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ACUTE RHEUMATISM IN CHILDREN.

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ACUTE RHEUMATISM IN CHILDREN.

It is not my intention in this paper to enter into a discussion of all the etiological factors or the theories of blood changes occurring in acute rheumatism; neither can I offer anything especially new in the study of this disease; but I propose to outline the main points of interest which may arise in connection with acute rheumatism as observed in children, contrasted to those observed in adults.

The study of acute rheumatism in children comprises a far wider range of territory, and gives us a more complete conception of its nature, than in the cases of adults. The finely organized and delicate tissues of a child offer a more extended area for the distribution of rheumatic disturbances. Its pathological range is not limited to the fibro-serous structures so uniformly, but may also comprise the mucous membranes and the skin. The statement that acute rheumatism in children is a rare disease is not well founded; indeed, I am inclined to think childhood rather predisposes to it when accompanied with poverty.

Children, and especially those of the lower classes, are continually exposed to damp and cold, which offers to them a factor in the causation of rheumatism, against which the adult is more careful to protect himself. Then, too, it

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must be remembered that the same causes act on the parents of these unfortunates, developing an hereditary tendency, and rheumatism is one of the most common of diseases to be handed down from generation to generation.

It is often the case to find very slight manifestations of the articular affection in the child, or none at all, but instead an inflammatory process going on in some sero-fibrous structure, as the endocardium, for example, that can be traced to no appreciable cause except exposure to cold and the consequent slight affection of some muscle, to indicate that the patient has developed a rheumatic diathesis; yet in these very cases one may find the direst lesions of the heart valves or pericardium.

A child may contract acute rheumatism at any age, but the greatest liability is between the fifth year and puberty. Cases occurring during this term are pretty evenly distributed. Many are recorded much earlier in life. Henoch cites one at ten months, Stäger one at four weeks. The earliest I have attended was one in a girl eighteen months old, where the inflammation of the knee joint was well marked; in this case erythema appeared.

Sex, contrary to the predisposition in adults, does not seem to have any significant etiological importance in childhood; there is a pretty even distribution between girls and boys. It is doubtful if there is any special type of complexion or temperament predisposing to an arthritic diathesis.

Acute rheumatism in children may be primary or secondary. It is secondary only to scarlatina or diphtheria. What the pathological processes are that influence the exciting of rheumatic tendency following these diseases, is uncertain; but

it is not altogether uncommon to find joint affections attending scarlatina, and that these affections are not to be distinguished from acute rheumatism, inasmuch as they are liable to be complicated with endocarditis or pericarditis.

Exposure to wet and cold is generally considered the most prominent of exciting causes; and when taking into account the formation of lactic acid in muscular exercise and the naturally active habits of a child, it may become a prime factor in the production of rheumatism in them, especially when they are exposed to chilling influences after bodily exertion.

Dr. Haig-Brown, in the *British Medical Journal*, September, 1889, points out the similarity of the exciting causes of rheumatism and follicular tonsillitis. One is two extremes of weather, viz.: excessive damp and cold, with fog and northeast winds, and excessive hot and dry, with the humidity of the atmosphere at about 80, and of course no fog; the other is the septic influence of poor drainage.

The post-mortem changes to be found in children with rheumatism differ greatly, according to the severity of the various local affections. The joints are ofttimes so slightly damaged as not to give those marked pathological changes so uniformly present in the adult. The synovial membranes may, however, be hyperæmic, and there is more or less effusion into the joint cavities and surrounding tissues. This effusion may consist of synovia, or serum containing blood corpuscles or leucocytes. Occasionally minute hæmorrhages in the more vascular portions occur. Rarely is there suppuration or ulceration of the cartilages. In children, commonly, one finds near the joint or tendons fibrous nodules, a con-

dition similar to that found on the cardiac valves after rheumatic endocarditis.

Erythema may be manifested in the skin about the swollen joint and elsewhere, and there are often evidences of acute tonsillitis in the throat.

It has been my experience to observe in children a number of cases where the inflammatory process attacked the sheath of the muscle in preference to the fibrous structure of the joint. In these cases the extent of inflammation varied greatly; for the most part it would be confined to a muscle or group of muscles, and often would be accompanied with serious heart lesions. One recent case is fresh in my mind, that of a boy 8 years old. On exposure to wet and a chilling east wind he contracted acute rheumatism in the muscles of the calf of his left leg. It was swollen, hot and painful in the muscular portion, but not in the joint. In two days the inflammatory process had extended to every muscle in the body that was appreciable to the touch, and had invaded the pericardium. This boy died on the eighth day from date of exposure of acute pericarditis, and there was a rise of temperature after death for some hours.

The chief interest and danger in acute rheumatism of children lies in the extension of the inflammation to the heart. Endocarditis, pericarditis, and more rarely myocarditis, are pathological conditions generally found in autopsies on children dying from this disease; in fact they are principally the prime causes of death, as simple arthritic or muscular rheumatism tends to recovery.

