

than to make any change in the curved portion itself. As a result of this, forcible attempts to correct bony rotation in fixed curves will increase the lateral curve, unless the thorax is kept from rotating, and forcible attempts to correct the lateral curve are likely to increase the rotation.

To judge from the observations on the cadaver, suspension as a corrective agent has but little corrective effect in rigid cases, being more likely to affect the compensatory curves than to produce any marked improvement in the rigid curve itself.

For the application of forcible jackets, the prone position, with the legs hanging perpendicularly, seems the most effective for two reasons: First, because in the prone position greater side displacement between the vertebra is permitted on manipulation than in the suspended position, because in the former the spine is not put on the stretch and part of its elasticity thereby exhausted; and second, because in the prone position, with the legs hanging perpendicularly, it is possible to apply a jacket which shall flatten, in some degree, the lumbar curve of the spine, and when the erect position is assumed, this flattening of the lumbar spine will necessitate some degree of hyperextension in the dorsal region on account of the equilibrium of the spine.

When the effect of rotations of the spine, in their effect on lateral deviation, is better understood, it will probably be possible to add the element of rotation to the corrective force applied in the treatment of scoliosis.

With regard to forcible correction, one of two things may be done: (1) Force, carefully antagonized, may be applied to the curve itself, with a view to improving the curved portion of the spine; (2) the curved region may be twisted as a whole, or displaced sideways as a whole in its relation to the rest of the spine, as occurs when unopposed force is applied to the curve. The former is, of course, the more desirable when it is possible, but the latter may be of much use in improving the general outline of the body. The separation of the two is important for the application of intelligent therapeutic measures. It is relatively easy to displace the thorax in relation to the rest of the column, but relatively hard to change the curve itself.

Forcible correction seems to have its place only as preliminary to gymnastic treatment, and the writer would not wish to be understood to advocate the use of corrective plaster jackets except as a temporary means to secure a better foundation for better gymnastic or, if necessary, mechanical treatment.

INTERMITTENT HYDROPS.*

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THE cases here reported represent a well-defined and recognized disease, although one not frequently seen. It is quite possible that many

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cases pass unrecognized, since it is necessary to have an opportunity of studying them in a greater or less length of perspective.

CASE I. A man of 30, good general condition, previous history negative with regard to any condition bearing on the present affection. Well until 4 years ago, then began to suffer with occasional pain in the hip, the thigh and the knee. Later periodic swelling appeared in the knees, lasting only a few days, and with comparatively free interval. The trouble gradually increased, with an increasing disability, not only at the time of the swelling, but also during the intermission. The patient had tried residence in several parts of the United States without benefit from the change of locality, and at the time when first seen the general condition was decidedly below par. The patient was suffering from a regular and intermittent swelling of knees, affecting the two knees alternately, with perfect regularity both of the effusion and of the interval. The affection consisted of swelling preceded by local symptoms of heat, some soreness and tenderness, with a general feeling of languor and malaise. The swelling reached its maximum in about 2 to 3 days, quite filling the knee-joint, which was somewhat hot and tender, until the time of maximum swelling; it then gradually disappeared, lasting in all about 4 days. During the interval, the knee was free from any symptoms except that of general weakness, and a limitation of motion both in full flexion and in extension.*

CASE II. Woman, 35, general condition good, with previous history negative; the first attack followed a slight trauma, and the knee was treated by fixation and crutches for several months. Later another effusion appeared, which was followed by the second period of fixation, after which the swelling came and went, but no special local treatment has been employed. At the time when first seen, there had been periodic swelling, appearing every 10 days, and lasting 4, with regular intermission of 6 days. The swelling was preceded one day by a feeling of malaise and languor, the knee was somewhat tender, painful and hot; the swelling reached its height in 2 days, and disappeared at the end of the fourth day. During the interval the patient was able to go about without any particular disability.

Both of these cases present a well-marked type of swelling known as intermittent hydrops, with the characteristics of a regular periodic swelling, of a constant length of duration of swelling, and of interval between the attacks, and with no apparent permanent resulting disability.

These cases are of interest from the manner in which they yielded to treatment; the first, that of the man, to the fixation of one knee, and the administration of quiaquin in 20 gr. daily doses, to which the condition responded at once. The improvement occurred first in the lengthening of the interval by 1 or 2 days, then in the skipping of an attack, followed by a gradual disappearance, the attacks becoming steadily slighter and less frequent.

The same treatment in the second case proved quite unavailing, but this case yielded to a persistent treatment by arsenic and strychnia, followed by creosote. Fixation and local treatment apparently had no effect. The manner of disappearance was of the same character as of the first; namely, that of the gradual lengthening of the interval, later the lessening severity of the attacks, and finally the gradually increasing duration of the interval.

