

PSEUDO-PARALYSIS DUE TO SCORBUTIC EPIPHYSITIS

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THE term 'scurvy' brings to one's mind a picture of bleeding gums or purpuric patches on the skin. It is not sufficiently recognized that a state of pronounced vitamin C deficiency may occur without either of these manifestations.

A clinical condition very frequently met with in Gujerat is a 'pseudo-paralysis' of the legs due to scorbutic epiphysitis. The term pseudo-paralysis is used because in nearly every case the diagnosis of paralysis has already been made by the practitioner or parent.

The previous history is usually that the child has suffered from some infectious disease or debilitating malady such as typhoid, measles, dysentery or smallpox. After convalescence it is found that the child refuses to walk or even stand. The child is fretful, crying, loses weight and declines to eat. There may be slight fever.

In typical cases, the attitude of the child is characteristic and almost pathognomonic, and bearing the condition in mind, one may 'spot' the diagnosis as soon as the parent presents the child for examination. Held up by the armpits, the child keeps its thighs and legs flexed up in mid-air. If an attempt is made to place the child on its feet, it refuses to bear its weight on its legs and withdraws its feet and flexes its legs more. If the legs are straightened, the child cries with pain. The legs are obviously not paralysed, but as the child refuses to walk or even stand, the impression of paralysis is often incorrectly gained by parents and even doctors. Frequently cases are seen, which have been treated as paralysis, rheumatism, tuberculosis or osteomyelitis for weeks or even months on end. The doctors have prescribed every vitamin except vitamin C, with the result that the child has drifted into chronic invalidism and the parents into disconsolate despair.

On being questioned, the parents invariably and emphatically reply that the child never eats fruits. In most cases, the child seems to have an aversion to fruit and has always obstinately refused to eat any.

One week's treatment with vitamin C has the miraculous effect of converting an apparently

hopelessly paralysed child into a practically normal child, able to stand and walk.

The gums are usually normal. In some cases, however, the usual scorbutic changes are seen in the gums, but the striking point is that they are more frequently normal than otherwise. In only 7 cases out of 30 were there scorbutic changes in the gums. The fact that an obvious case of vitamin C deficiency can show epiphysitis and not scorbutic gums is no more remarkable than that an advanced case of rickets can occur with all the usual skeletal deformities and yet have normally developed teeth.

Purpuric hæmorrhages in the skin were not seen in any case of this series. In adults, cases of scorbutic purpura are frequently met with, but none have been encountered in this series of children's cases of pseudo-paralysis. The skin is not hot nor changed in colour, and shows no inflammatory changes.

The knees are the joints usually affected. They present a diffuse, rounded swollen appearance, tender to palpation and painful on passive movement, especially extension.

Not infrequently, however, in cases presenting the characteristic flexed attitude of the knees and with the usual history of deficient intake of vitamin C, the knees appear externally quite normal. A skiagram will, even in such cases, reveal that there is scorbutic epiphysitis (*vide infra*).

Occasionally only one knee joint is affected. The diagnosis is then more obscure. I have seen cases in which only the hip joints have been affected. I have seen no case in which the upper extremity was affected.

Subperiosteal scorbutic hæmorrhages may occur. In one case, an extensive extravasation of blood under the periosteum of the femur, in a bottle-fed baby of 11 months, led to an incorrect diagnosis of osteomyelitis. In one week with appropriate therapy, the swelling had dramatically subsided. Such an extravasation of blood may occur over the spine, in which case a diagnosis of tuberculosis of the spine may excusably be arrived at.

Three classes of cases may thus be described:—

(1) Epiphysitis with swollen joints, usually the knees.

(2) Epiphysitis complicated with subperiosteal extravasation of blood. Such cases

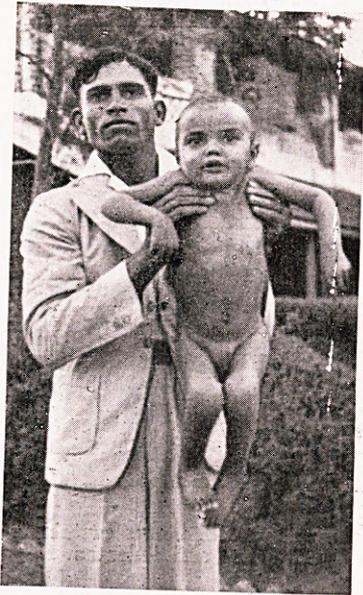


Fig. 1.

