A CASE
OF
OSTEO-MALACIA.

BY
ROBERT BARNES, M.D. LOND., F.R.C.P.,
PHYSICIAN TO THE ROYAL MATERNITY CHARITY; ASSISTANT OBSTETRIC-
PHYSICIAN TO THE LONDON HOSPITAL; AND LECTURER ON
MIDWIFERY AT ST. THOMAS'S HOSPITAL.

COMMUNICATED BY
MR. T. B. CURLING, F.R.S.

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IN the 'Medico-Chirurgical Transactions' is to be found a great part of all the original information that has been contributed by English authors concerning that rare and formidable disease, osteo-malacia. This fact has suggested the desire to acknowledge the benefit I have derived from that source, by submitting a very interesting case observed by myself, to the Society.

Mrs. W— came under my care in June, 1860, as an out-patient of the London Hospital, having been transferred by my colleague, Dr. Parker. She was then forty years of age; had been married ten years, but had never been pregnant. She belonged to a healthy family, and had herself enjoyed good health until nine years ago. Then she began to suffer from a series of colds. About eight years back she had a severe illness, described as inflammation of the chest. For this she was salivated. She says she has never

thoroughly recovered. After this illness she had an attack of erysipelas. Three years ago, suffering under a cough and difficulty of breathing, she went to the Victoria Park Hospital, and came under the care of Dr. Birkett. She subsequently came under the care of Dr. Andrew Clark, at the London Hospital.

The first symptom she complained of was persistent and excruciating pain in the dorsal and lumbar vertebræ. She had suffered from this pain when she had applied at the Victoria Park Hospital, but she had not at that time lost stature, and did not manifest any symptom to lead to a suspicion of the true nature of her disease.

When she presented herself to me she walked in painfully, supported by her sister. Her original height had been five feet eight inches; she now barely measured four feet eight inches. Her sister was a tall, well-proportioned woman. Both agreed that Mrs. W— had been the taller of the two.

Present symptoms.—Is racked by pains in the bones, which are thought by those about her to be rheumatic. This, however, she says, is not her own opinion. Walking is very painful, she is easier when sitting, but cannot get up without great trouble. She is liable to attacks of sickness. She has always been accustomed to "bilious attacks." She has pyrosis in the morning, and retching. The right leg swells towards night. She spits blood at times. Menstruation has always been scanty.

She was ordered a drachm of syrup of diphosphate of zinc and iron, and good diet, with wine. Under this treatment she appeared to improve, and is reported at her visits on the 14th July, 18th August, and 26th September, to be stronger, and better in every respect.

On the 20th October, although otherwise doing well, she complained that the sickness was more troublesome. Omit the zinc: take oxalate of cerium, two grains twice a day. On the 31st the sickness had been quite relieved, but the right leg still swells much towards night. The use of the diphosphate of zinc was resumed.

On the 1st December she complained that sweet medicines make her sick ; but the sickness is more controllable. The leg swells less. She seems weak. Urine passed with pain, and generally turbid.

December 15th.—Great acidity of stomach ; flushes in face after meals ; nausea and vomiting soon after eating ; pain and sense of coldness in chest. Ordered bismuth, hydrocyanic acid, and opium.

22nd.—Has lately complained of great pain, increased on pressure, over the left hip, where there is a spot like a bruise. The stomach is better.

January 5th, 1861.—The hip is better. The right leg is painful and swells. She has profuse leucorrhœa.

On the 2nd February there had been no marked improvement. The pains in the limbs were excessive, the legs were apt to get cold. The pains in the bones deprived her of rest. Menstruation very scanty ; like "port wine."

Having recently read a paper by Dr. Breslau, in which he described a case of osteo-malacia which had been benefited by cod-liver oil, I determined to try the remedy upon Mrs. W—. To this she manifested some repugnance, saying that both under Dr. Birkett and Dr. Andrew Clark she had in vain tried to take cod-liver oil ; it always made her sick. To counteract this tendency I prescribed ten minims of dilute hydrochloric acid with each dose.

During February and March she took the oil with this combination with decided advantage and without discomfort. But the pains in the limbs were still very distressing. To relieve this symptom she took a quarter of a grain of belladonna, with half a grain of morphia, at night. This did not succeed ; and one grain of Indian hemp, with two grains of extract of conium, were substituted. After taking this latter combination for a week the pains were much relieved. She came to the hospital walking, feeling much stronger and better.