* This case was reported by Dr. Spaulding under the title "Periodical Rheumatism," in the *Medical World*, July, 1900. This report covered the earlier portion of the course of the case.

The affection is characterized, in the cases recorded in the literature, by swelling due to serous effusion, recurring at definite periods. Each attack lasts a given number of days, fixed for the given case, the time of increase, of acme and of decrease being constant for the case. After a given interval without symptoms the attack recurs in like form. The calendar-like regularity of these attacks in nearly all of the reported cases is very striking, as is the long continuance of the affection without any change or progression.

There are in all 68 cases recorded in the literature, in which this diagnosis has been made.

A few show intermittent hydrops, so complicated with other conditions as to make their status somewhat doubtful. Such cases (and those in which the data are incomplete) being excluded, there remain 43 cases pretty fully described and closely resembling one another. Nearly all of them are so similar in essentials that they evidently form a natural disease group by themselves.

The joints affected.—The joint most frequently affected is the knee. One or both knees are involved in nearly all cases at some time during the disease; thus in 41 out of 55, one or both knees were involved without involvement of other joints. The hip, shoulder, elbow, wrist, ankle, jaw and spine have all been attacked in various cases. One joint alone may persistently show effusion at intervals for many years, or after a time other joints may be affected simultaneously or alternately, as in Fridenberg's case,²⁴ Löwenthal's,⁸ Kapper's,²⁸ one of Pierson's²⁴ and others. Also a number of cases, beginning as a knee affection, later involved other joints as well, as Case No. 28, which ran for years as a knee affection, then disappeared for a few years and returned in both knee and elbow.

In a case of Pierson's²⁸ the various joints were affected one after another in a sort of cycle, but without any strict regularity.

The attack.—The character of the single attacks vary somewhat in duration and symptoms. More usually there is, as above noted, a nearly painless swelling, dividing the fixed time of duration into about equal periods of effusion, fastigium and absorption. The onset is sudden. As a rule the disability is only that due to the mechanical hindrance of the effusion; the amount and tension of the effusion varies considerably. In few cases only does there seem to be any considerable spasm. Perrin's case¹ showed very marked spasm; Le Dentu's case¹⁶ showed restricted motion, apparently spasm, in several joints, with and without joint effusion. In a number of reported cases the description leaves this point undefined, save for mention of subjective stiffness.

In Rosenbach's case³⁰ there was doughy swelling about the knee at the time of attacks. In Perrin's case¹ edema accompanied the effusion in elbow and knee. As a rule local heat and redness are conspicuously absent; present, however, in typical cases reported by Grandidier⁸ and by Köster.³⁰

Local sensitiveness is noted in Rosenbach's case.³⁰ Usually it is not noted and is very often stated to be absent.

The matter of pain is curiously variable. In many of the cases there was no pain whatever, the subjective symptoms being limited to a vague feeling of discomfort. In others pain is marked, and in some severe arthralgia seems to be definitely the equivalent of the effusion. In Le Dentu's case¹⁶ there was at first intermittent knee hydrops, which ceased, and then later severe pain and disability (without swelling) in the hip and knee at regular intervals; still later the periodic swelling of the knee reappeared. In Grube's case⁴⁶ there was also a partial alternation of pain and effusion at the given interval. Benda's case⁵⁷ had periodic pains in various joints at regular monthly intervals for years before the effusion in the joints began its periodic appearance. There may be much pain in the earlier attacks, lessening in the later. (Canonne.⁷)

The pain is likely to be most pronounced during the first part of an attack, so, for example, in cases of Koster,³⁹ Rejou,¹⁷ Rosenbach,³⁰ Kennedy.⁴⁶ Or the pain may be most pronounced before the swelling comes on. It may be a prodromal pain in and about the joint, or more often in the whole limb. So it was in the cases by Blanc⁵² and Fridenberg.^{84 85}

Subjective languor is common during and after the attack. Headache, chilliness or slight objective fever are noted in a few cases. There may be, after a time, partly no doubt from the enforced confinement and the pain, a serious depression in health.

The duration of the attack varies greatly. The extremes are a case with duration of about an hour (terminated by morphine injections) with a daily recurrence, reported by Féré,⁴¹ and Benda's case with 19- to 21-day attacks and only 8-day free intervals. There is no discoverable relation between duration of attack and length of free interval. The duration most often recorded is 3 or 4 days. This was the time in 14 of 32 cases where this point was determined (but it is not always certain from the data that this includes the time of resorption).

A duration of 5 or 6 days is frequent (8 out of 32). Longer or shorter attacks vary all the way between the two extremes. The duration of the attack is less apt to be mathematically precise than is the interval of recurrence, but in the rule the swelling comes up in a given time, and its resorption begins after an interval constant for the given case.

