Intensive Care Med (2001) 27: 1547–1549
DOI 10.1007/s001340101051

BRIEF REPORT

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Smoking cessation through comprehensive critical care

Received: 23 January 2001
Final revision received: 14 June 2001
Accepted: 27 June 2001
Published online: 16 August 2001

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Abstract There has been little research on smoking cessation after critical illness. Smokers make up a high percentage of patients admitted to intensive care (ICU) and stopping smoking is one message that should be clearly given to recovering patients. The recovery period provides an important opportunity for patients to quit smoking as the period of sedation and ventilation allows patients to start nicotine withdrawal. Smoking cessation advice was included in a 6-week self-help ICU rehabilitation package comprising information and an exercise programme. Recovering ICU patients were randomised to receive either the routine follow-up of ward visits and ICU clinic appointments or routine follow-up plus the ICU rehabilitation package. Twenty out of thirty-one intervention patients and 16/30 control patients were smokers pre-ICU admission. At the 6-month follow-up, previous smokers given the rehabilitation package had a relative risk reduction for smoking of 89 % (CI 98 %–36 %). Smoking cessation after critical illness is aided by the provision of a rehabilitation programme.

Keywords Smoking cessation · ICU · Critical illness · Rehabilitation

Introduction

There has been little research on smoking cessation after critical illness. Smokers make up a high percentage of patients admitted to intensive care (ICU) for community-acquired pneumonia [1] and post-operative complications. Stopping smoking should be one message that should be clearly given to recovering intensive care (ICU) patients. The recovery period provides an important opportunity for patients to quit smoking as the time on the ICU of sedation and ventilation allows patients to start nicotine withdrawal. Written advice on smoking cessation in other patient groups, such as myocardial infarction, has been shown to result in a high quit rate (69 %) at 1 year [2]. Furthermore, rehabilitation programmes giving specific anti-smoking advice are effective in aiding smoking cessation in other groups of patients [3]. This is an important issue for many patients recovering after ICU treatment. The recovery of lung damage resulting from illnesses such as pneumonia or adult respiratory distress syndrome may be compromised if the patient continues to damage their lungs by smoking after ICU treatment.

Material and methods

Smoking cessation advice was included in a 6-week self-help ICU rehabilitation manual, read by the patient and their relative, comprising information on a wide range of issues, such as depression, anxiety, stress management, and a graded exercise programme. The importance to physical recovery of remaining a non-smoker

Table 1 Patient descriptors

Admission variables median (range) At ICU admission	Intervention $n = 31$	Control $n = 30$	2-tailed P value
Male/female	15:16	13:17	0.79
ICU stay (days)	11 (2–31)	11 (3–31)	0.71
Ages (years)	57 (17–72)	51 (17–77)	0.62
APACHE II	17 (11–34)	16 (9–28)	0.91
Ventilator days	6.5 (1–33)	8 (1–21)	0.88
Diagnostic groups			
ARDS	1	1	
Pneumonia	11	9	
Asthma/COPD	4	5	
Peritonitis	3	4	
Smoke inhalation	1	1	
Trauma	4	3	
Other	7	7	
At 2 weeks post ICU			
HAD Anxiety scores	7.0 (0–16)	7.5 (0–17)	0.68
HAD Depression scores	4 (0–15)	5.0 (0–16)	0.52

was made clear in the information as well as practical advice on coping without cigarettes [4]. Patients were recruited to the study 2 weeks after ICU discharge, with those randomised to the 6-week rehabilitation package commencing the programme at recruitment.

Recovering ICU patients were randomised to receive either the routine follow-up of ward visits and ICU clinic appointments or routine follow-up plus the ICU rehabilitation manual. As part of a larger rehabilitation study, information was collected at one study site on whether patients smoked prior to ICU admission and if they had returned to smoking at the 8-week and 6-month follow-up (verified by information from close family). Levels of anxiety, depression (Hospital Anxiety and Depression Scale) [5], and PTSD-related symptoms (Impact of Events Scale) [6] were also recorded. Consistent with our standard practice, control and intervention patients were given verbal encouragement to maintain being a non-smoker at three time points: on the ward after ICU discharge, at the 8-week clinic visit, and the 6-month clinic visit. In addition, for both study groups, the patients' immediate family were instructed not to smoke in the same room as the patient. The intervention group patients were introduced to the ICU rehabilitation package at 2 weeks after ICU discharge. All patients were followed up in clinic at 8 weeks and 6 months.

Table 2 Patients returning to smoking at 8-weeks and 6-months follow-up

	Intervention $n = 31$	Controls $n = 30$	
Smokers pre-ICU	20	16	
2 months			
Returning to smoking	2	5	RR = 0.24 (0.03–1.84)
Quitters	18	11	
6 months			
Returning to smoking	3	10	RR = 0.11 (0.02–0.64)
Quitters	17	6	

Results

Thirty-one intervention patients and 30 control patients were recruited at a single study site. Twenty out of thirty-one intervention patients and 16/30 control patients were smokers pre-ICU admission. No patients who were non-smokers pre-ICU admission became smokers during the follow-up period. All patients had an ICU stay of more than 48 h and had been ventilated. The clinical characteristics and demography of the patients in the two study groups were well matched for factors such as diagnostic group, age, length of ICU stay, and illness severity (see Table 1). At the 8-week follow-up fewer intervention patients had resumed smoking compared with the control group. This effect was more marked at the 6-month follow-up (see Table 2). The effect of anti-smoking advice in the rehabilitation package on previous smokers had a relative risk reduction for smoking of 89% (CI 98%–36%) at 6 months. There was no difference in anxiety, depression or PTSD-related symptoms at 6 months between patients who continued to smoke and those who had quit (Mann Whitney U, HAD anxiety $P = 0.51$, HAD Depression $P = 0.74$, Impact of Events Scale $P = 0.50$).

Discussion

Patients receiving the rehabilitation package were much less likely to return to smoking after discharge from ICU than the control patients. This was despite the control patients receiving verbal encouragement to quit smoking during the recovery period. There is insufficient evidence to determine whether the smoking cessation advice in the ICU rehabilitation package or the whole package in general was responsible for the high

quit rate. It has been reported that exercise may aid smoking cessation [7]. This may mean that it is not simply the smoking cessation advice in the ICU rehabilitation manual that is having an effect on whether patients return to smoking but also the provision of an exercise programme. Certainly the combination of life-threatening illness and structured written advice on stopping smoking seems to result in high rates of cessation.

The health implications of smoking cessation are great. Smoking has been implicated in the recent large increase in cases of chronic chest conditions amongst women [8]. In developed countries smoking causes about 20 % of all adult deaths [9]. The costs of smoking are wide ranging, not only to the individual and their families through smoking-related chronic illness, but to the healthcare services in caring for cardiovascular and pulmonary disease and the economy as a whole in lost productivity [9]. Recent guidelines encourage smoking cessation programmes as a responsibility of all health professionals [10].

The UK government's recent recommendations on Comprehensive Critical Care [11] include the follow-up of ICU patients. The striking relative risk reduction for smoking cessation of 89 % at 6 months amongst the intervention patients illustrates the benefit of a relatively simple intervention during ICU follow-up.

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