

# FATAL CASES OF DRUG ABUSE AT THE WORKPLACE AMONG HEALTHCARE ADDICT PROFESSIONALS

## DECES PAR OVERDOSE DE SUBSTANCES PSYCHOACTIVES PARMIS DES PROFESSIONNELS DE LA SANTE TOXICOMANES

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### Abstract

The use of psychoactive substances among healthcare professionals has been well documented. Anesthesiology, surgery and emergency medicine are recognized among medical specialty groups as having a high risk for the development of chemical dependence. Product availability, stress and work overload are risk factors. The risk of excess mortality by suicide or overdose has been proven.

We report two cases of deaths at the workplace among healthcare in the university hospital of Habib BOURGUIBA of Sfax (South Capital of Tunisia). Both of the victims were found in the toilet of the hospital during a night watch. The external examination found suggestive signs of addiction by intravenous injection. Autopsy and toxicology analyses led us to retain the toxic origin of the death.

No Tunisian publication was interested before in drug abuse among healthcare professionals. However, this problem exists in our country. Reducing this risk requires prevention through improved working conditions and early detection of cases to ensure appropriate care.

**Key-words :** Substance abuse; Autopsy; Dependence.

### Résumé

L'usage de substances psychoactives parmi les professionnels de la santé a été bien documenté. L'anesthésiologie, la chirurgie et la médecine d'urgence sont reconnues parmi les spécialités les plus exposées. Ceci peut être expliqué par la disponibilité des produits, le stress et la charge de travail. Le risque de surmortalité par suicide ou surdosage est important.

Nous rapportons 2 cas de décès de professionnels de la santé survenus sur les lieux de travail. Les deux victimes ont été retrouvées dans les toilettes de l'hôpital au cours d'une garde de nuit. Les deux corps portaient des traces d'injection intraveineuse d'âges différents. Les investigations médico-légales nous ont permis de retenir l'origine toxique de la mort.

Aucune publication tunisienne ne s'est intéressée au paravent à la toxicomanie chez les professionnels de la santé. La réduction de ce risque réel et croissant nécessite l'amélioration des conditions de travail et le dépistage précoce des cas.

**Mots-clés :** Abus de substances; Autopsie; Dépendance.

### ملخص

استخدام الأدوية المخدرة بين العاملين في مجال الصحة تم توثيقه جيدا. و يعتبر التخدير والجراحة وطب الطوارئ من بين التخصصات الطبية الأكثر عرضة لهذا الخطر المهني. ويعود ذلك إلى سهولة توفر الأدوية المخدرة، وطبيعة العمل المتميز بالضغط النفسي المتواصل للطبيب المباشر في هذه الاختصاصات و ضرورة النجاعة العالية.

و من أبرز المضاعفات الناجمة عن هذا الخطر المهني نجد الوفاة من جراء أخذ جرعة زائدة أو الانتحار بواسطة هذه المواد المستعملة. نقدم لكم تقريرا عن حالتنا وفاة لمهنيين في مجال الصحة جدتا في مكان العمل بالمستشفى الجامعي الحبيب بورقيبة بصفاقس. تم العثور على الضحيتين في مرخاض المستشفى خلال العمل في المناوبة الليلية. كانت كلتا الجثتين تحملان آثارا لحقن متكرر عبر الوريد. وقد مكنتنا مختلف معطيات الفحص الخارجي و تشريح الجثة و التحاليل السمية من الانتهاء إلى نتيجة أن الوفاة ناجمة عن أخذ جرعة زائدة من دواء مخدر. يعتبر تعاطي المخدرات في صفوف المهنيين الصحيين خطر مهني موجود في بلدنا بالرغم من عدم وجود بحوث تونسية منشورة سابقة تهتم بهذا الموضوع. و تعتبر الوقاية من هذا الخطر ضرورية و تستوجب تحسين ظروف العمل في الميدان الصحي والكشف المبكر عن الحالات المشبوهة في هذا الميدان.

**الكلمات المفاتيح :** إساءة استعمال المواد المخدرة; تشريح الجثة; الإدمان.

## 1. INTRODUCTION

The use of psychoactive substances among medical students, residents, practicing physicians and paramedical staff has been well documented.-The consequences may be devastating to users, and may be life-threatening to patients. Some medical specialty groups are believed to have a higher risk for the development of chemical dependence.

