RUBELLA, 1962

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For the first time for over 15 years a widespread epidemic of rubella occurred in this London suburban practice between March and July, 1962. Ordinarily a minor and insignificant infection of young children, it produces an unpleasant illness in adults and may result in permanent damage to the foetus of a pregnant woman infected with rubella in the first four months of pregnancy.

This report of the epidemic shows the extent of the infection, its complications, and side-issues such as the need to protect pregnant women in contact with infected cases.

Extent of the Epidemic

Routine clinical records were kept of the infected cases, and 355 patients were seen during the period March 5 to July 1. At the same time, however, it is probable that at least a further 200 patients were infected. Some of these reported by telephone the presence of a rash and enlarged cervical glands; others mentioned the fact at some later date; and yet others can be presumed to have had rubella without our being informed.

The size of the practice is approximately 6,500, so that nearly 6% of the whole practice were seen with rubella, and the total incidence was probably nearly 9%. Of young schoolchildren between 5 and 10 years of age 25% were seen, and in this group it is very probable that over 50% were infected. Local schools have confirmed that more than half the classes were absent during this period, presumably because of rubella.

Figure 1 shows the age-prevalence rates for those who were actually seen, and Fig. 2 shows the pattern of the epidemic.

The first cases were seen on March 5 and the last few at the end of June. On average 20 new cases were being seen each week, but the peak occurred during the week of April 9, when 48 new cases occurred.

Clinical Features

Clinically these patients presented with the typical pink maculo-papular rash, first seen on the neck behind the ears and then spreading to the trunk and face.

Conjunctival injection and sore eyes were features in those children who had a more profuse rash.

Enlarged lymph nodes were felt behind the ears and in the neck in almost all cases, but they were not very tender and few complained of them. Only a few children were ill enough to stay in bed, but almost all the adults felt ill enough to keep to bed and were visited at home.

The course of the disease was for the rash to clear within two to four days and for the glands to become impalpable within 10 to 21 days.

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Complications

Rubella is a very benign condition. None of our patients was seriously ill and none required anything more than symptomatic remedies. One girl aged 9 and one boy aged 16 who complained of headache were found to have some neck-stiffness and were considered to have meningism. They were bright and alert and there was no suggestion of any encephalitis. The only unpleasant complications occurred in the locomotor system.

Many of the 74 adults with rubella complained of aching limbs and joints, and in 11 (9 women and 2 men), a rate of nearly 15%, there were signs of an arthritis with swelling of the joints, redness of the skin and pain on movement. The fingers, wrists and knees were most often affected. In one woman, aged 39, it was more than three months before the joints returned to normal.

Symptoms of *compression of the median nerve in the carpal tunnel* were noted in three women about two weeks after the rash had appeared. All settled spontaneously.

Age-prevalence Rates of Rubella

Age (yrs.)	0-	1-	5-	10-	15-	20-	30-	40-	50-	60+	Total
Male {No. . .	2	20	71	37	10	21	4	8	1	—	
{%. . .	2	8	26	14	4	6	1	1	0.2	—	
Female {No. . .	4	17	65	40	15	20	16	4	—	—	
{%. . .	4	7	24	15	7	5	4	1	—	—	
Total											355

FIG. 1.—Age-prevalence rates of rubella.

FIG. 2.—Weekly prevalence of rubella.

Recurrences

Parents often state that "Johnny has had German measles three (or more) times." Up till now we have been sceptically unbelieving, telling the mother that this was quite impossible. In this epidemic we have seen three children who suffered what was clinically a second attack of rubella within a few weeks of the infection first being diagnosed. A number of affected adults also told us that they had had rubella as children. Our views on reinfection have been revised.

Rubella and Pregnancy

During the epidemic we had many requests for advice from pregnant women who had been in contact with cases of rubella, either their own or their friends' children, or during their occupation as school teachers. We reassured those who were more than 16 weeks pregnant that no further action was necessary, and we endeavoured to obtain gamma-globulin for those who were less than 16 weeks pregnant.

Since there was a great demand for gamma-globulin during the epidemic, supplies were short and there was sometimes delay of a day or two in obtaining supplies for cases fitting the criteria of close contact. We always obtained supplies without any trouble, and are grateful to the local public health laboratory for its co-operation. In all, seven women who were less than 16 weeks pregnant were injected with gamma-globulin (750 mg.). None of them developed clinical rubella.

