Rubella immunisation and contraception—a case for re-examining the policy of the Department of Health and Social Security

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SUMMARY. Now that immunisation against rubella is available, it would at first sight seem reasonable to identify all potential mothers susceptible to this disease and immunise them. Preliminary screening, however, carried out in order to restrict vaccination to seronegative subjects, not only serves no useful purpose, but is counter-productive.

Introduction

When one of us (A.J.R.), joined a single-handed training practice in central London in 1975, free contraceptive care had recently been introduced through the National Health Service. The large number of applicants suggested that this provided a sensible opportunity for offering rubella vaccination. It was decided to undertake the kind of study appropriate to a small practice and the short span of the trainee year.

During the study the letter from the Chief Medical Officer at the Department of Health and Social Security (1976) was received which recommended that " any woman regularly receiving family planning advice should be screened serologically and if found to be seronegative offered rubella vaccination." The same point, " finding and immunising those who are susceptible before their first pregnancy occurs " was made in the editorial *Rubella in early pregnancy* of the November 1975 issue of the *Journal of the Royal College of General Practitioners.*

Aims

Our initial intention was to make a pilot study of the rubella immunity of applicants for contraception and compare this with the findings of Goodman (1976), Hambling (1975), and Mayon-White and Bull (1976).

It soon became clear that it was important to examine the practical implications of undertaking antibody studies as a preliminary to offering vaccination.

Method

All nulliparous women presenting at the surgery for contraceptive advice were told about german measles and its relevance to pregnancy and about vaccination leading to immunity. Their answers were recorded to the following questions:

(1) How old are you?

(2) Have you had german measles?

(3) Have you received vaccination against german measles?

(4) Would you like a blood test to see if vaccination is advisable, and if so a vaccination?

This plan was to continue until 50 antibody titre estimations had been made. It was recommended by the local pathological laboratory that a titre of 1/32 would be accepted as indicating immunity.

Letters were sent to all those seronegative women who did not present themselves for vaccination within two months.

Results

Age

The mean age was 24; nine women were 19 years old or less, i.e. possible subjects of school immunisation programmes which began in 1970.

History of rubella

The results confirmed previous studies (Goodman, 1976; Skinner *et al.*, 1972) that history is a totally misleading indicator of immunity status (table 1).

TABLE 1

History of rubella	*Serotesting*		*Totals*
	Immune	*Susceptible*	
Positive	13	5	18
Doubtful	13	2	15
Negative	6	7	13
Vaccinated	3	1	4
TOTALS	35	15	50

History of previous vaccination

Four of the women reported being vaccinated, three at routine school programmes and one at her own instigation. One of these was seronegative, the other three, as expected, seropositive.

Offer of blood test and vaccination

Blood testing was refused twice. After interviewing the first 25 women, one refusing blood test and 24 agreeing, those who agreed were apparently happy to attend a local hospital laboratory with full instructions and an appropriate form for serological testing. However only six out of the 24 in fact attended. For the remainder of the study, therefore, blood was taken at the surgery at the first interview so that results could be obtained for each attender. Because of the 18 early defaulters (six results out of 25 women interviewed of which all but one appeared willing to co-operate), a further 45 women (one refusing venepuncture), were interviewed in order to produce the further 44 results necessary to attain the target originally aimed at of 50 results. Thus a total of 70 women had to be interviewed in order to obtain these 50 results.

Rubella immunity

Of the 50 blood samples, 15 were seronegative (30 per cent) and 35 seropositive.

Of the seronegative women, only one returned to the surgery specifically for vaccination against rubella. Two more were vaccinated when attending for repeat prescriptions for the Pill. The remaining 12 seronegative subjects were sent letters containing a prescription for vaccine and an invitation to attend surgery. Four weeks later six letters had produced no response. Two were returned by the Post Office " Not known at this address ". One patient replied to say that she had been vaccinated elsewhere. One

wrote promising to attend for vaccination, but in fact requesting a repeat prescription for her asthma medication. Two fulfilled the dream of the planners, coming to the surgery in response to the letter of invitation, and were duly vaccinated.

We were disappointed that, even with careful postal follow up, we achieved vaccination only of one in three of our 15 seronegative patients.

Discussion

We shall not discuss the high yield (30 per cent) of seronegative women. Hambling (1975) recorded ten per cent in Leeds, Mayon-White and Bull (1976) 15 per cent in Oxford and Goodman (1976) eight per cent in Liverpool. Not only was our sample particularly small, but the incidence of immunity is affected by many factors such as laboratory criteria, socioeconomic class, the timing of local rubella epidemics, possibly an immunosuppressive effect of the contraceptive pill, and is in any case continually modified by school, and now contraceptive clinic, immunisation campaigns.

On the other hand a small straw can indicate wind direction and our results show clearly some of the theoretical and practical pitfalls which may beset any screening project.

