

The Association Between Heroin Inhalation and Early Onset Emphysema

Paul P. Walker, MD, BMedSci (Hons), BMBS; Erica Thwaite, MBBS; Suzanne Amin, MBBS; John M. Curtis, MBChB; and Peter M. A. Calverley, MBChB, DSc



BACKGROUND: Inhalation/smoking has become the most common method of recreational opiate consumption in the United Kingdom and other countries. Although some heroin smokers appear to develop COPD, little is known about the association.

METHODS: We present data from a cohort of 73 heroin smokers with clinician-diagnosed and spirometrically confirmed COPD, seen within our clinical service, where symptoms developed before the age of 40 years.

RESULTS: The whole group mean age at diagnosis was 41 years, subjects had smoked heroin for 14 years, and mean FEV₁ was 1.08 L (31.5% predicted), with mean FEV₁/FVC of 0.4. No subject was found to have severe α_1 -antitrypsin deficiency. Forty-four subjects had either a high-resolution CT (HRCT) scan (32) or measurement of lung diffusion (12). Overall HRCT scan emphysema score averaged across the upper, middle, and lower part of the lung was 2.3 (5%-25% emphysema), with 47% subjects having an upper lobe emphysema score ≥ 3 (25%-50% emphysema). Median diffusing capacity of the lung for carbon monoxide was 48% of predicted value.

CONCLUSIONS: Recreational smoking of heroin appears to lead to early onset COPD with a predominant emphysema phenotype. This message is important to both clinicians and the public, and targeted screening and education of this high-risk population may be justified.

CHEST 2015; 148(5):1156-1163

Manuscript received January 30, 2015; revision accepted May 1, 2015; originally published Online First May 28, 2015.

ABBREVIATIONS: A1AT = α_1 -antitrypsin; DLCO = diffusing capacity of the lung for carbon monoxide; GOLD = Global Initiative for Chronic Obstructive Lung Disease; HRCT = high-resolution CT

AFFILIATIONS: From the University Hospital Aintree (Drs Walker, Thwaite, Amin, Curtis, and Calverley); and the University of Liverpool (Dr Walker), Liverpool, England.

This work was presented in abstract form (Abstract P125) at the British Thoracic Society Winter Meeting, December 4-6, 2013, London, England.

FUNDING/SUPPORT: The authors have reported to CHEST that no funding was received for this study.

CORRESPONDENCE TO: Paul P. Walker, MD, BMedSci (Hons), BMBS, Clinical Science Centre, University Hospital Aintree, Lower Lane, Liverpool, L9 7AL, England; e-mail: ppwalker@liv.ac.uk

© 2015 AMERICAN COLLEGE OF CHEST PHYSICIANS. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians. See online for more details.

DOI: 10.1378/chest.15-0236

Recreational use of opiates is common, and the health effects of IV opiate use are well described and include thromboembolic disease, transmission of blood-borne viruses, and infection, including abscesses and endocarditis.^{1,2} A UK audit conducted between 1994 and 1996 suggested that drug users constituted 6% of patients admitted as an emergency to an inner-city hospital, and 6% of respiratory admissions occurred in “drug users”³; consequently, most clinicians are used to recognizing and managing the health effects of opiate injection. However, since the early 1990s there has been a gradual but progressive move from injection to inhalation/smoking opiates, probably because it is perceived to be “safer,”⁴ and, anecdotally, respiratory clinicians increasingly recognize airway disease in opiate smokers.

