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IS SMOKING A DISEASE?

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Abstract

Smoking, once regarded as a 'dirty smelly habit', is now widely accepted as an addiction to nicotine. The smoking population spectrum encompasses those with little or no addiction, to those who are so severely addicted that they are unable to quit smoking despite serious smoking-related disease, e.g. leg amputation, myocardial infarction.

This paper introduces an interesting 'new disease' entity, directly related to smoking, from which every smoker suffers. Not addressing this 'new disease' or lack of awareness of the 'condition' presents important medico-legal implications for all doctors when encountering patients who smoke. The author reminds Government Health Departments and doctors who ignore this 'new disease' that they do so at their peril!

Key words: Smoking cessation, hypercarboxyhaemoglobinaemia, carbon monoxide, 'medicalisation'

Smoking – habit or addiction?

Twenty years ago, smoking was regarded purely as a habit, and doctors expected their patients with smoking-related illnesses to stop smoking when so advised. With this minimal intervention, success rates were very low even though the patient might be suffering horrendous personal diseases such as limb amputation or advanced chronic obstructive lung disease.

Obviously, smoking was far more than just a 'dirty smelly habit' and, in 1977, the Royal College of Physicians' (England) Report on Smoking and Health stated ". . . tobacco smoking is a form of drug dependence different from, but no less strong than, that of other drugs of addiction". This then explains why cigarette smokers found it difficult to cease smoking in the presence of advanced tobacco-related pathologies.

The UK Government's view

Seven years later, in 1984, I was faced with a dilemma regarding the prescribing of nicotine chewing gum (Nicorette) for smokers who wanted help in giving up their cigarettes. At that time in the UK, nicotine gum was a prescription only medicine (POM). In fact, it was the only POM amongst thousands which could not be prescribed at National Health Service (NHS) expense, i.e. it was not reimbursable under the socialised medical system currently operating in the UK.

A Department of Health committee, the Advisory Committee on Borderline Substances, recommended that Nicorette should not be allowed on NHS prescription because it decreed that "anti-smoking preparations are not regarded as drugs". I held the very strong view that nicotine was most certainly a drug and a powerful one

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at that. I therefore prescribed nicotine gum on NHS prescriptions for those motivated smokers who wanted to give up smoking. As a result of 'breaking the rules' I faced various disciplinary hearings, eventually having to present my case to a Tribunal of Independent Referees at which a statement for the Secretary of State for Health was read: "Smoking is a habit – it is not a disease or a condition – even though it may be a contributory cause of, or may aggravate, a disease or condition such as bronchitis, carcinoma of the lung, arteriosclerosis and so on".

The conclusions of the tribunal referees on whether tobacco dependency constituted a disease were that:

1) It ought to be so considered.
2) Nicotine prescribed for this purpose has both a pharmacological and a therapeutic effect.
3) This method of treatment is the most effective that has so far been evolved (Steele *vs.* The Secretary of State, 1984).

Although the Department of Health did not regard smoking as a disease in 1984, by 1989 it had changed its attitude. On 23 September, the British Medical Journal reported "The Department of Health has launched a criminal prosecution against a company selling an anti-smoking spray. The case against the company has dragged on for months whilst lawyers argue about whether smoking is a disease, and therefore the spray was supplied for a medicinal purpose under the terms of the Medicines Act". By 2 December, the Crown Court jury had decided, after hearing expert evidence, that smoking is a disease or adverse condition and the company was fined £5,000 plus £2,000 costs.

Other evidence

Tobacco dependence is also listed as a disease in the International Classification of Diseases (ICD 9), and the Diagnostic and Statistical Manual of Mental Disorders (DSM III R) of the American Psychiatric Association lists nicotine dependence as a 'Psychoactive substance use disorder'.

The concept of hypercarboxyhaemoglobinaemia

The doctor's work model

Taking the example of a doctor seeing a patient who presents with a history of possible hypertension, the basic working 'model' involves the following steps:

1) Measure a parameter, e.g. blood pressure.
2) Detect an abnormal reading.
3) Prescribe a suitable medication for that problem.
4) Measure that parameter at a later date.
5) Expect the parameter to have returned to normal.

This basic working model not only applies to hypertension, but also to several other disorders, such as hyperglycaemia, hypercholesterolaemia, hypertriglyceridaemia, etc. In each case the doctor follows the same procedure: measure, detect abnormal reading, prescribe specific medication, measure parameter again and expect a return to normal level.

'Medicalising' smoking

Using the above procedure this model could be applied to the smoker and the parameter to be measured is blood carbon monoxide (CO) level. When cigarette smoke is inhaled, CO from the burning tobacco is inhaled and dissolves in the blood 200 times faster than oxygen. CO has a very high affinity for haemoglobin, combining with it to produce carboxyhaemoglobin (COHb). The level of CO breathed out in expired air closely correlates to the level of COHb present in blood.