It is out of the province of this paper to enter into a discussion of the morbid anatomy of heart disease, but it is generally found that in endocarditis it is the mitral valve that is the most frequently attacked and occasions permanent im-

pairment of the cardiac functions, while lesions of the aortic valves are more liable to produce sudden death. Occasionally we may find an inflamed pleura, and even a pneumonia, associated with and dependent upon an attack of rheumatism, and instances of meningitis are not rare.

The symptomatology of acute rheumatism in the child varies according to the extent and severity of the inflammatory processes and the structures which they invade. Compared with this disease in adults there are scarcely any of the more prominent symptoms to any great extent, and those we are accustomed to credit as complications or sequelæ in them appear in the child as chief or initial manifestations. Thus, arthritis in children is at its minimum, while endocarditis or pericarditis is at its maximum of intensity; indeed, the latter may appear before any more characteristic symptom of rheumatism is observed. Then, too, a tonsillitis, pleurisy, or possibly chorea may appear as the more prominent symptom early in the attack.

Generally the commencement of acute idiopathic rheumatism is abrupt. There is a distinct recollection of the date of exposure, and this may be followed by some soreness and stiffness in the muscles or joints affected. There is redness, heat and swelling in the locality of the inflammation, and the affected limb is very painful on moving. As the inflammatory process abates in one joint or group of muscles, it reappears in some other, unless the morbific principle has in the meanwhile been eliminated from the system. Ordinarily the joint symptoms continue two or three days before attacking a second articulation.

The temperature of acute rheumatism in children does not run high—seldom more than 102–103. There are cases on record of hyperpyrexia

in this disease, but they are of rare occurrence. This is perhaps singular, because it is contrary to the general run of fevers in childhood. The febrile movement does not last more than two or three days.

Sweating in rheumatism is slight in children, as compared with the profuse acid perspiration of adults, and in consequence is not so sour-smelling.

It is in childhood that heart disease plays the most prominent and important part in acute rheumatism. Endocarditis is almost sure to follow joint affections, and often it may be the sole expression of the rheumatic state. It is generally confined to the left side of the heart, the mitral valve being the most frequently attacked, although it is common to find both aortic and mitral involved in the inflammatory process. It occurs in a relative proportion of 72 to 46 per cent., as compared with endocarditis of adults in acute rheumatism.

The endocarditis, as a rule, is of a subacute variety, and is prone to assume a relapsing character. The first or early sign is a soft, blowing murmur, indicative of a primary attack. This may disappear in a few weeks, but oftener increases in distinctness and becomes a loud, harsh murmur, heard, if the mitral valve be affected, loudest at the apex. Another cardiac sign indicative of the development of endocarditis is the reduplication of the second sound, audible at the apex only. This is to be distinguished from a similar reduplication heard at the base, sometimes as a result of Bright's disease, sometimes as the consequence of pulmonary obstruction. Occasionally this reduplication is accompanied by a diastolic murmur indicating mitral stenosis, and is a certain evidence of endocarditis.

Pericarditis is more common in children, during an attack of rheumatism, than it is in adults, and nearly as much so as endocarditis, to which it bears resemblance in its manner of onset and continuance. It is regarded by some as less liable to occur in a primary attack of acute rheumatism in childhood. It is generally subacute, and is to be distinguished from endocarditis mainly by the friction sounds, the increased præcordial dulness, and rapid respiration and pulse rate.

Pleurisy is not a rare manifestation of acute rheumatism, is usually found on the left side, and may be secondary to pericarditis; but when it occurs alone, followed by arthritis, it is to be considered as a direct expression of the rheumatic diathesis.

Peritonitis has been occasionally observed and meningitis found existing in a certain proportion of rheumatic cases.

That the same causes act to produce tonsillitis as acute rheumatism, has been mentioned; hence, taking this view of it, there is little wonder that tonsillitis occurs during the course of rheumatism, or may usher in its initial stage. Rheumatic sore throat has long been recognized as a prominent symptom in children; indeed, it is not uncommon to see a child come into the dispensary with enlargement of the tonsils, having previously had attacks of rheumatism. Statistics show that tonsillitis occurs as a primary symptom of the rheumatic diathesis in 24 per cent. of cases.

Bronchitis and pneumonia may occur as symptoms of the rheumatic state, but more rare.

Erythema in some form is a pretty constant concomitant of acute rheumatism in children. Since commencing this paper I have seen a case that, save for the inflamed wrist joint and the

mild fever, might easily have been taken for some exanthematous disease.

In a certain number of cases a neurotic tendency is manifested; chorea, with or without emotional excitability, is the form predominant. The preponderance of cases is in girls in a ratio of three to one, as compared with boys.

When thrombosis or embolism occurs, as they rarely do in connection with heart disease, a serious source of danger is manifested.

Delirium supervenes in a certain number of cases, probably due to the action of rheumatic virus on the nerve centres.

Anæmia is a common accompaniment of the rheumatic diathesis in children, and is especially well marked in cases where there is serious heart trouble.

