Available online at www.elixirpublishers.com (Elixir International Journal)

Physiology and Anatomy

Elixir Physiology and Anatomy 169 (2022) 56417 - 56418

ISSN: 2229-712X

The Electronic Cigarette: a New Cardiovascular Risk Factor? About One Case

J.Nguadi[1], B. Mesmoudi[2], R.Jennane[2], Z. Lakhal[1] and A. Benyasse[1]

[1] Department of Cardiology, Military Hospital Mohammed V of Rabat, University Mohammed V of Rabat

[2] Department of Cardiology, Maternity Souissi, Ibn Sina Teaching Hospital University Mohammed V of Rabat

ARTICLE INFO

Article history:

Received: 16 July 2022;

Received in revised form:

20 August 2022;

Accepted: 30 August 2022;

Keywords

Electronic Cigarette,

Myocardial Infarction,

Tobacco.

ABSTRACT

The electronic cigarette is a product of common consumption which has known a remarkable commercial success. Its use is controversed by the doctors because of its toxicity, especially in the long term. A lesser toxicity of vaping compared to cigarettes is also an established fact. We report the case of a young electronic cigarette smoker, who arrived at the emergency department with a myocardial infarction. In the literature, a significant impact of electronic cigarette use on intermediate endpoints or markers of cardiovascular but it is not clear whether these changes have medium- and long-term clinical consequences. Few clinical studies have been conducted to specifically evaluate the cardiovascular effects of vaping. Thus, the electronic cigarette should never be used on a non-smoker or ex-smoker. Ideally, its use should be limited in time necessary for smoking cessation.

Introduction

The electronic cigarette (personal vaporizer), which is a product of common consumption, was introduced into society independently of the medical field and long before specific research could be conducted on it. This particular context gave rise to controversy, making it difficult for doctors to advise on the subject.

We report the case of a young man who arrived at the emergency department with a myocardial infarction and whose history did not reveal any cardiovascular risk factors. Our patient is an electronic cigarette smoker.

Case report

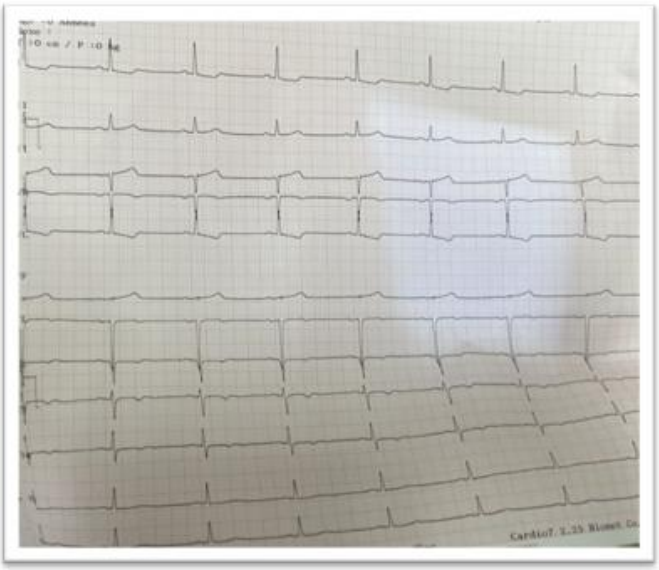

Figure 1. Electrocardiogram showing sequelae of necrosis in the inferior leads

We report the case of a 31 years old patient, without cardiovascular risk factors, smoker of electronic cigarette for 3 years, who was admitted to the emergency department for an acute chest pain at the thirty sixth hour of pain. The patient was clinically stable with a blood pressure at 130/70 mmHg, a heart rate at 70 beats per minute, no crackles on auscultation and no heart murmur.

The electrocardiogram showed a regular sinus rhythm with sequelae of necrosis in the inferior leads (Figure 1).

Echocardiography showed hypokinesia of the basal and middle segments of the inferior wall with left ventricular ejection fraction at 42%.

The coronary angiography performed in emergency showed a significant stenosis of the proximal segment of the right coronary artery which underwent angioplasty with successful stenting.

Results and Discussion

In recent years, vaping has enjoyed remarkable commercial success. In France, in 2016, 24.5% of the adult population aged 15 to 75 years had already experimented a vaping product and 2.5% had used it daily (3% of men and 1.9% of women) [1]. It is likely that this success is at least partly responsible for a decreasing trend in cigarette sales in France since 2012, when they had been flat since 2004. A lesser toxicity of vaping compared to cigarettes is also an established fact. The British Royal College of Physicians postulates that the use of vaping represents a 95% risk reduction compared to remaining a cigarette smoker [2]. Although this difference in risk is not as precisely demonstrated, it is a fact that if the vaping fluid contains propylene glycol and/or glycerine, flavourings and in the vast majority of cases nicotine, there is no tobacco and the system that produces the aerosol inhaled by the vaporizer does not

Tele:

E-mail address: jaouad7um@gmail.com

cause combustion of these products. There is therefore no carbon monoxide and the amount of carcinogenic substances present in this aerosol is considerably reduced compared to that contained in cigarette smoke [3].

