**Joint tuberculosis / by De Forest Willard.**

# Joint Tuberculosis

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# JOINT TUBERCULOSIS.*

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The discussion of tuberculosis of the hard and soft parts has been so general in the past years that it would hardly seem necessary at this date to emphasize the extent or the importance of this infection in the production of bone or joint disease, but the fact still remains that a large proportion of cases of joint tuberculosis are not recognized until the period of actual destruction has taken place. Tuberculosis of the joints, as of the lungs, requires for its arrest a diagnosis at the very beginning of the infection. At this time, while it is a purely local process, arrest and cure are perfectly feasible; in the later stages, destruction of bone or joint or limb or life is probable. It is of the utmost importance, therefore, that a recognition of the earliest signs should be urged upon the general practitioner, so that curative measures may be instituted at the earliest possible moment. Three things are absolutely necessary in order to accomplish this result: 1. The practitioner must first recognize that joint tuberculosis is at the beginning a purely local process; that the focus is small; that local and constitutional symptoms will not present themselves in any positive palpable or visible symptoms so far as

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the ordinary evidences of acute inflammation are concerned. As a rule, there will be neither heat, nor swelling, nor redness, nor recognizable pain. I do not mean by this that there will not be recognizable symptoms; these are nearly always present, but they are of a different kind, as will be shown later. 2. The practitioner must rid his mind of the idea that joint tuberculosis originates only in the children of tubercular parents. A visibly healthy child, of apparently absolutely healthy ancestry, can, and often does, have local tuberculosis. 3. He must absolutely divest himself of the old idea that all joint pain is rheumatic. This last error is the most difficult of all to remove, as it is so firmly fixed in the minds of the profession and of the laity, and is most pernicious in its results.

As already stated, the evidences of acute inflammation are rarely present. It is a quiet struggle that is going on deep in the recesses of the epiphysis of the bone, but it is a desperate one. The tubercle bacillus has gained a foothold, owing to some local traumatism or temporary constitutional depression that has lowered the individual's resistive power. The attack of the enemy is immediately the signal for phagocytic defense: the invader must be destroyed, or, failing in this, must be walled off and isolated from the system. In a previously healthy individual victory will crown the efforts of these defending cells, if the physician will but lend his aid to prevent that stage beyond hyperemia which we recognize best by the term inflammation. Alas! Too often the surgeon waits for the flame to show itself, when he should have made his diagnosis while there was but the smouldering ember! It is then too late to check disastrous results. It is a discredit to any surgeon to wait for violent or inflammatory symptoms before he makes a diagnosis; both diagnosis and treatment are demanded at the very inception of the invasion.

With early diagnosis and early treatment, hundreds of crippling results will be arrested.

After a slight and often unrecognized injury, a child begins to limp. Let no physician imagine that a child limps "from habit;" a child does not wish to be hampered in its play, and it will limp only from a cause. To find that cause is the duty of the physician; he will not find it by looking for tenderness or pain, although these may be exceptionally present, but first in rigidity of the muscles (muscular spasm), protective rigidity, in the region of the joint affected. The muscles are all placed upon guard, and diminished mobility is the result. Fortunately, Nature at once recognizes the invasion of the enemy, and uses her best efforts to secure the condition most helpful for recovery. Nature puts the part as thoroughly at rest as is possible under existing mechanical conditions by fixing the joints in the best attainable position and preventing motion, but unfortunately in doing this she is compelled to bring the two joint surfaces into more positive apposition. This rigidity can be recognized in the first few days, if the patient is stripped and placed in a horizontal position; a comparison of the position of the limbs and the motions possible at any given joint can then be fairly instituted. With the patient standing, or clothed, any surgeon is liable to error, especially if the joints of the lower extremities are involved. Even for an examination of the shoulder or elbow, patients should be stripped to the waist. I am inclined to attribute a large proportion of errors to insufficient examination. A careful investigation, under these circumstances, will, even in the first few days of the disease, disclose this limitation of motion in some direction. At the knee we will usually find that the hamstring muscles, being the stronger, have carried the knee into a state of flexion, thereby also relieving joint strain; at the hip, the psoas, iliacus and anterior muscles will be found in a

state of excessive tension, while the entire periarticular group will also be rigid and on guard. Bringing the pelvis into its proper relation to the vertebræ, by flexion of the sound limb upon the chest, will at once show the deviation of the affected limb from its normal relations to the ilium; or, if the popliteal space is brought down upon the table, the pelvis will be so tilted that a compensatory lordosis of the spine is necessitated. In early examination, movements of the femur may drag the pelvis after it only in one direction, but a few days later all the muscles will be on guard, and it will be noted that the pelvis follows the thigh bone in all directions: adduction, abduction, flexion, rotation, etc.

