

THE DIAGNOSIS OF MEASLES, SCARLET FEVER, RUBELLA, AND "FOURTH DISEASE."*

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THE differential diagnosis between some of the acute specific fevers presents certain difficulties from the resemblance which exists between their clinical aspects during the early stage of the illness. One can best study them by a consideration of certain symptoms which are common to the infectious complaints in question, and to some other diseases which are not infectious at all.

First as regards catarrh of the naso-respiratory tract accompanied by pyrexia. This symptom is present in measles, rubella, whooping-cough, and an ordinary cold. In measles the appearance of the child, with its watery eye and short cough, is very suggestive; and the catarrh is followed by the appearance of a rash, which is in itself a distinction of great value. This is usually seen on the fourth day of the illness, though it may have been just noticeable on the preceding night. One must remember, however, that this interval is liable to vary in some cases. In measles following an attack of scarlet fever it is commonly shortened; and the rash frequently appears in such cases as early as the first or second day of the disease. In rubella, on the contrary, the rash is usually the first sign of the disease, though some patients, and especially adults, will complain of pain and tender enlargement of the posterior cervical glands for several days before the rash appears. Many other conditions, *e.g.*, eczema, pediculi, etc., will cause slight enlargement of the glands in the posterior triangle of the neck; but an enlargement, sufficient to cause distinct fulness, and to occasion the patient to complain of tenderness in them, is very suggestive of rubella. The catarrh is less than in measles, and the pyrexia is relatively slight and transient. The patient generally feels better with the out-coming of the rash, whereas in measles the symptoms appear to be aggravated. The individual spots in rubella are commonly smaller and pinker than in measles, and remain more discrete. In some cases of rubella the spots after twenty-four hours tend to lose their raised appearance, and become merged in a diffuse red blotchiness which may occasionally show punctuation. In such cases the eruption simulates very closely the rash of scarlet

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fever. In rubella the rash usually persists for a shorter time, and does not leave behind it the mottled staining of the skin which one sees in measles. One other sign to which much attention has been directed of late years is the so-called Koplik's spots. These can usually be detected on the buccal and labial mucosa. It is essential to have a good light when examining the mouth for them. They are of a bluish-white colour, and affect particularly the buccal membrane in the neighbourhood of the molar teeth and the mucous surface of the lips. They appear from two to three, or more rarely four, days before the eruption, and are of the greatest value in making an early diagnosis of measles. True Koplik's spots have not been found in association with any other disease. They may be confused with minute aphthous specks sometimes seen in children's mouths (especially during the period of teething), and associated with stomatitis. There are also certain other white specks sometimes seen in the mouth which may cause confusion. They are, however, rather yellowish in tint, few in number, and situated rather far back in the mouth. They appear to be congenital in their origin.

In the differentiation of an ordinary cold from measles one seeks for the signs which have been referred to as characteristic of the pre-eruptive stage of that disease. Pyrexia is generally slighter in an ordinary catarrh; the abatement of temperature which occurs during the pre-eruptive stage of measles is not seen. Some lachrymation will be noticed, but the conjunctival injection and photophobia are probably wanting. The absence of Koplik's spots is also a point of importance.

Whooping-cough at its onset is attended with symptoms of bronchial catarrh before the whoop is heard which is characteristic of the disease. A distinction has then to be made by the frequency with which the cough occurs at night, its sudden onset, and its paroxysmal and energetic character. It must also be remembered that the whoop is sometimes lost during the febrile stage of an intercurrent attack of whooping-cough and measles, or of whooping-cough and scarlet fever, and only appears again when the temperature has returned to normal. The whoop may even be absent altogether throughout the attack.

Another difficulty which frequently besets the physician is the differential diagnosis between measles, rubella, and scarlet fever. The early indications in measles have just been considered, but between the two latter diseases confusion is very often likely to occur. In each the rash is present from the early stage of the attack, and the throat is reddened. As points of distinction we

have the difference in the length of the incubation period. Vomiting is frequent in scarlet fever, but rare in rubella. Some suffusion of the eyes occurs in scarlet fever as a part of the general flushing, whereas in rubella slight conjunctival inflammation is commonly present. The faucial inflammation is a much more marked feature in scarlet fever. The rash in scarlet fever is a punctiform erythema; in rubella it is discrete and papular, and only at a later stage assumes a diffuse erythematous appearance. The face in scarlet fever is flushed with a pale oral zone, whereas in rubella the rash is seen on the face, and it invades this region. The submaxillary lymphatic glands are usually enlarged and tender in scarlet fever, but there is no marked involvement of the concatenate chain as is seen in rubella. The variation in type which occurs in rubella tends to accentuate the difficulties of diagnosis. As an explanation of this, Dr. Dukes has suggested that two distinct diseases are included under this head, viz., rubella, and another which he has provisionally named the "fourth disease."

