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Thesis
On Acute Rheumatism
and its
Treatment.

Originally Composed by

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Amongst febrile diseases of non-infectious character, acute rheumatism is not uncommonly met with by all practitioners. Its occurrence is determined more or less by heredity, and, to some extent, dependent on climate, being more common in temperate than in warmer latitudes. Every observer must have been struck by its hereditariness in certain families. Even on slight exposure to chills, or damp, or alternations of heat and cold, some have more or less acute attacks of rheumatism, just as others, in like circumstances, nearly always have coryzal, tonsillar, bronchial, or pulmonary inflammations.

Symptoms:— Briefly, acute articular rheumatism is characterized by pyrexia, pain and sometimes swelling of one or more of the larger joints, profuse perspiration of characteristic sour odour, and a tendency to metastatic development of endocardial, pericardial, pleuritic, pulmonary, or other mischief in its course. Unlike contagious fevers, it has no fixed period of crisis or defervescence, and may run on for weeks or months, unless curtailed by treatment.

In acute cases, the temperature may rise to 104° or 105° F., & in fatal hyper-pyrexia as high as 107° to 110° or 112°. As in all febrile states, there are exacerbations towards night, and the urine is scanty, highly acid from excess of urates and uric acid and extractives, of high specific gravity, and deficient in chlorides. Delirium is seldom present, in uncomplicated cases.

The pain of the joints is frequently excessive, insomuch that the patient dreads the slightest movement of the affected limb, or the weight of the bed-clothes, or even the shaking of the bed or floor. It is also prone to attack the joints simultaneously or seriatim — ankles, knees, hips, wrists, or elbows —, and

sometimes it attacks the thighs, or the back, or even the maxillary articulation as in some rare cases. It wanders from joint to joint, nomad-like, never staying long in one articulation, & when it does so, may result in more or less permanent mischief. It often begins in the joints of the lower extremities, and ascends to those of the upper, but there is no rule. In very severe cases, the smaller joints of the hands and feet may be affected, and in such cases, Trousseau states a prolonged attack may be anticipated.

Sometimes there is a faint reddish blush over or near the painful joint, and sometimes there are swelling and effusion into the synovial cavity of the joints and surrounding tissues.

The profuse perspiration does not decrease the temperature as in the crisis of continued fevers. Its acid and excessive nature often leads to the formation of copious sudamina, especially on the chest.

Complications:— The most dangerous feature or complication in acute articular rheumatism is the inflammatory metastasis from the fibro-serous tissues of the joints to corresponding structures of the heart, or brain, or lungs, or other viscera. This may occur at any stage of the disease, early or late, and is by some considered almost as an integral part of the disease. The younger the patient, the more likely is the heart to become involved. Endocarditis is perhaps more frequent than pericarditis. The symptoms, consequences, and diagnosis of these complications, it is not my purpose to enter upon. But cardiac complications must always be carefully watched. Pleurisy, pneumonia, or bronchitis are not uncommon in the course of acute rheumatism. Cerebral complications are more rare. Hyper-pyrexia

is a dangerous, and often, fatal form of complication. When pain ceases suddenly in the joints, and the temperature rises rapidly to a great height, and the skin from moist becomes hot and dry, and cardiac, pulmonary, or cerebral symptoms are present, this hyper-pyrexia, unchecked, may lead on rapidly to coma, & death from paralysis of the heart and perhaps of the respiratory centre.

Pathology:— The pathology of acute rheumatism is obscure. Some regard it as a species of blood poisoning. Certain effete matters, retained and accumulated, poison the blood. Dr Prout regarded lactic acid as the actual materies morbi, but no excess of this or any other acid has yet been discovered in the blood, and, if poison there be, it has not hitherto been isolated. Yet from the results of treatment, we are led to infer that there is a rheumatic poison, though it is not deposited in the tissues surrounding the joints in the same sense as urate of soda is in gout. Whatever be the cause of acute rheumatism, I believe it to be a diathetic or constitutional disease. Dr Maclagan holds that acute rheumatic fever is malarial or miasmatic in origin, but if malarial, why not confined to malarious districts? Of one thing we are certain, that the blood becomes abnormal in rheumatism, from excess of fibrine and the products of disintegrated tissue, but these are probably the effects, and not the cause, of the rheumatic process. Local post-mortem examination of the joints throws no light on the pathology of rheumatism. Little is found to account for the intensity of the symptoms, and, in truth, this disease is so rarely fatal in itself, apart from its complications, that little opportunity is given to pathologists to settle the point.