Scanty evidence exists concerning heroin smoking and airway disease, and what does exist relates to asthma. Hughes and Calverley⁵ and Cygan et al⁶ reported cases of acute severe asthma in heroin smokers, and two subsequent inner-city American case series showed both a

high incidence of recent heroin inhalation or insufflation in subjects with asthma requiring ventilation⁷ and that asthma admissions frequently occurred in heroin smokers where intubation rates were higher.⁸

FOR EDITORIAL COMMENT SEE PAGE 1126

Boto de los Bueis et al⁹ showed a threefold higher incidence of asthma in a population who inhaled a mixture of heroin and cocaine. However, little is known about the association between heroin inhalation and COPD beyond a study by Buster et al¹⁰ that showed an association between magnitude of heroin smoking and reduction in FEV₁ in a series of 100 heroin smokers attending a methadone treatment center. No previous study has examined measures of emphysema, such as detailed lung function testing or CT scan. We present a cohort of heroin smokers from this urban population who presented at an early age with a clinical diagnosis of COPD from who we demonstrated physiologic or radiologic evidence of early onset COPD with an emphysema phenotype.

Materials and Methods

Data were collected retrospectively between 2005 and 2013 from a convenience sample of subjects identified from the clinical respiratory service at University Hospital Aintree. To be included, subjects had to have smoked heroin regularly for a minimum of 5 years, have received a clinician diagnosis of COPD, have chronic respiratory symptoms that started at age 40 years or younger (breathlessness, wheeze, and cough with or without sputum production), and have completed spirometry on at least one occasion when clinically stable. Subjects must have undergone either a thoracic CT scan or a measurement of lung diffusion. Any subject who had received a diagnosis of asthma before they commenced smoking heroin was excluded. Demographic data were collected by retrospective case note review. All investigations were arranged as part of routine clinical practice, and where results were not present it was either not requested by the managing clinician or the individual failed to attend for the test(s).

Lung Function Testing

Testing was performed when the individual was clinically stable and at least 4 weeks post-exacerbation. Spirometry could be prebronchodilator or postbronchodilator, as subjects were not asked to omit inhalers when attending clinic (68% were prescribed short- or long-acting bronchodilators at the time they performed spirometry). The majority of spirometry was performed using a SpiroAir LT spirometer (Vitalograph; Medisoft group).

Some subjects agreed to attend for measurement of lung volumes and lung diffusion, in almost all cases measured using a SpiroAir machine (Medisoft group). Subjects omitted short-acting inhaled bronchodilators for 8 h, long-acting β -agonists for 12 h, and long-acting antimuscarinics for 24 h. Most of these subjects also had spirometry measured before and 15 min after inhalation of 5 mg salbutamol administered by air-driven nebulizer. All tests were performed according to 2005 American Thoracic Society/European Respiratory Society guidelines.¹¹⁻¹³ Static lung volumes were measured using the helium equilibration method, and up to 15 min was allowed for helium equilibration. Predicted values used were those of the European Coal and Steel Community.¹⁴

High-Resolution CT Scan

CT scans were classified as high resolution CT (HRCT) scan if slice thickness was ≤ 2 mm. The non-HRCT scans were described as showing emphysema or no emphysema, and where emphysema was present this was described as mild, moderate, or severe. Before 2010, the majority of HRCT scans were performed on a Toshiba Asteion CT scanner (Toshiba Medical Systems Corporation), with 1- to 2-mm slices obtained through the chest with a 1-cm gap between slices. After 2010, the majority of HRCT scans were performed on a Toshiba Acquilion 180-slice CT scanner (Toshiba Medical Systems Corporation) and were acquired helically with 1-mm reconstructions through the lungs.

For the subjects who had undergone an HRCT scan, the images were independently assessed by two thoracic radiologists. Emphysema was scored as per Sakai et al¹⁵ in both lungs at three levels:

- A cranial level taken 1 cm above the superior margin of the aortic arch
- A middle level taken 1 cm below the carina
- A caudal level taken ~ 3 cm above the top of the diaphragm

TABLE 1] The Simple Visual Score Used to Assess Extent of Emphysema in Subjects With Thoracic HRCT Scan Images¹⁶

Emphysema Grade	Percentage Emphysema
0	< 1
1	1-5
2	6-25
3	26-50
4	51-75
5	76+

HRCT = high-resolution CT.

Download English Version:

<https://daneshyari.com/en/article/5953247>

Download Persian Version:

<https://daneshyari.com/article/5953247>

[Daneshyari.com](https://daneshyari.com)