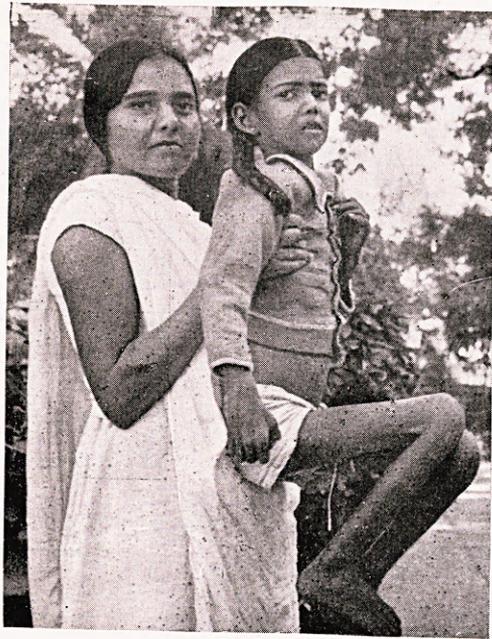


Fig. 2.



Fig. 3.

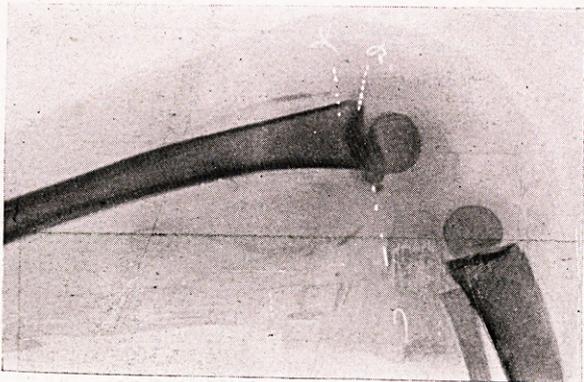


Fig. 4.

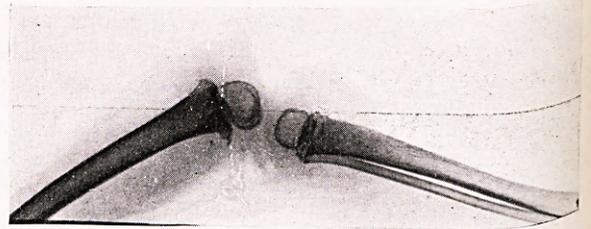


Fig. 5.

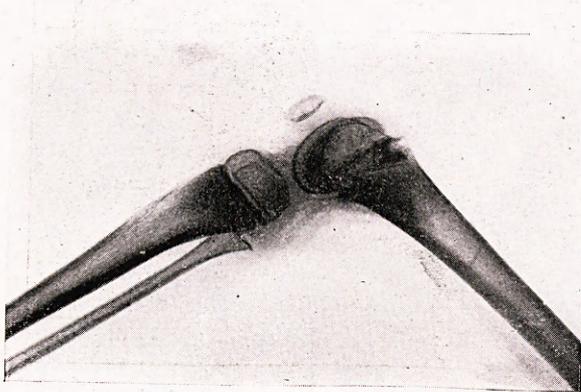


Fig. 6.

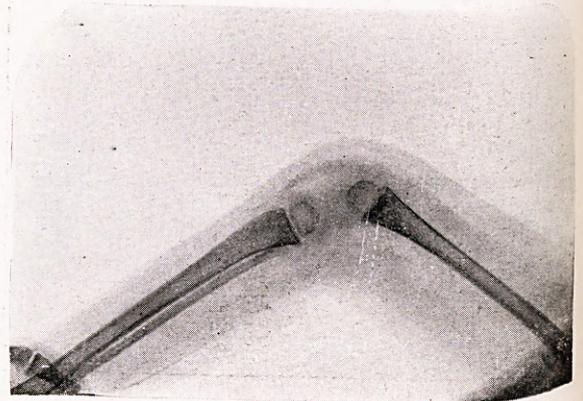


Fig. 7.

present a considerable swelling and simulate acute osteomyelitis.