The interval between attacks, the cycle of days, is, as has been said, curiously constant in each case for long periods of time. From beginning to beginning of the attacks the most usual period is 14 days (7 cases in 42), or 11, 12 or 13 days (including 11 cases). A cycle of 8 or of 9 days appears in 7 cases; of between 28 and 30 days in 6. The minimum of time recorded is 24 hours, Féré,⁴¹ the maximum 3 months (cases by Seeligmüller,¹⁹ Pletzer²⁰).

A change of interval is noted in a number of cases: For instance, in Moore's case⁶ there was a change from 30 to 8 days; in Pletzer's case,²⁰ from 3 months to 11 days; in Perrin's case,¹ from 7 to 3 days; in Fridenberg's case,³⁵ from 14 to 21 days. In some cases the change in interval follows a temporary cessation of the attacks (Perrin's case¹ and Pletzer's²⁰) or the change may take place without such pause. When the new rhythm is established, it usually continues with the regularity of the old. In a few cases there is a progressive shortening (Rosenbach³⁰ and Löwenthal⁸) or lengthening (Seelingmüller,¹⁸ Pierson²⁴ and Fridenberg³⁴) of the interval. So also the cases here reported, after the beginning of treatment. In some cases, otherwise typical, the interval is never a definitely fixed one (cases of Roser¹¹ and Pierson²⁴).

When an intermittent effusion, already appearing in cyclic form in one joint, attacks others, the affection of the newly affected joints may come on at the same time, or may occur in the middle of the previously free interval (Goix²⁹), or may alternate with the attacks in the joint first affected, or may precede or follow the attacks in it by a short interval. As a rule the persistence of the original cycle in one form or another is obvious during all this shifting.

There is usually no obvious determining cause for the length of the cycle. In certain cases, to be sure, it apparently has some connection with the menstruation. In Wagner's case¹⁴ the attack is said to have coincided exactly with the menses. In Senator's case⁴⁷ there were attacks usually just before the menses, and in a case of Pierson's²⁴ the cycle was 9 days, and the more obstinate attacks always coincided with the menses. In 1 of Féré's cases the deprivation of narcotics determined the daily attack, and in another, reported by the same author, anger was the obvious exciting cause. Trauma may start up the affection to begin with, or after a pause, but of course cannot determine the periods.

Age.—Of 38 typical cases where the age is given, the average age of beginning was 26 years. The individual cases varied irregularly from 12 to 54 years, but 18 were between 20 and 40, 7 above 40, and 13 below 20. Only 3 cases began at 15 years or younger; Pierson records an irregular, atypical case in a girl of 9 years, the youngest case on record.

Sex.—As to sex, there is a slight, but only a slight, preponderance of females. The sex evidently is of no considerable importance. The disorder occurs in the weak or in the robust without obvious choice.

The question of intermissions is an interesting one, especially in relation to the matter of cure. Apart from all treatment, such interruptions occur in a large proportion of cases. In 5 cases at least, there was an intermission during pregnancy. This, however, is in no way constant, and in a given patient (case by Pletzer²⁰) one pregnancy may not and another may cause intermission. Such intermissions may occur, however, without

any obvious cause and may run over several years, and sometimes as the result of some trauma or other shock, or oftener without obvious cause, the trouble returns in the same or another joint, in the same (*Le Même*⁵⁰) or in different rhythm (Pletzer²⁰).

Needless to say, some alleged cures have been of this sort, and have not stood the test of years. The question of cure is the more difficult to judge, inasmuch as the spontaneous remission may either be abrupt or preceded by gradual improvement.

Pathology.—The condition of the joint or joints between attacks is interesting in a negative way. In the great majority of cases there is nothing to be found during the interval, beyond possibly a little thickening and laxness of the capsule. Occasionally there is a little crepitation in the joint. Some cases have finally become chronic hydrops (Bylicki,¹⁰ Féré⁴⁰), and in Fiedler's case,²¹ where many joints were affected, the wrist alone became stiff. Moore reports free bodies in 2 cases, and the presence of "Gelenk-zotten" is mentioned in the records of Schuchard³³ and Benda.⁵⁶ The arthritis deformans, rheumatism and Charcot's joint existing in 4 other cases were certainly in no sense changes resulting from the affection. Strangely enough, the considerable effusion recurring so often through so many years seems usually to leave no trace of damage to the joint. It would seem that there are no characteristic changes locally; the lesions occasionally occurring may be *provocative* of the disease, hardly more. The disease has no complications, strictly speaking, and involves no danger to life.

When we come to the question of the real nature of this disease, we find a series of facts and plenty of theories, all of which are somewhat inadequate to explain the facts.