There is one condition which is more prone to occur in children than adults, namely the development of fibrous nodules in connection with this disease. These nodules are found in the neighborhood of joints and tendons, are not painful, but may assume the size of an almond, they appear in successive crops or singly.

Regarding the diagnosis of acute rheumatism in children there is little to say; most cases are self-evident. There may be room for confounding it with scrofulous arthritis, but the latter would be more chronic, less indurating and symmetrical about the joint.

When endocarditis arises in the child, there is strong presumption that it is rheumatic in origin. From fifty to eighty per cent. are said to be traceable to rheumatism, and if it be accompanied by a rheumatic train of symptoms, as chorea, fibrous nodules, erythema or joint affection, the diagnosis is certain. The duration of acute rheumatism in children is shorter than in

adults; two or three weeks usually suffices for the primary attack, and often it is much shorter.

Since the introduction of salicylic acid in the treatment of acute rheumatism the profession have held a most powerful sheet anchor to throw to windward in times of need; now and then there are failures of course, but in the main salicylic acid, and its derivatives, may almost be called a specific in this disease, and it is no less efficacious in children than in adults. It mitigates the fever, alleviates the pain, and, withal, renders the child less liable to heart complications. The most efficacious preparation is the salicylate of soda, and regulated in the proper dosage does no more harm than any of the other preparations of salicylic acid, in fact it is more soluble, more palatable and quicker absorbed by the system. There are some drawbacks to be sure; it may cause vertigo, deafness, ringing in the ears, and prostration, also it may cause epistaxis, but such effects of the drug are less liable to occur in children than in adults.

Salicin is preferred by some, but it takes a larger dose to perform the same work and obtain the same results than the salicylate of soda.

The general experience with salol is, that it is a much inferior preparation to any of the others just mentioned; it is ofttimes beneficial, however, in mild cases.

It is a good plan to combine an alkali, like the bicarbonate of soda with the salicylate of soda. The salts of potash are too depressing to be as safe as those of soda, and depressing drugs are to be avoided in rheumatism.

Absolute rest in bed is a prime requisite in the treatment of acute rheumatism in children, and this should be combined with warmth. When the limbs are swollen and painful, I generally di-

rect a strong, hot bicarbonate of soda solution to be prepared, into which flannels are dipped, and wrung, and quickly applied to the affected limb or joint. This tends to sooth the pain, and often times the little sufferer obtains a few hours of refreshing sleep after a night of pain and restlessness.

If heart symptoms arise, the salicylates should be stopped and the alkali increased, say from ten to fifteen grains of bicarbonate of soda every four hours, to a child of five years. Warm poultices may be applied to the præcordia in endocarditis, but blistering should be avoided. On the other hand, in pericarditis local depletion by two or three leeches is advisable, and blisters are warrantable after the effusion has supervened; care should be taken to stop the bleeding occasioned by the leeches.

When the heart's action becomes turbulent and rapid, the tincture of digitalis may be employed in three to five drop doses every four hours according to age, but it should be cautiously administered in pericarditis as it is a dangerous remedy in cases of extreme effusion. Strophanthus may be employed in its place if preferred.

Stimulents are necessary when heart failure is imminent and should be pushed to a point of materially relieving the exhausted vital powers. Alcohol and nitro-glycerine may be usefully employed for this purpose.

At times some form of opium is indicated for the treatment of the pain and restlessness of acute rheumatism in children, but only such doses should be used as will produce quiet, and under no consideration should it be pushed to a point of narcotism.

Dr. Goodwin, in the *New York Medical Journal*, 1888, called the attention of the profession

to his use of the fluid extract of cascara sagrada in ten-drop doses three times a day as a laxative, also claiming a beneficial action on rheumatism in his own person and others.

Statistics do not seem to favor antipyrin in place of the salicylates, in the treatment of rheumatism. While it may relieve the pain and reduce the fever, yet it is not permanent in its action and, moreover, is a depressing agent on the heart.

Acetanilide bears a better reputation in the treatment of febrile movements in children than does antipyrin, and I think rheumatism is no exception to this rule.

Phenacetine is credited by many as being a safer and better drug to use than either of the previous antipyretics, and especially it has more permanent results.

Dr. Grinevitski, of Russia, recommends the hypodermic injection of osmic acid in a one per cent. solution in muscular rheumatism. Eight to twenty minims are thrown directly into the muscle substance. There is a burning sensation for a time which disappears and, he claims, the rheumatic pains are soon relieved, and from two to three injections effect a cure. I have never employed this agent but once, and that in an adult, the result was a certain amount of relief, but a number of injections did not effect a cure. As far as I can find the experience of others is similar.

When anæmia exists, arsenic and iron should be administered during convalescence.

Other symptoms rapidly disappear under the general treatment of rheumatism. The erythema needs no treatment, and the tonsillitis yields readily to the salicylates.

Acute rheumatism does not call for the restrict-

ed diet usually prescribed. During the pyrexia it is well to keep the patient on a milk and broth diet. In cases of extreme anæmia, meat juice, or even raw meat pulp, may be given with advantage as blood restorers. The self-digesting foods and peptonized milk are also most useful.