We report 2 cases of fatal drug poisoning among healthcare professionals that took place at the workplace in the university hospital of Sfax, Tunisia. Both victims presented signs of addiction to psychoactive substances.

To the best of our knowledge, this is the first report in the literature of cases of psychoactive drug poisoning among healthcare addict professionals with death taking place at the workplace.

## 2. CASES DESCRIPTION

### 2.1. Case n°1:

A 33- year old anesthesia resident was found dead in the toilet of the hospital at the end of a night watch (at 11am). She was seen alive for the last time around 5 am.

The body lifting found two syringes and vials of anesthetic drugs near the corpse and ten syringes and vials of drugs in the victim's handbag.

External examination revealed sub-ungueal and perioral cyanosis, numerous recent needle marks, fresh and older hemorrhages from previous injections in the skin of the upper and low limbs, and bruising in occipital scalp.

The autopsy was performed within 20 hours after finding the decedent.

At autopsy, there was cerebral congestion and pulmonary edema without traumatic injury.

Microscopically, there was no evidence of any disease that might have caused, hastened, or facilitated death.

Toxicological standard analyses of blood and urine of the victim were negative.

Toxicological screeningrevealed that the syringes found at the death site were positive to FENTANYL® and TRACRIUM®. The three syringes found among the personal belongings were respectively positive to FENTANYL®, MIDAZOLAM® and TRACRIUM®.

Moreover, the DNA profile as well as the blood group identified in all the syringes was the same as the victim.

### 2.2. Case n°2:

The victim was a nurse at the emergency unit. He was a 42- year old man, married, smoker, father of three children, and left-handed. He was found dead in the toilet of the hospital during a night watch. Unusual behavior was noted in the last period with frequent request of night shifts and admission in the emergency department for short periods and for poorly specified reasons. A history of self-medication with an analgesic (Nefopam®: ACUPAN®) injectable was reported by his colleagues.

An empty syringe was found in the pocket of his coat.

External examination revealed recent and ecchymotic injection marks on the outer edge of the middle third of the right forearm opposite the radial duct (fig.1), two old injection marks on the anterior face of the middle third of the right forearm, and an old injection mark on the right elbow (fig.2).

We also found an ecchymotic tongue biting (fig.3) referring to the occurrence of a seizure. No other traumatic injury was found.

At autopsy, we found congestive syndrome, brain edema with tonsillar commitment and lung edema.

Microscopically, there was no evidence of any disease that might have caused, hastened, or facilitated the death.

Toxicological standard analyses of blood and urine were performed. NEFOPAM® was screened in blood in supra-therapeutic concentration.

## 3. DISCUSSION

### 3.1. Cause of death:

In the first case, positive diagnosis of toxic death from acute anesthetic drug poisoning was detained regarding to the memorial and death circumstances, the symptoms of addiction, the blood group and the DNA profile of the collected samples from syringes, and the presence of anesthetic drugs in the syringes found in the personal belongings, without argument for another cause of death.

The pharmacokinetics of the anesthetic drugs used (fast elimination products), the delay between the time of death and the practice of autopsy and the poor sensibility of the methods of detection used in standard toxicology analysis were the arguments that explain the negativity of toxicological analyses of the samples taken from the body.

In the second case, the cause of death was attributed to an acute poisoning with Nefopam®.

This drug is a non-opiate central analgesic with psycho stimulant effects and a documented dependence risk [1].

Data from animal studies [2], human non-fatal cases [3] and fatal cases, revealed that the symptoms of Nefopam® overdose are generalized seizures, tachycardia, generalized limb flaccidity, fever, acute renal failure, cerebral edema and finally cardiac arrest. In our case, the mechanism of death is probably a deep coma with convulsions resulting in hypoxic brain damage as attested by the tongue biting mark and the brain edema with tonsillar commitment.

A remarkable fact in both cases is the occurrence of death during a night watch in a toilet, a very intimate place for a victim to make his shots away from the control of work colleagues and patients.

### **3.2. Epidemiology of drug abuse among healthcare professionals:**

Substance abuse and impairment are serious societal problems. Physicians have historically had high rates of substance abuse, which has been viewed as an occupational hazard [4].

Physicians are at higher risk of addiction compared with the general population. It is estimated that approximately 10% to 15% of all healthcare professionals will misuse drugs or alcohol at some time during their career, and about 15% of physicians worldwide may be addicted to drugs or alcohol [5].