(3) Cases with normal appearance of knee joints. The parents complain that the child is always stumbling and falling and is unsteady on his feet. At times the child may even 'go off his feet' and refuse to walk at all. There is no pain in the knees and no swelling. A skiagram will, however, show the changes described below.

Diagnosis

(1) The characteristic attitude of the child can be considered of diagnostic value.

(2) Other signs of scurvy, e.g. purpuric spots, bleeding gums, may be looked for.

(3) The skiagram is diagnostic. A dense irregular band, obviously containing an excessive amount of calcium, is seen at the end of the diaphysis. This is the provisional bone laid down by the epiphysis, and it is composed of unorganized calcium phosphate. This appearance is diagnostic of scorbutic epiphysitis. This provisional bone is friable and often breaks, and there may be hæmorrhages in this area and microscopic fractures or dislocations of the epiphysis. The neighbouring zone is greatly decreased in density so that the bone may not be visible. The essential disturbance seems to be failure of the osteoblasts to convert provisional into true bone. The true bone of the shaft is rarefied, in striking contrast to the provisional bone. The shaft looks blurred—the so-called ground-glass appearance.

Plate IX illustrates these three features.

(4) Failure of the urine to decolorize dichloro-phenol-endo-phenol after administration of ascorbic acid. In one child three tablets of ascorbic acid 50 mg. each and one injection of 'Redoxon' 50 mg. were given. The urine subsequently passed did not decolorize dichloro-phenol-endo-phenol, indicating a marked deficiency of ascorbic acid.

(5) Improvement on vitamin C therapy, given orally and parenterally, will confirm the diagnosis.

Differential diagnosis

(1) *Infantile paralysis*.—Many cases are referred with this diagnosis and have had prolonged therapy with vitamin B, to no advantage. On careful scrutiny, it is obvious that the legs are not paralysed.

(2) *Tuberculosis*.—The slightly expanded knee joint may suggest tuberculosis, but the bilateral nature of the condition should cause further reflection.

(3) *Acute rheumatism*.—In scorbutic epiphysitis, the condition remains limited to the knee joints, whereas in acute rheumatism the condition flits from joint to joint.

(4) *Acute osteomyelitis*.—If there is an extensive subperiosteal extravasation of blood, acute osteomyelitis may be thought of, but the leucocyte count will not be raised and the child's condition will not be so critical as in acute osteomyelitis.

(5) *Rickets*.—In rickets, the bone ends are expanded at the joints, and the skiagram shows a cup-shaped epiphyseal cartilage, quite distinctive from the radiological appearances in scurvy.

The doctors' note, attached to one case, is given below in full, as it illustrates the common fallacies in diagnosis and treatment.

'The patient has been under the treatment of various doctors since the last 4 months for daily rise of temperature and pain in the lower extremities. Two months back he was referred to me for continuous fever. He had at that time enteric fever complicated with jaundice which condition cleared up in due course. In the meantime, my attention was drawn to the localized swelling in the lumbo-sacral region which was tender and bearing relation to the pain in the lower extremities. The relatives are convinced that the spine is affected and the patient is sent for radiogram. He is having Adol drops and Osteo-calcium tablets and a mixture containing calcium, iron and bitter tonic. He is advised plaster of paris jacket.'

As the child was presented to me by the parents, the diagnosis was obvious. Both knees were flexed acutely in the mid-air and the child screamed as I tried to straighten the legs. The lumbo-sacral swelling was a scorbutic hæmorrhage tender to touch. The gums were bleeding. This point had been overlooked by the doctor. When I questioned the parents as to the child's diet, they admitted that the child obstinately refused to take any fruit at all. The white cell count was normal.

Treatment

Ascorbic acid is given in large doses, orally and parenterally.

Local treatment is unnecessary, but frequently lead lotion, belladonna and glycerine are prescribed as placebos.

As auxiliary treatment, cod-liver oil and ultra-violet light are given.

Fruit is insisted on as a part of the diet.

Prognosis.—With the correct diagnosis in mind, it is most gratifying to be able to reassure the parents and predict that, with the

proper treatment, the child will be showing distinct improvement within a week.

Cases relapse if correct diet is not given subsequently. Some cases relapse each year.