Treatment:— We come now to the practical therapeutics of our subject. Though the symptoms of acute articular rheumatism are simple and easily recognised, the treatment is by no means such a simple or satisfactory matter. Many have been the systems and drugs employed in the cure of this disease, and no specific remedy has ever yet been discovered, which will relieve every symptom, and prevent every complication.

Last century, the majority of physicians practised uncompromising bleeding as in every other inflammatory fever. It has fallen into desuetude nowadays, though it may be that in pericardial complications, leeching over the precordial region to relieve localised congestion, may be advisable. General bleeding in a disease which is too prone to lead to further anæmia in debilitated subjects cannot be often recommendable. Bleeding was practised, (1), to relieve pain & diminish fever, (2), to pave the way for other remedies, as calomel, opium, colchicum, &c, and, (3), to cut short the attack. And the results appear not unfavourable, for, Dr Hope, after six years' experience in 200 cases, preferred moderate bleeding, calomel, opium, and salines, for the satisfactory reason that his patients were usually well within a week, and able to resume work ten days after the pain ceased.

Purging with calomel and salines is another of the old remedies. Five grains to a scruple of calomel at the outset of the disease, followed by black draught next morning, and carefully repeated, was a common practice. Doubtless, the generally constipated bowels require attention, but how a system of free purgation could be easily carried out in such a painful disease, I am at a loss to know. Still I think it well to clear out the primæ viæ before beginning other treatment.

Opium or morphia is frequently advantageous to relieve pain and sleeplessness. Dr Corrigan trusted to

opium alone, giving one grain every two hours till the pain disappeared. I occasionally find Dover's powder very effective, even while using more modern drugs.

Colchicum is recommended by Watson in certain cases in 20 minim doses every six hours till some effect is obtained, but it is a powerful depressant and perhaps unsafe. Colchicum, Veratria, and Guaiacum I have never tried in acute cases.

The alkaline is still with many the treatment par excellence of acute rheumatism. Various alkalies are administered according to the predilections of the individual practitioner. Nitrate of potash has been given in doses of one to to three ounces daily, and freely diluted. It has a powerful sedative action on the heart and vascular system, and is refrigerant as well as diuretic. Acetate of potash was preferred by Dr Golding Bird. It has an alkaline alterant effect upon the blood and secretions, rendering the urine capable of holding uric acid in solution, and acting generally as an eliminant. Dr Rees advocated treatment by lemon juice in doses of one or two ounces five or six times a day. Citrate of potash its most active principle is converted in the blood into the carbonate, rendering the urine less acid or alkaline in reaction. Lemon drinks are recommendable in all cases, as grateful to the patient and serviceable.

The bicarbonate of potash has been largely tried by Dr Garrod and many others. He gave it in average doses of two scruples every two hours, by night & day, for several days together, and in 51 consecutive cases, he had no heart complications, the average period of treatment being about a week, & the average duration of the disease slightly under a fortnight. Dr Fuller of St George's Hospital records the results in 116 consecutive cases treated by alkalies during his

registrarship, and the average residence in hospital was 20·1 days. He treated 439 cases, hospital & private, without a single death, and with only 9 cardiac complications, six of which appeared within 24 hours of the beginning of treatment. Put against this the fact that 114 instances of cardiac complications occurred in 246 cases treated on other plans at the same time in this Hospital, and we have a strong argument in favour of alkalies. In further illustration of the efficacy of alkalies in acute rheumatism, we have the fact that Dr Furnivall had no cardiac complications in about 50 cases; Dr Chambers had 9 in 174 cases; Dr Dickinson had one in 48 cases, while he had 35 in 113 cases otherwise treated; and Dr Senator had 2 in 34 cases, and 4 in 22 cases under other treatment.

The alkalies may in some cases be advantageously combined with medium doses of the iodide of potassium, or the bromide.