The question of what to do with a pregnant woman who is actually infected with rubella arose in one case. This was a para-3 who was 10 weeks pregnant when she developed the rash and enlarged cervical glands, having been infected from her young son. Following discussions and consultations a therapeutic abortion was eventually carried out. Although this was the only case it caused us (and the gynaecologist) much distress and concern.

Summary

An epidemic of rubella occurred in a London suburban practice of 6,500 between March and July, 1962.

A total of 355 patients (6%) were seen with rubella, but it is probable that a further 200 were infected (9%).

Children between 5 and 10 years of age were most affected. There was a prevalence rate of 25% in those actually seen in this age group, but the true incidence was probably well over 50%.

Although the infection was quite benign in children, the 74 adults who were infected suffered unpleasant symptoms. Transient arthritis occurred in 11 adults (15%) and the carpal-tunnel syndrome was noted in another three.

Gamma-globulin was given to seven women who were less than 16 weeks pregnant. One woman who was 10 weeks pregnant and became infected with rubella had a therapeutic abortion.

The bi-monthly journal, *Revista Cubana de Cirugia*, is the official publication of the Cuban Ministry of Public Health. Details may be obtained from the publishers, Oficinas de Publicaciones Medicas, Consejo Cientifico, Ministerio de Salud Publica, Habana, Cuba. The subscription is \$6 a year.

Preliminary Communications

Sensitivity of Mouse Pneumonitis Organisms to Ampicillin

Sensitivity of psittacosis-lymphogranuloma organisms to relatively high doses of penicillin and tetracycline has been known for some years (see Florey, 1952; Hurst, 1953). Penicillin can be regarded as an analogue of the cell-wall component, muramic acid, and its antibacterial action seems to be due to interference with cell-wall synthesis (Rogers, 1962). It is therefore relevant that psittacosis-lymphogranuloma organisms have been shown to possess mucopeptide cell walls containing muramic acid (Allison and Perkins, 1960). Psittacosis-lymphogranuloma organisms can, in fact, be regarded as small rather specialized Gram-negative bacteria multiplying within cells.

Recently ampicillin (6-[D(-)- α -aminophenylacetamido] penicillanic acid; "penbritin"), an acid-stable penicillin with a broad antibacterial spectrum rather like that of tetracyclines, has become available (Rolinson and Stevens, 1961) and been shown to have therapeutic value against certain Gram-negative as well as Gram-positive bacteria (Stewart *et al.*, 1961). It therefore seemed of interest to test ampicillin for activity against psittacosis-lymphogranuloma organisms, and experiments have been carried out with a typical member of the group, the mouse pneumonitis organism.

MATERIALS AND METHODS

Mice.—White mice, strain VSBS/NIMR weighing 12–14 g., were used.

Mouse Pneumonitis (Nigg).—This was the highly virulent Hampstead strain isolated by Sir Christopher Andrewes (see Andrewes and Horstmann, 1949) and maintained by passage in mice.

Penicillins.—Ampicillin and benzylpenicillin ("crystapen") were administered three times daily by subcutaneous injection in saline. Doses are shown in the Table. Administration was begun on the day of

Mortality in Mice Given 100 LD₅₀ of Mouse Pneumonitis Virus and Treated Daily for 14 Days with Three Subcutaneous Doses of Stated Amounts of Ampicillin and Benzylpenicillin

Doses:	500 μ g.	50 μ g.	5 μ g.	0.5 μ g.
Ampicillin ..	0/10	0/10	1/9	8/10
Benzylpenicillin ..	0/10	8/10	8/10	

In untreated controls the mortality was 10/10.

inoculation with mouse pneumonitis and continued for 14 days.

RESULTS AND DISCUSSION

Two sets of experiments were carried out with similar results, summarized in the Table. Untreated mice died between 5 and 10 days after inoculation. Both ampicillin and benzylpenicillin protected the mice, the former in lower dosage than the latter (50 μ g. as compared with 500 μ g.). The difference in cumulative mortalities between ampicillin and benzylpenicillin at the 50 μ g. dose level is statistically significant at the 1% level, and at 5 μ g. is significant at the 5% level. These results show that ampicillin is more effective than benzylpenicillin against mouse