In May the improvement continued. She took the oil without suffering from sickness. In June she had an attack of bronchitis. In July this had disappeared ; she was gain-

ing strength rapidly, was able to discharge her domestic duties, and reported herself as restored to health.

On the 16th November last she was seen by myself and Mr. Taylor, acting resident-accoucheur at the London Hospital. She was still in good health and spirits. The skeleton was minutely examined. Nowhere did pressure occasion any tenderness. Latterly she had menstruated freely and more naturally than for many years.

The physical appearance of the patient is very remarkable and characteristic. Long, thin, straight limbs are set upon a squat, dwarfed, distorted trunk. The disease seems to have spared the bones of the head, the clavicles, scapulæ, arms and legs. These parts accordingly preserve their original dimensions, and belonging, as they do, to a person originally of high stature, contrast strangely with the compressed and deformed body. The cervical vertebræ appear but little affected. But from the upper dorsal vertebræ downwards the whole spinal column is greatly distorted. An immense gibbosity rises between the shoulders; this is succeeded by a slight deviation to the left in the lower dorsal and lumbar region; there is no compensating anterior curvature. The ribs are much compressed, contracting the capacity of the chest. The sinking down of the spinal column has been attended with the fall of the chest towards the pelvis. To such an extent has this been carried that the lower ribs on either side have sunk below and inside the crests of the ilia. The pelvis is centripetally compressed on all sides. The acetabula, squeezed inwards into close approximation with the promontory of the sacrum, carry backwards the horizontal rami of the pubis, and throw out the symphysis into that peculiar beak so characteristic of *mollities ossium*. This beak is so pronounced that it can be seized between the finger and thumb. The obliteration of the pubic arch, the near approach of the tuberosities of the ischia, and the doubling up of the sacrum, have so narrowed the outlet of the pelvis that it is with difficulty two fingers can be introduced. As a result of the shortening of the spinal column, the three great cavities of the chest, the

abdomen, and the pelvis, are much contracted in their capacity. The chest has dropped down upon the pelvis, leaving scanty space for the abdominal organs. The deficiency is a little compensated by the protrusion forwards of the abdominal walls.

The shortening and distortion of the spinal column are obviously due to the falling in of the bodies of the vertebræ. The disease has attacked those bones and parts of bones of the trunk the bulky part of which is largely formed of cancellous tissue. The bulk of the bones has been consequently lost. Hence the falling down or squatting of the trunk.

I think the shortening and distortion made some progress during the first weeks of her attendance at the hospital.

It has often been regretted that we possess such scanty information concerning the constitution of the urine in this disease. Through the valuable assistance of Dr. Letheby, this case has been made subservient to the requirements of science in this respect. I have brought together the analyses made, in order that the results may be the more easily appreciated.

The following is the first full account of the urine. It refers to the 22nd of December, 1860, a period when the disease appeared to be still progressing and when the patient had not yet commenced taking cod-liver oil.

“The urine which you sent to the laboratory on the 22nd does not contain albumen, or the gelatiniform animal matter referred to in Dr. McIntyre’s paper (and by Dr. Bence Jones, ‘Med.-Chir. Trans.,’ vol. xv, 2nd series). It contains, however, a very large proportion of alkaline and earthy phosphates. The general properties and reactions were as follow :

“*Colour*, very pale amber ; *odour*, ammoniacal ; *reaction* to litmus, very alkaline ; *sp. gr.*, 1018 ; *heat*, slight turbidity, but no coagulation or gelatinisation after standing ; *nitric acid*, no coagulation or gelatinisation, but a deepening of tint to a dark-sherry colour ; *acetic acid*, no reaction ; *Fehling’s solution*, no action, or sign of sugar ; solutions of

lime, silver, and barytes, copious precipitates of phosphates, which were dissolved by nitric acid, leaving evidences of sulphates and chlorides.

“ On standing, the urine threw down a copious precipitate of flocculent matter, of a white colour. On microscopic examination, this was found to consist of crystals of triple phosphates, bibasic phosphate, phosphate of lime, and oxalate of lime, the first two being dissolved by cold acetic acid, the third by boiling acetic acid, and the last remained untouched.