In March 1876, Dr Maclagan, then of Dundee, contributed an article to "The Lancet," which soon drew the attention of the profession to the use of salicin & its congeners in the treatment of acute rheumatism. He only recorded 8 cases so treated, & his conclusions were that "Salicin does not cause troublesome symptoms; that its beneficial action is generally apparent within 24 hours, always within 48 hours; & that, given sufficiently early and in sufficient doses, salicin prevents cardiac complications". These conclusions have in many cases been verified, but not in all: and the consentaneity of opinion in favour of salicin, salycilic acid, & salycilate of soda has been almost unparalleled in modern therapeutics. This treatment has passed from the region of experiment to that of experience during the years which have elapsed.

Dr Maclagan founded his use of salicin

on the miasmatic origin of acute rheumatism, he regards the successful results of the treatment as in favour of the truth of the theory. Whatever the mode of operation of salicin or its congeners may be, the results are often so striking that this treatment is worthy of careful investigation. Dr Maclagan argues that salicin has exercised its full anti-rheumatic effect before its conversion into salycilic acid in the system: Dr Senator of Berlin holds that it does so by its conversion. It has been found that salycilic acid prevents or destroys fermentation. "One to 20,000 will preserve saccharine fluids from fermentation. The action of such ferments as amygdaline or the myrosine in mustard is as effectually checked by its presence as of diastase, the fibrin ferment, or the lactic acid fermentation". Lancet. 1879. Vol 2. p 906. Dr Squire remarks that "The great use of salycilic acid is, that by shortening the fever, the risk of heart complications is lessened; and, if the heart be already affected, no remedy can act better. It slows the pulse, lowers the blood-pressure, and diminishes the vascular tension; the fever is controlled better than by quinine; pain is relieved better than by sedatives; no secretion is checked; the natural crisis of the disease is hastened; the subsequent anaemia is less, and the convalescence is quicker than after treatment by iron. Kidney disease, chronic or acute, is an obstacle to the free employment of salycilic acid."

Some striking results have been recorded of late years to a few of which I may now refer.

Drs Finlay and Lucas give the results of 158 typical cases of acute rheumatism treated in the Middlesex Hospital — 60 by salycilate of soda, 60 by alkalies, and 38 by a combination of alkalies with quinine. The average duration of pyrexia in the cases

treated by salycilate of soda was 5·7 days; by alkalies alone, 10·3 days; by alkalies and quinine, 11·6 days. The average duration of the joint affection in the cases treated by salycilate of soda was 5·06 days; by alkalies, 12·2 days; and by alkalies and quinine, 10·07 days. Seven cases developed endo- or pericarditis under salycilate of soda treatment; four cases under alkaline treatment; & five cases under alkalies and quinine. 70% of the cases in first and second groups had some heart complication before admission, and over 50% in third group. Relapses occurred in 16 cases under salycilate of soda; in 5 cases under alkalies, and in 3 cases under alkalies and quinine. Return of pain without pyrexia occurred in 6 cases under salycilate of soda; in 4 cases under alkalies; and in 7 cases under alkalies and quinine. The average duration of stay in hospital was 29·7 days under the salycilate; 27·7 days under the alkalies; and 31·1 days under the alkalies and quinine. So many disturbing elements, however, come in here that the value of the comparison is slight. Convalescence was much sooner established under the salycilate than under any of the other treatments.

Dr Oliver Moore published in the New York Medical Journal of August, 1879, the following results:— 316 cases treated by alkalies relieved in 17·2 days' average, discharged cured in 22·6 days' average; 305 cases treated by salycilates relieved in 2·9 days' average, discharged cured in 9·5 days' average.

Boston City Hospital Report, 1877, gives the average complete relief of pain in 106 cases treated by salycilic acid as 2·85 days; average time the acid was given 6·22 days; 4·76 cases out of 63 in which the condition of the heart was noted, developed heart complications; and the average residence in hospital was 18 days. One died from heart complication, and one from cerebral.

More time was required for convalescence than to produce a cure of the rheumatism.

Dr. Sinclair gives the average duration of rheumatic symptoms in 77 cases treated by the salycilate of soda in Dundee Royal Infirmary as 8·9 days, and the average residence in hospital as 21·48 days. Pneumonia occurred once, pericarditis once, and endocarditis twice, after the patient was fully under the influence of the drug.

