of pethidine among those induced early and more meconium stained amniotic fluid among those induced late in another,[7] and no significant differences between the groups in the third.[8] One post-term trial, very similar in design to ours, was reported while our original manuscript was being considered for publication.[9] In that trial Cardozo *et al* found that more babies in the active management group were intubated and that the same group had slightly lowered cord blood pH, but otherwise there were no differences in outcome. In our trial there were no significant differences in any of the variables concerning labour and delivery. It is fair to conclude that either type of management appears to be safe, provided that certain conditions in case selection and supervision are met. An intelligent choice must therefore be based on other considerations.

The menstrual and pregnancy histories should be scrutinised to ensure that the pregnancy is truly past term. We excluded 373 (40%) out of 944 women from the trial because of uncertainty about dates. This proportion is not surprising, given that the proportion of pregnancies with uncertain dates increases with time past term. Furthermore, it is common experience that strict adherence to preset selection criteria in any randomised trial leads to many more exclusions than anticipated.

One feature of elective induction is often overlooked and therefore not universally acknowledged—namely, the comparatively high rates of unsuccessful attempts. In each of two studies of post-term induction delivery in 70% of cases occurred within 30 hours.[4 10] In this trial the success rate was 77% (first attempt in group 1). Success is related to parity and the intensity and duration of oxytocin infusion. The chance of success must be weighed against the inconvenience and risk of prolonged contractions due to oxytocin. In principle the same argument is valid for treatment with prostaglandin. Restricting induction to mothers with ripe cervices (high Bishop scores) naturally increases the success rate. This group, however, has the highest chance of going into spontaneous labour soonest; hence if preventing the postmaturity syndrome is the aim these women may not need induction. The emotional response of some mothers in whom induction attempts fail also deserves consideration.

Oxytocin infusion has been incriminated in raised bilirubin concentrations in the newborn.[11 12] The same tendency was found in this study, in which significantly more children in the induction group needed phototherapy. Though mildy raised bilirubin concentrations may not have serious implications, treatment is clearly demanding of resources.

Conclusion

With regard to safety the results do not warrant recommending one or other type of management. Nevertheless, we now postpone induction of labour in post-term cases, as the risk in monitoring the natural course, certainly up to day 308, seems minimal. Proper attention to menstrual history combined with ultrasonic and other information discloses some cases that are wrongly labelled as beyond term. Resources spent on cardiotocography and ultrasonography of gradually dwindling numbers must be weighed against efforts at induction. Recent publications suggest that ultrasound assessment of amniotic fluid volume combined with non-stress tests are the best markers of fetal condition in post-term surveillance.[13 14]

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SHORT REPORTS

Effect of negative ion generators in a sick building

Discomfort within office buildings is widespread and has been called the "sick building syndrome."[1] A deficiency of negative ions has been suggested as the cause of the symptoms, though research has not shown a consistent improvement when the ion concentrations are increased.[2 3] Data from Hawkins suggest that any effect of negative ions is long lasting, thus making a randomised crossover trial ineffective.[4] We conducted a survey in a sick building whose occupants had a high prevalence of symptoms[1] to test the effects of negative ion generators.

Subjects, methods, and results

Twenty six subjects in five rooms agreed to participate. In each room an EC 300 negative ion generator (Medion) was installed. The on/off light indicated that the machine was on throughout the study, but an internal switch activated the ionisers without the subjects knowing. The subjects completed a questionnaire daily for 12 weeks, using linear analogue scales to rate the environment and their personal comfort (see table). Certain specific symptoms were also recorded—for example, headaches, lethargy, nausea, dizziness, and nasal, eye, and throat symptoms.

After four weeks without ionisation the ionisers were activated in three of the rooms. After a further two weeks the ionisers in the other two rooms were activated. Once activated the ionisers remained on for the rest of the study. The air conditioning was not adjusted during the study. The negative ion concentrations in each study room and in a control room were measured every fortnight by an experienced operator with a 134A Atmospheric Ion Analyser (Medion). The temperature and relative humidity were measured each morning and afternoon with a wet and dry bulb hygrometer. A more detailed thermal survey of temperature, relative humidity, radiant heat, and air velocity was performed once in each study room and in the control room during each part of the study.

There were no significant changes between the different stages of the study in the variables in the control room or any of the study rooms (unpaired t test). The mean negative ion concentration was 139/ml before the study and 1841/ml after activation ($p<0{\cdot}001$). Because factors other than the negative ion concentration might have affected the linear analogue scale result each participant's ratings were adjusted by least squares multiple linear regression for the effects of temperature, relative humidity, and negative ion concentration to obtain a coefficient for the effect of negative ions. The suitability of this linear model was confirmed by plotting residuals against predicted values of the linear analogue scale. The 95% confidence interval for these coefficients was calculated, every case including the null value of zero (table). Similar analyses were performed to determine the effects of temperature and relative humidity. These gave expected results: higher temperatures led to the environment being assessed as being hotter and more stuffy and people feeling hotter, while relative humidity, which varied from 31% to 54%, had no effect on comfort.[5]

For specific symptoms the proportions of positive responses for the low and

Estimated mean effect on linear analogue scores (adjusted for mean daily temperature and humidity) of high negative ion concentrations

	Estimated centre	95% Confidence interval
Environment:		
Hot/cold	−1·0	−4·7 to 3·1
Pleasant/unpleasant	−0·6	−5·1 to 6·1
Fresh/stuffy	−2·0	−6·2 to 3·2
Comfortable/uncomfortable	−0·9	−5·4 to 5·8
Personal:		
Hot/cold	−0·9	−5·7 to 4·0
Comfortable/uncomfortable	−3·2	−7·2 to 2·6
Pleased/annoyed	−1·9	−6·6 to 3·8
Alert/drowsy	−1·0	−5·7 to 5·2
Best/worst	−1·7	−6·0 to 3·6

high negative ion periods for each subject were obtained, and that of the low ion period was subtracted from that of the high ion period to produce a representative figure for each subject. The 95% confidence interval for these figures was calculated and for all symptoms except two (upper respiratory tract infections and nausea in the high negative ion period) included zero.