“ The chemical composition of the clear urine was as follows :

“ Water	962·60
Solid matter	37·40
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	1000·00

“ The solid constituents were :

“ Urea	10·0
Uric acid	0·41
Extractive	14·59
Alkaline chlorides	4·34
„ sulphates	3·12
„ phosphates	2·93
Earthy phosphates	1·99

“ If we reduce these proportions to per-centage numbers, and compare with the per-centage composition of the constituents of healthy urine, they will stand thus :

	Per cent. composition of solid matter in this case.	Per cent. composition of solid matter in healthy urine.
“ Urea	26·80	44·50
Uric acid	1·10	1·50
Extractive	39·01	24·20
Alkaline chlorides	11·60	10·25
„ sulphates	8·34	12·35
„ phosphates	7·83	5·40
Earthy phosphates	5·32	1·80
	<hr/>	<hr/>
	100·00	100·00

"From which you will perceive that the phosphates and extractive are greatly in excess of the normal proportion. As the urine was alkaline, it is very probable that the urea had decomposed, and was therefore in much larger quantity in the fresh urine.

"H. L."

In reference to this last remark of Dr. Letheby, I may observe that in an analysis of the same urine made by myself whilst fresh, I found a larger proportion of urea than in any other sample of urine I had ever examined. The nearest approach was given by the urine of a patient suffering from acute rheumatism. The quantity of urea, determined by the volumetric method, was $\cdot 9$ grain in thirty grains of urine. I also found the specific gravity to be higher than it was ascertained to be when Dr. Letheby examined the urine. The proportion of urea should stand at 29.7 per 1000 parts of urine, instead of 10.

Dr. Letheby was kind enough to analyse two more samples of urine which were passed on the afternoon of the 11th and the morning of the 12th of January, 1861. His report is as follows:—"The last two samples of urine contain, as you state, very small quantities of sugar. The other properties are—

	11th January.	12th January.
"Colour . . .	pale amber .	pale amber.
Deposit . . .	white, and but little	white, and more.
Reaction . . .	slightly alkaline	more alkaline.
	traces of sugar	traces of sugar.
Sp. gr. . . .	1024	1014
Solid matter, per 1000	38.4	21.4

Per-centage composition of
the solid matters.

	11th January.	12th January.
"Urea	51.7	53.8
Uric acid, sugar, and extractives	25.1	18.8
Alkaline chlorides, sulphates, and phosphates	21.2	24.6
Earthy phosphates	2.0	2.8
	<hr/> 100.0	<hr/> 100.0

(For the twenty-four hours the means of these two analyses must be taken.—R. B.)

"The deposit, as in the last case, consisted of triple phosphates and oxalate of lime.

"H. L."

The total quantity voided in twenty-four hours was three pints and a half.

On the 12th of July, 1861, when it was considered that the disease was fairly arrested, I procured another sample of urine, which Dr. Letheby analysed. It gave—

"Colour	.	.	.	pale amber.
Reaction	.	.	.	faintly alkaline.
Sp. gr.	.	.	.	1014.
1000 grains evaporated	.	.	.	24·5 of solid matter.
Of the solid matter	.	.	.	7·0 was saline.
Of the saline matter	.	.	.	3·2 consisted of phosphates."

(The proportion of urea was 17 per 1000.—R. B.)

There were traces of albumen and sugar. The total quantity passed in twenty-four hours was two tenths of a gallon.

In a sample of urine passed on the 1st of December, 1860, I found 30·5 per 1000 of urea. The deposit, after two days' standing, showed very numerous epithelial scales, both of the columnar and tessellated varieties, and also sporules of the sugar-fungus, crystals of uric acid, and oxalate of lime. No albumen.

The characters of the urine may be briefly summed up as follows. During the active stage of the disease it contained a large excess of urea, of alkaline and earthy phosphates, and of extractive. It also almost constantly contained small quantities of sugar.

It is a matter of regret that more frequent examinations were not made.

The establishment of a form or stage of the disease characterised by the preservation of a yielding condition of the pelvic bones is one of very great interest. The question whether, in a given case, resort must of necessity be had to the Cæsarean section, or whether relief may not be obtained by some less formidable operation, may depend upon it.