Dr. C. Hilton Fagge tabulates 355 cases treated at Guy's Hospital from 1876 to 1880 inclusive, & found that nearly 50% were relieved of the disease within five days of the commencement of treatment by salycilic acid or salicin. In 28 cases there was more than one relapse, in five there were three relapses, in one four, & in one six. In 69 cases, auscultation revealed some cardiac change while in hospital. Yet in face of these admissions, "he would now feel that he was accepting a very grave responsibility if he were to withhold a drug which he believed to be so useful," "unless there were some good reason for doing so." Lancet. 1881. Vol 2. p 1033.

Various other analyses of statistics might be adduced, but their general tenor may be stated to prove that salicin or its salts are very valuable as anti-pyretics, as anti-rheumatics, but that cardiac complications are not totally prevented, though prima facie, a drug which is so potent otherwise, and which has been vaunted almost as a specific, might have been expected to do so.

It becomes me to speak with diffidence of my experience of salicylic acid, or the salycilate of soda. I have only as yet used the former in three or four cases, and the latter in seven cases of acute rheumatism. My first case at the latter end of 1876 gave me

strong encouragement. The patient, a young girl, was rapid relieved from alarming symptoms which I interpreted as of pericardial sign. My second case under salycilic acid, a young lady of 23, did not improve under 10 grain doses every two hours, & her temperature rapidly rose on the 18th day to 107° within a short time of her death. Her brother, lying ill at the same time, did well with it, but had a prolonged convalescence. I abandoned the use of the acid in my fourth case from gastric irritation apparently produced by the drug.

In the cases treated by the salycilate of soda I have hitherto, with one exception, had a more satisfactory issue. The pain and fever were rapidly relieved in a few days, & sometimes it was difficult to get the patients to take due care of themselves. My exceptional case is one under present treatment, a young woman. After two or three days, the pain in the limbs almost entirely subsided, and I anticipated a speedy conclusion & satisfactory convalescence. But a gradual rise of temperature for several days, from normal on the second day to 103°4 on the 8th day, indicated some complication. Pneumonia and pericarditis had set in, and there was some change in the clearness of the heart sounds. A precordial blister removed greatly the pain in the breast, and next day the pains had settled in both knees and ankles. Under 15 grain doses of the salycilate of soda, every 2 hours, with the ordinary expectorants, she was practically relieved, at once of articular pains & pneumonic phlegm. But again a couple of days ago on a renewal of the pain in the left breast, blistering has been most beneficial. The rheumatic pains are nearly gone, but linger in one or two of the digital joints. If I had no other

evidence than this one case, I should consider myself justified in not placing too implicit trust in the power of salycilate of soda to prevent cardiac or other complications. The drug did not reduce the temperature in the presence & progress of pericarditis and pneumonia, as has been frequently observed.

My first case under salycilate of soda was very encouraging. In spite of sedatives and alkalies, the pains crept up from the lower extremities, joint by joint, & on the 4th day, the temperature had risen nearly to 105°. Salycilate of soda was then used in 15 grain doses every hour for 8 doses, & after profuse sweating, in less than a couple of days, the patient, my servant, was normal in temperature, but very prostrate. She was fit for her duties in a little over two weeks.

The mode of administration of these drugs varies according to the preferences of individuals. Dr Maclagan in his early series of cases gave 72 to 180 grains of salicin daily. In October 1876 he advocated larger quantities of from 2 to 6 drams daily. And finally, as far as I can learn, he now gives 30 grains every hour till an ounce has been consumed, when the patient is usually free from pain & fever: a second ounce divided into the same doses every two hours; & a third ounce, divided similarly three times a day, to prevent relapse. He still prefers salicin to the acid, as being a tonic, while the latter is a depressant.

The salicylate of soda is now preferred to the acid as being more soluble, more readily absorbed, not generally irritant or disagreeable, & more prompt & certain in its effects. Five grains of the salt are equal to four of the acid, and 15 to 20 grains or even more every 2, 3, or 4 hours are required to produce

decided effect. I don't think it is always necessary to give large doses. Deafness, nausea, noises in the ears, headache, after-depression, & other symptoms frequently indicate the effects of the drug, and sometimes cause abandonment of its use.

The blistering treatment of Dr Davies without other drug I have never tried, nor the perchloride of iron, except in convalescence.

I have not been much in the habit of applying lotions to the affected joints. If these be well wrapped up in layers of cotton wadding, & the patient be kept between blankets, generally no other means of easement are called for.

Finally, the convalescence from acute rheumatism is generally more or less prolonged, and the indications for treatment will depend very much on the complications and results of each case.

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