Comment

The sick building syndrome is well known among office workers and is becoming more recognised among health workers.[1] It is therefore important to be able to give correct advice when faced with this problem. This study provides evidence that negative ion generators are not to be recommended for this problem, especially as the data on temperature and humidity provided a good "internal control" that real effects were being measured.

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Subunit influenza vaccination in adults with asthma: effect on clinical state, airway reactivity, and antibody response

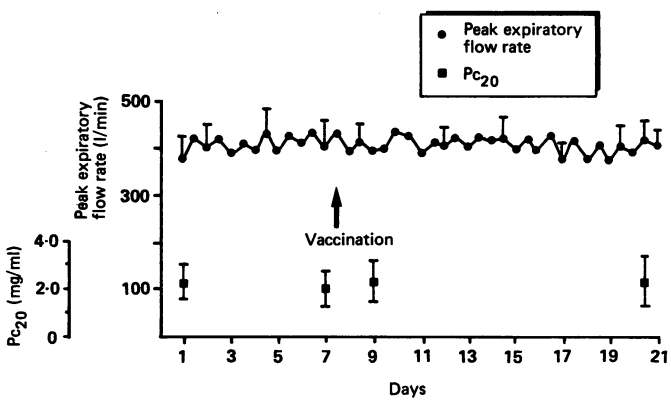
The Chief Medical Officer recommends an annual influenza vaccination for patients with chronic pulmonary disease including asthma. Some doctors may be reluctant to vaccinate asthmatic patients because of the risk of inducing increased bronchial reactivity[1] and exacerbating their patients' asthma. Reactions to these vaccines may be due to non-immunogenic impurities, which are not present in the more recently developed subunit vaccines. In subunit vaccines the surface antigens are separated from the virus core by selective solubilisation.[2] These vaccines cause fewer side effects when given to normal subjects.[3] We therefore studied the effect of one dose of a subunit vaccine on airway reactivity, symptoms, and peak flow rate in patients with chronic stable asthma and measured the antibody response in these patients.

Patients, methods, and results

Fourteen asthmatic patients (12 men and two women) with a mean age of 44 years (range 24-65) were studied. All patients were non-smokers. Eight patients had had asthma since childhood, and 11 were atopic as judged by results of skin prick tests, although none was allergic to eggs. These patients had moderately severe asthma with daily symptoms and a mean forced expiratory volume in one second when stable of 74% of predicted values. All the patients required regular daily treatment with inhaled β_2 agonists, and 11 also required regular inhaled corticosteroids. Two patients were taking theophylline, and one was taking cromoglycate.

Baseline spirometry and histamine challenge tests were performed on all patients.[4] They were then asked to record their peak expiratory flow rates every morning and evening, complete daily symptom score charts (morning tightness, daytime asthma, cough, and night asthma), and record their use of bronchodilator drugs for one week. After a second set of baseline lung function measurements, histamine challenge tests, and baseline serology had been performed the patients were vaccinated with 0·5 ml of subcutaneous Influvac subunit (Duphar Laboratories Ltd) containing the following: influenza A/Philippines/2/82 (H3N2) 10 μg HA; influenza A/Brazil/11/78 (H1N1) 10 μg HA; and influenza B/Singapore/22/79 10 μg HA. The lung function measurements and histamine challenge tests were repeated two days and two weeks after vaccination at the same time of day. Antibody titres were also measured again two weeks after vaccination using complement fixation tests to monitor natural infection and a radial haemolysis test to detect vaccine induced antibodies to viral surface antigens.[5]

None of the patients experienced any local or systemic side effects after vaccination, and there were no significant changes in symptoms of asthma, use of bronchodilator drugs, or peak expiratory flow rates (Student's *t* test). There were also no significant changes in lung function measurements and results of histamine challenge tests either during the week before vaccination or two days and two weeks after vaccination (figure).



Changes in peak expiratory flow rate and histamine concentration required to cause a 20% fall in forced expiratory volume in one second (PC_{20}) during the study. Values are means and standard error of mean.

Results of complement fixation tests showed no evidence of natural infection with either influenza A or influenza B. Substantial antibody responses to vaccine were shown by radial haemolysis in all patients[5]: eight responded to all three vaccine components; four responded to two components; and the remaining two patients responded to only one of the strains.

Comment

In this study subunit influenza vaccination was well tolerated by a group of patients with moderately severe asthma. Substantial antibody responses were noted in all patients to at least one of the components of the vaccine. Removal of the virus core from the vaccine therefore seems to reduce the local and systemic side effects of vaccination while maintaining the immunogenic properties of the vaccine.

In seven of the asthmatic patients results of skin prick tests to feather antigen were positive, but none of them experienced any reactions after vaccination. Since there is no evidence to suggest that a positive result in a skin prick test to a feather antigen is a contraindication to influenza vaccination we believe that this recommendation should be revised.

This study was not intended to determine whether or not subunit vaccine provides adequate protection against influenza infection in asthmatic patients. Such an investigation would require a large scale study, preferably