This question is fully discussed in Kilian's work. He cites several cases in which the compressed pelvis could be opened out, either by the hand of the practitioner or by the child *in transitu*. One case is so striking that I hope I shall be excused for quoting it in some detail. It is contained in a letter which Kilian received in 1856 from Ed. von Siebold, who says—"I can only comply with your wish *obiter*, for the two accoucheurs concerned are dead. Tr— had long been burning with desire to perform the Cæsarean section. At length he thought he had a suitable case—a woman afflicted with osteo-malacia. He invited his colleagues (not me) to the operation, the deceased Os— with others. The woman already lay on the operating-table, when Os— begged permission to make another examination. He made it, and gradually passed in his whole hand, forcing the soft pelvic bones apart, turned the child, and brought it through living. This was on a Saturday; and he came to me early on the Sunday, and with tears of joy in his eyes told me— 'Yesterday I saved a woman from the Cæsarean section, and also from death.' "

Kilian extracts the following case from J. P. Weidmann's work 'De Forcipe Obstetricio,' 1813. The hand was passed through into the pelvis more easily than was expected, the feet of a dead child were seized, and the child was delivered without extraordinary difficulty. The mother died on the fifth day. The vagina was found in its posterior wall much mortified and the pelvis so misshapen and contracted that it was incomprehensible how the hand could have penetrated, and how the child could have been extracted.

Another case is taken from Von Ritgen, 1831. The wife of a surgeon, who, from much sitting and reading had a nervous fever, resulting in osteo-malacia. Von Ritgen, examining her when pregnant, found that it was possible by strong pressure to force the tubera ischii apart considerably. He brought on labour at the thirty-fourth week. The head of the child opened the outlet of the pelvis to a great extent, but this opening was not preserved afterwards.

The oldest case of this kind is that of John Welchman.

"The case of a woman who underwent the section of the symphysis pubis" ('London Medical Journal,' 1790). When the section was made, one pain drove down the nates, and another completed the delivery.

Another case is one of Mr. Barlow's, quoted by Dr. Hall. In 1794 a woman living in the deepest poverty was delivered by turning. During extraction Barlow observed that the pelvic bones opened, making room for the foetus.

H. G. Spengel¹ relates a case. A pluripara, with the bones highly contracted, had a dead child weighing six pounds and a half, extracted by Naegele's forceps, the bones yielding manifestly. In a subsequent delivery she was delivered by the feet, the head being afterwards perforated. Some yielding of the pelvic bones was again noticed. In a later labour the bones were more consolidated. The Cæsarean section was resorted to; the patient died five days afterwards. Spengel relates another case of a pluripara, in whom dilatation of the bones took place.

Litzmann's memoir, already quoted, contains a similar case. In one labour the feet presented; the labour was difficult; it was supposed that the foetus expanded. Pregnant again, the Cæsarean section was performed, and death followed in four days.

Dr. Breslau, in the case already referred to, says that during pregnancy it was difficult to pass the finger, but forcing in two fingers the joint pressure easily pushed the pubic bones asunder.

Dr. Tyler Smith also² adverting to the uses of the air-pessary, says—"I have also used the air-pessary before the time of labour, in a case of high deformity of the pelvis from mollities ossium, with considerable effect in separating the contracted bones. The case I refer to I saw with Dr. S. W. J. Merriman, and before the use of the pessary the tuberosities of the ischia were so close as scarcely to admit

¹ 'Diss. inaug. med. sistens dilatationem pelvis ex osteo-malacia coarctatæ in partu bis observatam,' Heidelberg, 1842.

² 'Medico-Chirurgical Transactions,' vol. xli, p. 191.

the passage of one finger. After the separation of the bones delivery was effected by turning."

A conjecture may arise that the dilatibility of the osteo-malacic pelvis may be increased during pregnancy, and especially about the period of labour. At this time the disease itself has often been observed to commence, to be renewed after remissions, and to be rapidly aggravated in intensity. This consideration invests the conjecture I have started with some probability. The case of Breslau proves that even in early pregnancy this dilatibility may exist. I can adduce no evidence bearing upon this point from my own case. The patient fortunately was not pregnant, and I did not feel it justifiable to use any violence without further motive than that of curiosity to ascertain the dilatibility of the pelvis.