TABLE
Summary of cases

Number	Sex	Age in years	Caste	Parts affected	Duration	Precipitating factors
1	F.	4	Bania	Legs, gums	2 years	
2	M.	2½	Jain	Legs	20 days	Smallpox.
3	M.	4	Patel	"	1 month	Measles.
*4	M.	½	Mohammedan	Ankles	1 "	Rickets.
5	F.	1½	Christian	Legs	15 days	
6	M.	½	Patel	Knees	2 "	Diarrhœa.
7	M.	6	Bania	"	4 months	
8	M.	1	"	"	..	Cirrhosis liver.
9	M.	3	Patel	"	10 days	
10	M.	3	Bania	"	1 month	
*11	M.	2	Patel	"	8 days	
*12	M.	3	Christian	"	..	
13	M.	4	Hindu	"	2 months	
*14	M.	7	Bhavsar	Right leg	15 days	
15	M.	4	Brahmin	Knees	4 months	Enteric fever.
16	M.	2	Dhed	Knees, gums	10 days	Fever.
*17	M.	5	Bania	Right hip	25 "	Dysentery.
18	M.	10	"	Knees	..	
*19	F.	4	Darji	"	2 months	A fall.
20	M.	4	"	"	2 "	Diarrhœa.
*21	M.	3	Bania	Spine, gums	..	A fall.
22	F.	6	Christian	Knees	2½ months	Diarrhœa.
23	F.	2	Bania	"	3 "	
*24	M.	11/12	Mohammedan	Knees and femur	..	Malaria.
25	M.	4	Bania	Knees	..	Pneumonia.
*26	M.	5	Soni	"	2 years	
*27	F.	7	Bania	Knees, gums	2 months	Malaria.
28	F.	4	..	" "	..	Rickets.
*29	M.	9	Bania	" "	1 year	Tonsils.
30	F.	2	"	" "	..	

Further notes on the above cases

No. 4. Recovered under treatment. Recurrence 6 months later. Re-admitted.

No. 11. Recovered in 4 days.

No. 12. Three attacks.

(1) Both knees, one year ago. Recovered.

(2) Recurrence—discharged, walking in one week's time.

(3) Recurrence after one week—unable to stand—recovered in 24 hours with large doses of vitamin C.

No. 14. A similar attack one year previously—recovered with fruit. No fruit given since—hence recurrence.

No. 17. Simulating infantile paralysis—recovered in 15 days.

No. 19. Treated for two months as 'pus' and given vitamin D. Improved in a week.

No. 21. Spine very tender—diagnosed as T. B. spine. Recovered in a week with vitamin C.

No. 24. Subperiosteal hæmorrhage left femur simulating acute osteomyelitis—a bottle-fed baby—gums normal. In one week, swelling subsided with vitamin C.

No. 26. Does not walk properly at times. Frequently stops walking.

No. 27. Attacks recur yearly in September and October.

No. 29. Pain and stiffness in both knees once every year. Bleeding gums.

CORRIGENDUM

In the March 1945 issue of the *Indian Medical Gazette*, on page 133, column 2, line 22, the number '252' should be '2052'.

EXPLANATION OF PLATE IX

Fig. 1.—Showing the characteristic posture when held supported by the axillæ.

Fig. 2.—Showing the characteristic posture which may be considered a diagnostic sign.

Fig. 3.—Same child, as in figure 2, now able to stand after one week's treatment with vitamin C.

Fig. 4.—Skiagram of child, aged 11 months, artificially fed, never given fruit.

(a) Extensive subperiosteal hæmorrhage.

(b) Dense, irregularly formed, provisional bone.

(c) Microscopic dislocation of epiphysis.

(d) Zone of diminished density.

Complete recovery with vitamin C therapy.

Fig. 5.—Skiagram of child, 4 years age, knees swollen and tender.

(a) Dense provisional bone of epiphysis.

(b) Microscopic subluxation.

(c) Zone of diminished density.

Unable to walk 2 months. Improved in one week on vitamin C treatment.

Fig. 6.—Skiagram of child, 7 years age. Unable to walk 2 months. Knees held in typical posture but no obvious swelling. Pain on pressure and extension. Gums and teeth hypertrophic and bleeding slightly. History of relapses annually in September and October.

(a) Extremely dense and irregular provisional bone of epiphysis.

Fig. 7.—Skiagram of child, 2 years age. Knees not swollen but pain on extension. Typical posture. Bleeding gums; never eats fruit.

(a) Irregular provisional bone.

(b) Zone of diminished density.