It has been supposed that the trouble was of infectious nature. So far as bacterial infection goes, there are but 2 cases with bacteria found. One by Ehrlich and Garré⁴⁹ was obviously a staphylococcus osteomyelitis, not really belonging in the present series. In the other, reported by Hartmann,³⁶ the bacilli found were not identified or tested, and the findings have not been confirmed. There is really no ground for belief in bacterial infection. As to malaria, the case is a little different, but not very convincing. In a number of cases (as in any group of any sort of cases) there was a history of malaria, but in no case a fresh infection. Knowing as we do that quinine affects not only the white blood corpuscles but the capillaries as well, we cannot accept the cures under quinine as in any way a proof of the malarial nature of the affection, nor is even a history of malaria to be found in most cases. At most, we can say that it may have something to do with the liability of some persons to the disease. It cannot be the usual cause.*

The same may be said of rheumatism; it is not

* Benda cites from Liszt: Irregular Malaria, *Pester Med. Chir. Presse*, 1893, No. 52, a case of malaria with periodic pains in one joint recurring daily.

infrequent in the histories of cases. It may offer favorable ground for the development of the disease, but is certainly not the true cause.

So, too, of gout and gonorrhea.

The theory most favorably received by modern writers is that of a vasomotor neurosis. The genesis of the individual attack may then be explained (Seeligmüller) by a dilatation of the capillaries. On this theory the action of quinine (which paralyzes vasomotor nerves) may be explained as an interference with an active stimulation of vasodilator nerves.

In favor of the vasomotor theory is the concurrence in certain cases of what seems to be vasomotor edema (angioneurotic or blue edema) (Perrin case,¹ Goix case²⁹ and Féré⁴⁰) of migraine (Féré⁴⁴), which is definitely vasomotor and periodic, of urticaria (Féré⁴⁸) and of various disorders classed as neurotic or functional nervous diseases, especially epilepsy (2 cases) and Basedow's disease (3 cases).

On the vasomotor theory may also be explained the influence of pregnancy, the slight influence of menstruation, and the effect of trauma or other shock in lighting up the process. So, too, we may perhaps explain the case³⁸ where preparation for operation sufficed to avert an attack in an usually regular case, and cases where methods of treatment succeeded which could hardly have more than a psychic effect (case of Kolbe,²² where application of a bandage 2 days before brought about a cure). So, too, perhaps, the cases are to be explained where the trouble, banished by treatment in one joint only begins in a fresh one (Köster,³⁹ Blanc⁵²), nor is such explanation inconsistent with the 1 case (Blanc) which was apparently hereditary.

To sum up, we have an affection without discoverable anatomical basis, without proof of infection, giving a simple noninflammatory serous effusion in the joints, occurring at regular inextinguishable periods, interrupted without rule, or in accordance with what we may term psychic stimuli, associated in some instances with what are usually classed as functional nervous disorders. Certainly the disease seems to be a functional, as opposed to an organic, trouble; and whether we do or do not call it a vasomotor trouble or a neurosis, depends largely on our reluctance towards these catch-alls for unexplained disorders.

As to therapeutics, we have a bewildering array of remedies. Bandaging, blisters, the cautery, aspiration and irrigation, injections of ergotine, of iodine, of iodoform, of carbolic acid, and open operation have each brought about one apparent cure. In 2 cases (1 after treatment with hot iron, 1 after puncture) the result was not a cure, but a shifting of the process to another joint. Operation would seem to have its effect simply as one way of interrupting a vicious cycle; there is usually nothing *definite* to do by operating. Electricity seemed of benefit in a number of cases, and in Kapper's case²⁸ brought about a cure.

Of internal medication potassic iodide was of service in 1 case. Salicylic acid has been used repeatedly without result. Quinine shows good results, 2 cases (Perrin¹ and Moore⁶) cured and 1 improved. Best of all the drugs is arsenic, given as Fowler's solution, with 3 cures to its credit. It seems that the last 2 drugs are the only ones that are to be looked on as possibly having a definite action. Baths, change of climate and of scene, help somewhat, but seem rarely if ever to be the real determining factor in such remissions as may follow them. The prognosis, on the whole, is not good, the proportion of permanent cures up to date being relatively small. Most cases have simply been lost sight of.

On the basis of the data at hand it is hard to formulate treatment, but it seems fair to infer that quinine and arsenic and electricity (according to Benda its action is psychic only) should be tried, and if no result is achieved, then, and after time allowed for the chance of spontaneous remission, puncture and injections or open drainage may be resorted to.

The list of cases referred to in the text is appended. A good many of these cases have been taken from Benda's exhaustive monograph, in which excellent and full abstracts are given of nearly all cases up to 2 years ago.

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7. Canonne. *Thèse de Paris*, 1867.
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21. Fiedler. *Loc. cit.*, 1881.
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