The question of treatment is one that will appear to demand the more attention, if we are open to the evidence in favour of the curability of the disease. This point is contested by some. Thus, H. F. Kilian¹ says—"That osteo-malacia *heals* is beyond dispute, but whether it is ever *cured* is altogether doubtful, for it is proved by the clearest evidence that in numerous cases osteo-malacia, without any aid from art, has arrived at complete arrest, and afterwards to fundamental healing. On the other hand, there is not a single fact that proves a particular method of cure, and this alone or even chiefly, has had a curative effect."

Upon this absolute conclusion the first remark to be made is that Kilian calls in question the accuracy of the diagnosis in the cases reported as cured.

The conditions laid down by him as necessary to justify a diagnosis of osteo-malacia are excessively rigorous. He only regards "that as the true osteo-malacia of adult women, which proceeds from the pelvis, or which is, at least, in early succession concentrated upon this part." For him, whenever this does not happen, "the case wants its diagnostic signature and the essential of its existence." He disputes

¹ 'Das halisteretische Becken in seiner Weichheit und Dehnbarkeit während der Geburt erläutert,' Bonn, 1857.

the title of the case recorded in the 'Medico-Chirurgical Transactions' by the late Dr. Macintyre. As this case was seen by several Fellows of the Society, of whom I may mention Dr. Bence Jones and Dr. Watson, it will probably be concluded that the accuracy of Dr. Macintyre's diagnosis is not shaken, and that hence Kilian's definition is too arbitrary.

Not unconscious of the difficulty that so continually meets us in practice in assigning the respective measures of curative influence due to nature and to agents known and unknown, and to our remedies, where all are acting simultaneously, I think there is sufficient evidence to show that medical treatment has exercised a marked beneficial effect in some cases of osteo-malacia. Indeed, it may be justly argued from the admission of Kilian that since the disease sometimes remits and disappears, there are certain circumstances or certain agents that exercise a healing power. The physician surely need not despair of being able to trace out those circumstances and agents. And if he succeed, even partially, he may at once transfer at least a portion of those agents from the unknown or accidental to the available class of remedies. Arrived at this point, it may be fairly said that medicine has acquired a certain control over osteo-malacia.

The disease in its advanced stage—and it seldom comes under intelligent medical care at the commencement—is, no doubt, very formidable and intractable.

The history of the case now submitted to the Society may possibly not be considered complete. It may still be apprehended that the disease may reappear. But a complete remission of several months' duration, during which the patient describes herself as enjoying perfect health, may at least be taken as a temporary cure. In estimating the influence of treatment, I think a high place must be assigned to the cod-liver oil. There was no perceptible improvement in the patient's condition until she began to take this remedy. From that time her improvement was almost uninterrupted.

I have already mentioned that the use of cod-liver oil

was suggested to me by a case of Dr. Breslau. As it must be useful to adduce corroborative testimony of the effect of this remedy, I will cite briefly those cases in which it has been reported as beneficial.

Dr. Breslau's case.—Mrs. V—, near Zurich, æt. 42; never scrofulous or rhachitic; married at twenty-one; had three abortions during the first three years; living in poverty; then had two children at term; then one delivered by turning. Her health began to fail rapidly after a miscarriage, attended by severe hæmorrhage, a year ago. A dull pain affected the spinal column. She became pregnant in April. In November the spine and pelvis were much affected. The pulse was seldom below 100; clammy sweats; the slightest movement was attended with pain. The urine had a sp. gr. of 1005; it was free from albumen and sediment; phosphates were not increased; reaction acid. Induction of labour was decided upon, but labour set in spontaneously on the 12th of November. A dead child, weighing two pounds and a half, was expelled. The patient began to complain greatly of pain in her bones; cough, attended by profuse discharge from the lungs; and a low febrile state. She took large doses of cod-liver oil, Seltzer water and expectorants. On the 15th of January she had so recovered that the pains in the bones had ceased, the cough was better, and she had gained strength.

Dr. Litzmann¹ also relates a case which, he says, recovered tediously under cod-liver oil, good food, and Bavarian beer. Becoming again pregnant, she died in consequence of a Cæsarean operation.

¹ Opus citatum.