Unfortunately, some studies concerning vape smoke aerosols highlighted the presence of carcinogenic substances, even in small quantities, which have been clumsily relayed by the media, with the consequence of having made return to the cigarette many electronic cigarette users.

Cardiovascular safety of nicotine replacement therapy (skin patches and oral substitutes) has been well demonstrated, which allows its use without hesitation in cardiac patients, including coronarian ones [4]. However, such a level of safety cannot be applied for the administration of nicotine by a personal vaporizer given the great variability of kinetics observed between the different vaporizers and the way they are vapourized.

Studies have found a significant impact of electronic cigarette use on intermediate endpoints or markers of cardiovascular risk such as oxidative stress, sinus variability [5], fine particles [6] or platelet function [7], although it is not clear whether these changes have medium- and long-term clinical consequences.

Few clinical studies have been conducted to specifically evaluate the cardiovascular effects of vaping. Some studies on myocardial function [8] and coronary circulation [9] have not shown immediate deleterious effects of electronic cigarette unlike cigarette smoking. But it should be noted that these studies concerned healthy, non-cardiac and non-coronary individuals.

Furthermore, the main limitation of all studies evaluating the clinical tolerance of vaping is that they only concern the effects of an acute exposure, not allowing to eliminate possible long-term effects. There is an imperative to engage and continue quality research in this subject.

In practice, however, it should be noted that even if the toxicity of vaping is much lower than that of smoking, it is not relevant to assert the total absence of its toxicity, especially in the long term. This implies that this product should never be used on a non-smoker or ex-smoker. Ideally, its use should be limited in time necessary for smoking cessation.

Conclusion

The electronic cigarette cannot simply be judged beneficial or harmful. Under certain circumstances, such as its use among non-smoking adolescents and young adults who do not smoke, the harmful effects of the electronic cigarette may warrant concern. However, in the case of smokers using electronic cigarettes to quit smoking, vaping offers a way to reduce smoking-related diseases.

References

1. Pasquereau A, Gautier A, Andler R et al. ; le groupe Baromètre santé 2016. Tabac et e-cigarette en France : niveaux d'usage d'après les premiers résultats du Baromètre santé 2016. Bull Epidémiol Hebd, 2017;12:214-222.

2. Royal College of Physicians. Nicotine without smoke: Tobacco harm reduction. London: RCP, 2016. https://www. rcplondon.ac.uk/projects/outputs/nicotine- without-smoke-tobacco-harm-reduction- 0

3. Goniewicz ML, Gawron M, Smith DM et al. Exposure to nicotine and selected toxicants in cigarette smokers who switched to electronic cigarettes: a longitudinal within-subjects observational study. Nicotine Tob Res, 2017;19: 160-167.

4. HAS. Recommandation de bonne pratique – Arrêt de la consommation de tabac : du dépistage individuel au maintien de l'abstinence en premier recours. 2014. http://www. has-sante.fr/portail/jcms/c_1718021/fr/arret-de-la-consommation-de-tabacdudepistage-individuel-au-maintiende-l-abstinence-en-premier-recours.

5. Moheimani RS , Bhetraratana M, Peters KM et al. Sympathomimetic effects of acute e-cigarette use: role of nicotine and non-nicotine constituents. J Am Heart Assoc, 2017;6:e006579.

6. Fuoco FC, Buonanno G, Stabile L et al. Influential parameters on particle concentration and size distribution in the mainstream of e-cigarettes. Environ Pollut, 2014;184:523-529.

7. Hom S, Chen L, Wang T et al. Platelet activation, adhesion, inflammation, and aggregation potential are altered in the presence of electronic cigarette extracts of variable nicotine concentrations. Platelets, 2016;27:694-702.

8. Farsalinos KE, Tsiapras D, Kyrzopoulos S et al. Acute effects of using an electronic nicotine-delivery device (electronic cigarette) on myocardial function: comparison with the effects of regular cigarettes. BMC Cardiovasc Disord, 2014;14:78.

9. Farsalinos KE, Tsiapras D, Kyrzopoulos S et al. Immediate effects of electronic cigarette use on coronary circulation and blood carboxyhemoglobin levels: comparison with cigarette smoking. Eur Heart J, 2013;34 (Abstract Supplement):13