Comprehensiveness of screening

In any screening programme the compliance of the population to be screened must be known. Blood tests were refused by two of our subjects. This was disappointing in a single-handed practice with a strong personal doctor/patient relationship. A good interpersonal relationship plays an important role in a screening programme. The use of the attached health visitor, for instance, with her face-to-face advice is favourably commented on by Skinner *et al.* (1972) in improving compliance. But our two refusals, a 2·8 per cent failure rate is, however, nothing compared with the figure reported by Mayon-White and Bull who report an acceptance rate of only about 50 per cent. Goodman had no trouble in obtaining blood samples by the simple ruse of testing for rubella serology in blood taken for other reasons.

The reluctance to submit to venepuncture was further underlined in our study by the fact that after achieving only six results out of 24 women who happily agreed to go to the local laboratory for testing, we had to change to a policy of taking blood at the first interview in order to be certain of getting a result at all.

Follow-up of seronegative subjects

We managed to vaccinate one in three of our seronegative subjects. Goodman, in five years' systematic screening of an entire practice found 74 seronegative results. He does not report how many of these were vaccinated but he mentions that 37, or exactly half, did not attend for subsequent follow-up. Mayon-White and Bull were pleased, as they deserve to be, that by vaccinating eight out of a screened population of 100 which yielded 15 seronegative women they halved the potential incidence of congenital rubella from 1:2,500 live births to 1:5,000. As, however, their acceptance for screening was only about 50 per cent and their vaccination of susceptibles was also only about 50 per cent, they managed to vaccinate only one in four of susceptibles.

We conclude that 'blind' i.e. (without preliminary serological investigation) vaccination at first interview would produce a much better immunity of susceptibles than an attempt to vaccinate only susceptibles proved to be so by screening. The pros and cons of blind vaccination must therefore be examined.

Financial considerations

In any project involving screening, awareness of costs is becoming increasingly important. Accurate pricing is impossible, but enquiries reveal that the costs of blind vaccination

of 100 women and selective vaccination of 100 screened women are similar. Following up un-cooperative seronegative women, when screening is done, could be an endless addition to cost.

The actual figures are of little relevance because for their true significance to be appreciated, the cost to the community of rubella abnormality would have to be known.

It is, moreover, worth noting that, in the words of the Department of Health and Social Security's letter " Vaccination of this group of women (adult women of child-bearing age) was introduced only gradually because of limitations in laboratory facilities." (Yellowlees, 1976.)

Risks

Risks are involved in all vaccinations, indeed in most prescriptions issued by general practitioners. The burden of responsibility for side-effects is permanently with us and accepted.

The risks of accidental pregnancy in recently vaccinated seronegative women are not increased by vaccinating seropositive women.

Medical considerations

There is only one potential problem if unscreened seropositive patients are vaccinated. That is that in the event of an existing pregnancy or present within eight weeks of vaccination, a decision about an unwanted termination would be made more difficult. This hazard though real is remote.

It is, however, probable that in this event it would be possible by modern immunological methods to demonstrate that the patient had been seropositive at the time of vaccination and therefore not at risk of congenital abnormalities (Banatvala, 1976). Even if facilities for this were not available, the problem could be side-stepped by taking blood for subsequent serology immediately before vaccination.

Psychological considerations

What is necessary is that adequate stress be laid on the dangers of pregnancy at vaccination and during eight weeks after vaccination. (This represents about six fertile days.)

The true price of blind vaccination is not a crop of congenital abnormalities, but simply the degree of extra care not to be pregnant being taken unnecessarily by large numbers of women.

The young women in our practice have demonstrated by their reaction to our study that they are far more earnest in avoiding pregnancy than in avoiding possible hazards of rubella abnormalities, which perhaps seem too remote.

Admittedly our practice has a changing population, making screening and follow-up difficult, but mobility is a feature of young people. The necessity to cope efficiently with this age group is again emphasised by the fact that approximately 40–50 per cent of rubella abnormalities occur in first pregnancies.

Conclusion

Given that the risk of giving rubella vaccine to an adult woman is acceptable at all, this risk is not reduced by screening.

Our efforts in screening before vaccination, corroborated by other studies, show unequivocally that the policy at present recommended by the Department of Health and Social Services of screening before vaccination, far from improving matters, in practice allows the majority of seronegative women to escape vaccination. This policy thus defeats its own ends.

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FETAL ACTIVITY AND FETAL WELLBEING: AN EVALUATION

The clinical value of the 12-hour daily fetal movement count as a test of antepartum fetal wellbeing was assessed. The lowest 2·5 per cent of 1,654 daily fetal movement counts recorded by 61 women who subsequently delivered healthy infants fell below ten movements per 12 hours. This level was taken as the lower limit of normal for clinical purposes. A normal daily fetal movement count in a population at risk was associated with a satisfactory outcome. A low daily fetal movement count was associated with a high incidence of fetal asphyxia, and when fetal death occurred fetal movements rapidly diminished and stopped 12 to 48 hours before death. The daily fetal movement count is a generally applicable method of monitoring fetal welfare during pregnancy, which provides an inexpensive adjunct or even an alternative to the more expensive placental function tests in current use.

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