >20 cigarettes per day (OR = 2.83, 95% CI 1.54–5.20), and already for 1–20 cigarettes per day (OR = 1.47, 95% CI 0.94–2.30) (Chen et al., 2015).

People suffering from psychiatric disorders, on the other hand, show high levels of substance use disorders. For example, major depression has been observed to be associated with alcohol dependence (OR = 3.7, 95% CI = 3.1–4.4) (Grant et al., 2007) and, in women, with smoking (Husky et al., 2008). Moreover, Thoma and Daum reported that patients with schizophrenia have a lifetime prevalence of 50% of suffering from a comorbid substance use disorder, with cannabis, alcohol and tobacco the drugs most frequently used. According to Callaghan et al. (2013), the prevalence of smoking among individuals with psychiatric conditions is approximately 2 to 4 times higher than in the general population. The authors also observed that tobacco-related conditions appear to be responsible for approximately 53% of all deaths in schizophrenia cohorts, and 48% and 50% of all deaths in bipolar and depression cohorts respectively. In addition, it is well known that there is a link between anxiety disorders and substance use disorders (Callaghan et al., 2013). For example, Fatseas et al. showed that there is a strong correlation between PTSD and opiate addiction, with a lifetime prevalence of drug consumption of between 26% and 35% (Fatséas et al., 2010).

Dual diagnosis is the term used to refer to the co-occurrence in the same patient of a substance use disorder and a psychiatric disorder (Błachut et al., 2013; Murthy and Chand, 2012). The nature of the preexisting trouble may be of importance, and it has been observed, for example, that phobia seems to precede addiction (Compton et al., 2000, 2007), whereas addiction seems to precede generalized anxiety (Callaly et al., 2001; Back and Brady, 2008). Studies report that most frequently it is the psychiatric disorder that seems to manifest itself before the substance use disorder, but regardless of the order, their co-occurrence is very frequent. Consequently, medication prescribed initially for psychiatric diseases could have an impact on substance use disorders and vice versa, and these potential effects can be clinically observed by the physician. For example, people who suffer from anxiety and substance use disorders are usually prescribed antidepressant drugs for their anxiety. This then gives the clinician an opportunity to observe the potential benefits of psychiatric medication like antidepressants for the substance use disorders of their anxious patients. Some psychiatric medication has already been shown to have certain benefits for treating substance use disorder. Some authors have since proposed specific medication that might be effective as treatment of both conditions, i.e. for dual diagnosis (Graves et al., 2012; Murthy and Chand, 2012; Schnell et al., 2014).

The concept of "medications between psychiatric and addictive disorders" refers to the medication that has resulted from these observations. It is expected that special medication will be able to treat both psychiatric and substance use disorders. Such medication has been developed on the basis of not only clinical observations but also neurobiological and cognitive rationale.

In drug addicts, there is some modification of neurotransmission, involving dopaminergic, serotoninergic, glutamatergic, opioid neurotransmission system, as well as GABAergic, and norepinerphrinergic systems, coupled with changes in neuroplasticity. Neurobiologists and physicians have also gained useful knowledge from observing drug abstinence. In the case of protracted abstinence, the dysregulation of dopamine and serotonin transmission is characterized by a drop in their secretion and may subtend many clinical symptoms commonly described during abstinence, such as irritability, tiredness, anhedonia, lack of motivation and dysphoria (Zorrilla et al., 2014). In mice, heroin protracted abstinence provokes a decrease in social interactions and depressive disorders (Goeldner et al., 2010). These symptoms could be associated with a serotoninergic system dysregulation via the kappa dynorphinergic system (Lalanne et al., 2014). Otherwise, these symptoms appear to be quite similar to the symptoms of depression, which are characterized by a decrease in serotonin, dopamine and norepinephrine secretion (Blier, 2013; Shao et al., 2014). These observations have led physicians to test certain anti-depressants as treatment for protracted abstinence. In addition, cognitive impairments are present in both drug abuse and psychiatric illnesses. More specifically, mnesic, temporal, attentional, and executive impairments are all observed with substance use disorders (Gould, 2010) as well as psychiatric disorders, particularly depression (Papakostas, 2014) and psychotic disorders (Vidailhet, 2013). These observations explain why some medication for cognitive disorders which was initially developed to treat neurological or neuropsychiatric disorders has since been adapted in psychiatry and tried in the field of addictology. Although these rationales help to assess the relevance of use of many medicines in the context of dual diagnosis, the use of such medications is often the result of clinical observations.

2. Material and method

In our article, we describe some medications developed as a result of neurobiological and clinical observations, as well as some stemming from cognitive rationales that may help to assess whether or not the medication in question is relevant for use (see table 1). It is expected that these rationales can be used to develop clinical research and to improve treatment for addiction in the future.

3. Results

3.1. Medications between psychiatric and addictive disorders prescribed according to a neurobiological rationale

3.1.1. Antidepressant drugs effective for treating psychopathological symptoms of drug abstinence

Many serotoninergic ligands have been used to treat addiction and especially depression-like disorders associated with protracted abstinence, given that addiction and depression could potentially benefit from the functional and structural interdependence that dopamine