DISCUSSION.

In the discussion which followed Dr. GOODALL referred to the difficulties which are occasioned by the occurrence of an erythema, possibly punctate and confined to the trunk, in the prodromal stage of both diphtheria and varicella. This might lead to an erroneous diagnosis of scarlet fever being made. He emphasized the value of Koplik's spots in the diagnosis of measles, but in some cases he had failed to find them. The slight nature of the sore throat in scarlet fever, and the mild constitutional symptoms, caused great difficulty in establishing a diagnosis in some cases. In severe cases, too, the rash might be delayed in its appearance, and so cause an erroneous diagnosis of diphtheria to be made.

Dr. ASHBY referred to the difficulty of making a differentiation between mild whooping-cough and the spasmodic cough which sometimes follows influenza. There was no true whoop in the latter complaint, but the paroxysmal attacks resembled true whooping-cough very closely.

Dr. POYNTON narrated an outbreak of an infectious disease at a large public school where he had been called in consultation. He had been in considerable doubt as to whether the disease in question was mild scarlet fever, rubella, or the "fourth disease." He also testified to the difficulty experienced in diagnosing scarlet fever in surgical wards, where it was liable to confusion with burn rashes and iodoform poisoning.

Dr. DUKES subsequently wrote that: In scarlet fever, while many cases cannot be diagnosed with certainty until the fourth day, serious difficulties do not arise when the disease is considered as a whole, and reliance is not centred on the eruption alone. The experience of large fever hospitals cannot but be one-sided, inasmuch as the slight cases—the difficult ones to diagnose—do not generally find their way there; and as a matter of fact a large proportion of such cases are never seen by a doctor at all.

Epidemic rose rash (German measles or rubella) is a disease which entails endless trouble on account of its vagaries:

1. The majority of these cases commence and terminate with an eruption which resembles English measles in its main features.

2. But there is another set of cases where the eruption, while commencing like measles, finishes in patches resembling scarlet fever, owing to the coalescence of the spots.

(1) For instance, take a patch of eruption at one stage on a certain region of the body, and conceal the remainder of the skin from view, and even the most skilled observer, basing his diagnosis on the skin alone, would assert that it was a characteristic measles eruption.

(2) Treat another large surface patch in the same manner at another stage, and the same observer would at once say that it was scarlet fever. It is not, however, such cases to which the name of the "fourth disease" is applied.

The "fourth disease" resembles scarlet fever in its eruption from the onset in being a diffuse eruption.

I must press the fact home that many of these cases find their way to fever hospitals, though sometimes they are not admitted on account of not being scarlet fever. In fact, in the spring of this year Dr. R. C. Gowan, in writing to me on this subject, informed me that "quite recently some twenty-eight cases were back from one of the Metropolitan fever hospitals as having been incorrectly sent certified as scarlet fever." At other times they are received into scarlet fever wards of hospitals, and there become attacked by scarlet fever, and give the "fourth disease" to the scarlet fever patients already in the ward. (I conclude that it has been under such circumstances that what have been termed "second attacks," or relapses, have been diagnosed.) Now these are the facts, call the disease what we will. I contend that it is a distinct and definite disease, which I have provisionally named the "fourth disease." But it is with some diffidence that I still urge this; for one speaker at the Cheltenham meeting regarded my recorded cases as rubella, and another was persuaded that they were scarlet fever. Well, they cannot be both. And when we come to practical politics the above-mentioned confusion is not what we, as physicians, can desire for those who place themselves in our trust.

Dr. FOORD CAIGER, replying to Dr. Dukes, said he had been on the outlook for cases of "fourth disease" ever since the publication of Dr. Dukes' paper in 1900, but he had never yet succeeded in discovering a case or any such connected series of cases in a ward as had been described. He was unable to say that what was recognised as a "relapse" in scarlet fever was or was not due to the introduction into a ward of such a case, but in the Metropolitan Asylums Board Hospitals relapses were not common. Their incidence during the last ten years had been less than 1 per cent. amongst scarlet fever cases, and during the years 1892 and 1893, when "fourth disease" was said to have been of unusually wide prevalence, the number of relapses showed no corresponding increase.

IN Copenhagen, since the municipal bacteriological laboratory has been opened, 5,000 examinations of cultures have been made with respect to diphtheria. Most of these were from patients in the early stage of illness, but a few were from patients suffering from diphtheria, when the organisms persisted for some time. Of the 5,000 cultures, only 1,000 were found to contain the diphtheria bacillus; the others contained cocci, streptococci, or other bacteria.