*Pain.*—Pain is frequently entirely absent or may exhibit itself by a reflected pain, or by distress along the course of a nerve and at a distant point, as in the knee in hip-joint disease, or down the legs or in the abdomen in spinal caries. The night-cries so frequently present in joint disease are an evidence of deep pain, caused by the sudden resumption of muscular control when any motion of the limb during sleep arouses the muscles to sudden and violent action. The patient, after a scream or cry, will be relieved by the control secured by muscle rigidity, and will sink to sleep only to have the process repeated at irregular intervals. Tenderness may be entirely or partially absent; in fact, is rarely present over a tubercularly diseased vertebra. Rigidity is evidenced when attempts are made either at flexion, extension, lateral bending or rotation, and is a much more reliable sign. Tenderness even at the ankle and wrist in tuberculous cases is often wanting. Induration and thickening, however, are usually present early, and become marked as the disease progresses; comparison with the opposite joint will best discover the amount. Heat or redness is rarely visible.

*Heredity.*—Every individual, and especially every child, is liable to be invaded by tubercle bacilli, no

matter how healthy in itself, no matter what the condition of the parents. The child of tuberculous parents is far less able to resist the onslaught of these bacilli, and it was this non-resistance of cells that was recognized by the older pathologists as the "scrofulous" or "tubercular diathesis." Healthy cells, however, may be temporarily rendered non-resistant by disease, general or constitutional, or by injury producing hyperemia or inflammation. During this stage, tubercle bacilli introduced through a slight abrasion, or through the blood, may secure a lodgment; phagocytic action being temporarily reduced may not be able to overcome them, and a foothold is secured in the epiphysis, which is in young children an especially favorable focus owing to its great activity. What we mean by tubercular heredity, therefore, is simply congenital cell non-resistance, and such a child will be continually exposed to the dangers of infection from even trifling traumatic or other causes, while such causes in the truly healthy child would be quietly and successfully repelled. Let it not be forgotten, therefore, that there are seasons and conditions in the strongest child when, through temporarily reduced vitality, a tubercular infection may take place.

*Rheumatism.*—A large majority of all cases of tubercular hip disease are treated for weeks, even months, sometimes even up to the stage of suppuration, for so-called "rheumatism." The mistake is utterly inexcusable, for rheumatism of a single joint in children ought to be absolutely thrown out of the question, unless positive symptoms are in evidence. The symptoms of true rheumatism are always sufficiently marked to render the diagnosis clear, consequently if every case of joint disease which is unaccompanied by positive indications is viewed from the beginning with the probability of its being tubercular, the greatest benefit to mankind will be secured. I have never seen injury resulting from an error of diagnosis in this direction; I have seen hun-

dreds of most lamentable results from the "rheumatic" mistaken diagnosis. Moreover, the treatment for the more grave disease is never injurious, even granted that the rheumatic element is present. The symptoms of the two conditions differ so widely that only care is necessary for the differentiation.

*Treatment.*—Diagnosis being assured, the indications for immediate and early treatment are positive. One week of rest at the inception of a tubercular invasion will accomplish more than months at a later period after a tubercular focus is established. A large proportion of the cases of invasion can be warded off if the proper treatment is commenced within the first ten days. The treatment of joint disease should follow certain positive lines; the methods of securing results will differ greatly with individuals, as might be anticipated. Rest of the affected joint; control of muscular action; relief from weight-bearing; abundance of sunshine, fresh air and good food are the fundamental ideas. Mechanically, the chief object is to prevent the addition of hyperemia and inflammatory action to the cell conflict already inaugurated against the invading enemy. Therapeutic and hygienic measures are of the greatest importance. A general definite plan of treatment is all-important; the particular method, or the particular splint, to be employed is not of much consequence.

*Conclusions.*—1. Diagnose early; treat early. 2. Do not look for positive inflammatory signs as indications of tubercular invasion; the symptoms are entirely different, but are equally positive, if a careful examination is made, muscular rigidity being one of the earliest and most reliable. 3. Discard entirely the existence of rheumatism of a single joint in children.