Specialties such as anesthesia, emergency medicine, and surgery have higher rates of drug abuse, probably related to the high-risk environment associated with these specialties, the stressful and competitive environment in which they work, the baseline personalities of these healthcare providers, and the easy access to drugs in these areas [6] with the possibility of self-prescription. The hypothesis of second hand exposure has also been raised [7].

1% to 2% of anesthesiologists are considered drug addicts in epidemiological studies [8]. According Garcia Guaschin [9], anesthesiologists have a significantly higher frequency of substance abuse by a factor of nearly 3 when compared with other physicians.

Residents in anesthesiology are a specific

vulnerable population frequently mentioned in the literature [10].

When drugs are mostly used for "recreational" purposes by medical students, residents use drugs for performance enhancement, in response to sleep deprivation and as self-treatment for various reasons, such as, pain, anxiety, or depression [11]. They have the feeling of a control of the substances used.

Concerning the risk of drug abuse among nurses, a survey conducted among American anesthesia nurses reported a prevalence of addiction about 10% in their careers with a net male predominance [12].

A. Tracquiet all also reported a fatal case of voluntary over dosage with Nefopam® in a nurse in a medical rehabilitation unit, but the death happened at her home. Up to this date, there have been six previously reported cases of deaths involving toxicity of Nefopam® in the literature [13].

### **3.3. Consequences of the substance abuse in healthcare professionals:**

In general, the underlying issues of this occupational risk are the dangers of "role strain", features of a "typical" personality and a high rate of burnout among physicians [5]. Please to respect of space after the end mot, so before correspondent reference.

Moreover, the risk of death is higher among anesthesiologists after the discovery of drug addiction. Mortality in addict anesthesiologists is more than 15% over 5 years [14].

Among residents, the attributable risk of substance use disorder to several adverse outcomes during and after residency training is substantial [15]. It includes failure to complete residency or become board certified, adverse medical licensure actions subsequent to residency and a marked increase in the risk of death after training. In fact, the authors observed a mortality of 15% by suicide or overdose among anesthesia residents and 17% among those who had taken an anesthetic activity after the discovery of addiction and its treatment. Finally, it was shown that 66% of the residents relapsed after returning to anesthesia. Rehabilitation programs succeed in 60% to 80% of the cases but residents in anesthesia need to be redirected to another medical specialty [8].

### 3.4. Prevention:

Drug abuse and dependence are behavioral disorders and treatable medical diseases.

Early recognition of this occupational hazard and appropriate care is very important. Symptoms of addiction at the workplace are numerous. The most frequent are clinical performance changes, behavior changes, inappropriate behavior mood swings, decreased attention to appearance or hygiene, drowsiness, urgent requests for breaks, unusual will to provide pain treatment to patients, lethargy, unusual financial problems, legal conflict (driving under the influence of drugs and so forth), sloppy medical records, new skin problems, long-sleeve shirt wearing, frequent requests to work extra nights or weekend, falling asleep in the operating room...[16-17].

Initiation of special education in medical schools about alcohol and drug use and management of the occupational stresses are all of paramount importance.

It is also recommended to tighter control of drugs and surveillance of all medical personnel in order to reduce the risks to patients associated with chemical dependence.

### 4. CONCLUSION

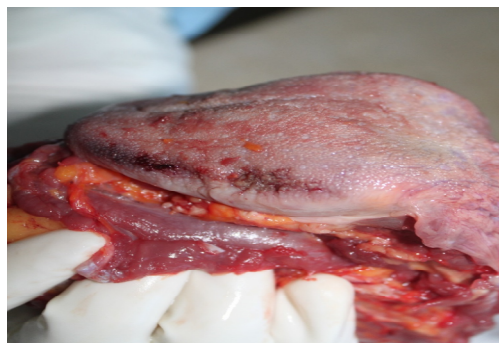
The problem of addiction among healthcare professionals is real and substantial in the world as in our country. The risk of excess mortality by suicide or overdose is proven in this case report. However, no Tunisian publication was interested before in prevalence of substance abuse among medical staff neither in the substances abused. Reducing this risk requires prevention through improved working conditions and the early recognition of cases to ensure appropriate care. The authors have no conflicts of interest to disclose.



**Figure 1.** Recent injection marks on the outer edge of the right forearm



**Figure 2.** Old injection marks on the anterior face of the right forearm and the right elbow



**Figure 3.** Ecchymotic tongue biting

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