A monitoring device known as the 'Smokerlyzer' is currently available (Bedfont Scientific Ltd, Hollywell Lane, Upchurch, Kent ME9 7HN, UK) for measuring expired air CO levels. After holding the breath for about 10 seconds, the patient then forcibly blows until no further air can be exhaled. The highest reading is then taken as that patient's CO level. A non-smoker will usually have levels below 10 parts per million (ppm)

of CO in their expired air which is equivalent to a blood COHb of 2%, whereas a smoker will have much higher levels, e.g. 30ppm of CO, equivalent to 6% COHb. The highest reading I have encountered in a heavy smoker was 110ppm which is 22% COHb.

Because valuable haemoglobin is being taken up by the CO, the body compensates for this 'deficit' by producing more haemoglobin. As a result, smokers have higher haemoglobin levels, producing an increased packed cell volume and whole blood viscosity, with consequent deleterious effects upon peripheral circulation, giving an increased tendency to thrombotic events in the coronary and cerebral arteries. The average smoker, therefore, suffers from a raised COHb level, and, as the patient with raised lipid levels has hypercholesterolaemia, so the smoker suffers from 'hypercarboxyhaemoglobinaemia', a raised blood CO level.

The American 'Know your Number' campaign for blood cholesterol levels was extremely successful, as many people became interested in having their cholesterol checked in order to 'know their number'. A similar campaign could be aimed at smokers to have their CO levels checked, and hence 'know their number'. This could create a great deal of interest in smoking and may well influence many smokers to try and give up smoking, once they have been taught about the consequences of their raised CO.

On stopping smoking the CO level drops rapidly so that within 24 hours of quitting cigarettes, a smoker's expired CO is identical to a non-smoker, even though he may have smoked 40 cigarettes a day for 40 years. This provides very positive immediate feedback to the patient, as all other parameters, such as peak flow readings, packed cell volume, plasma viscosity and plasma fibrinogen take much longer to return to normal levels.

Advantages of measuring expired CO

1) The expired CO level is an objective parameter, which easily demonstrates the difference between smoking status and non-smoking status.
2) It is personal to that patient, and it is always extremely important to try and personalise the problem.
3) It 'medicalises' the problem, which is good for the doctor as he is now treating a disease, hypercarboxyhaemoglobinaemia, and it is also good for patients to see that they do have something which is abnormal, but yet normal or lower in the non-smoker.
4) Measuring the expired CO is also a way of assessing the level of the patient's addiction to nicotine. Obviously, a patient who is inhaling cigarette smoke deeply and frequently to obtain high levels of nicotine will also have high levels of expired CO. Hence a smoker with a CO reading of 110ppm will be more heavily addicted to nicotine than a smoker with a reading of 30ppm. This could forewarn the physician that the former patient will probably need higher doses of nicotine replacement therapy than the latter. In such circumstances, combination therapy, i.e. nicotine gum plus nicotine patch may have to be considered.
5) Only measured expired CO can show the patient the early benefits of stopping smoking, as CO levels drop quickly to the level of the non-smoker.

Treatment of hypercarboxyhaemoglobinaemia

The obvious way to reduce blood COHb levels in a smoker is to stop smoking. This can be done by going 'cold turkey', with hypnosis or acupuncture – or any other safe intervention, or by using nicotine replacement therapy (NRT), such as nicotine gum or any of the nicotine skin patches currently available. Nicotine replacement therapy has doubled success rates and now has to be seriously considered as first-line treatment in smoking cessation.

Nicotine therapies can be prescribed by the doctor, so this type of treatment fits in perfectly with the doctor's working model:

1) Measure . . . expired CO.

2) Abnormal levels . . . usually only detected in smokers.

3) Prescribe . . . NRT.

4) Measure . . . expired CO after stopping smoking.

5) Normal . . . expired CO is at the non-smoker's normal level.

Medico-legal implications

As all smokers have hypercarboxyhaemoglobinaemia, is a doctor who ignores the smoking problem then guilty of negligence in not addressing a serious medical condition? Could a patient successfully sue a doctor for not receiving medical treatment and/or counselling for his or her addiction to tobacco, which has produced abnormal haematological changes, which can be objectively measured and recorded?

In countries where socialised medical systems still exist, such as the NHS in the UK, could the Department of Health or the Minister of Health be taken to court for not allowing smokers with hypercarboxyhaemoglobinaemia to receive treatments that have been proven to work, such as NRT, on NHS prescription? Other addicts, such as alcoholics and heroin addicts, receive their treatments at NHS expense.

Similarly, in countries with private medical schemes, would the medical insurance companies allow NRT to be reimbursed, as treatment for the condition of hypercarboxyhaemoglobinaemia, as well as treatment for the actual dependence on tobacco?

Finally, would the International Classification of Diseases list hypercarboxyhaemoglobinaemia as a disease?