SKELETAL MANIFESTATIONS IN EARLY ACQUIRED SYPHILIS

By

A. K. DATTA

Skeletal involvement in early acquired syphilis has long been recognised. Neisser demonstrated the presence of Treponema pallidum in the bone narrow within few hours of intratesticular inoculation in experimental animals. Turner and Hollander (1957) while discussing different aspects of experimental treponematosis pointed out that following intratesticular inoculation in rabbits, a small proportion of animals develop generalized lesions of skin and sometimes of long bones. " Bone lesions follow much the same pattern as skin lesions as regards location and timing. Lesions occur most frequently along the bones of the foreleg, the metatarsals, the nose and the tail. The lesion is predominantly a periostitis, less often there is invasion of the bone, occasionally severe enough to lead pathologic fracture (Chesney and Turner, unpublished observation, 1931)". Such localisation may be due to a somewhat lower temperature than that of the whole body. All strains of syphilis spirochetes studied appear to have the capacity to invoke skin and bone lesions in rabbits, but considerable variation has been observed from strain to strain in this respect.

In human beings treponemes may invade the bony tissue during the incubation period and the primary stage. Skeletal manifestations appear in the secondary stage only when large number of treponemes are present, being distributed by way of the circulation during the period of generalization and during a relapse. It is said that rich lymphatics of bone marrow and periosteum, dependent position of long bon s and slow circulation are the factors responsible for localization of treponemes in bones. To these, low surface temperature and trauma may be added as important predisposing factors for a particular bone or joint to be involved.

There is no doubt that the actual incidence of skeletal involvement during early acquired syphilis is higher than what is clinically observed. This may be due to mildness of symptoms or to deeper situation of some of the skeletal units. Error in diagnosis commonly occurs due to low index of suspicion and the patients with vague symptoms of bone and muscle pain are very often dismissed being placed into the " catch basket of rheumatism ".

Clinically again the cases may vary not only subjectively from just localized or diffused ache to severe constant boring pain with nocturnal exacerbation but also objectively from slight bony tenderness to severe osteitis and hydrathrosis. Can this variation in individuals be due to different strains of treponemes as observed in experimental animals? Or does it depends on the constitution of the patient, his mode of life and environment and the treatment he has undergone before symptoms appear? The involvement of bones of the extremities specially those

Received for publication on 3-8-1964.

which are superficially situated is commonly observed, but nasal and metatarsal bones as has been seen in experimental animals, are extremely rare. It is worth noting that osteoperiostitis of the nasal process of superior maxillae resulting in a condition known as goundou may occasionally be seen in yaws.

It was in the year 1943 that Mahoney first introduced Penicillin in the treatment of syphilis. More than twenty years have passed since then. One may be interested to know about any possible change in the incidence or pattern of skeletal involvement in early acquired syphilis in the penicillin era than what was observed before. The purpose of this paper is to present various skeletal manifestations observed in early acquired syphilis, its frequency, relation to the appearance of chancre and other lesions of secondary or relapse and any change in the pattern in comparison with prepenicillin era.

The present study includes 300 males with secondary syphilis admitted in V. D. indoor, Medical College Hospital, Calcutta during the period 1954-63. Not a single case of relapse was admitted during that period. 18 out of 300 showed skeletal involvement in some form or other.

TABLE I.

Showing incidence as observed by other authors.

Authors.			
Wile and Snear	(1916)	Early syphilis	36%
Stokes et al	(1944)	Secondary syphilis	Bone complaints 5% (excluding headache) Nocturnal ostalgia 2% Periostitis 1% Arthritis 1% Headache 24% (excluding occipital)
		Relapse	0.4%
Burke	(1940)	Secondary syphilis	Bone pain 9% (excluding headache) Arthralgia and myalgia 14% Headache 32% (including occipital)
Present study		Secondary syphilis	Bone and joint pain 5.33% Painless swelling of joints 0.66% 6.0% Arthralgia 2.66% Ostalgia 1.66% Ostalgia & Arthralgia 0.66% Osteoperiostitis 0.33% Hydrarthrosis 0.66%

TABLE II

Showing detail of 18 cases with skeletal manifestation.

No.	Name, age etc.	Symptoms	Signs	Investigations	Treatment	Result
1.	D. S. H, Md, Student 25	Rash 4 week Pain knee joints 4 weeks	Maculopapular rash Mucous patch prepuce Generalised Lymphadenopathy Sear on anus	Blood V. D. R. I. 32 dil CSF. cells 3/cmm VDRL Neg WR Pos	Diamine Penicillin 1.2 mega Weekly 4	Cured
2.	B. K. J. H, Md, Cook 28	Rash 8 weeks Pain back and legs 4 weeks Slight deafness 3 weeks Fever 1 week	Papular rash Cervical lymph adenopathy Tenderness leg bones both side.	Blood VDRL 64 dil	Crystalline Penicillin 6.0 mega	Do
3.	B. K. D. H. Single Business 25	Rash palms and soles 4 weeks Swelling both ankles 4 weeks	Papular rash palms and soles Generalized lymph adenopathy Hydrathrosis both ankles	Blood VDRL 16 dil X' Ray N. A. D.	6.0 mega	Do
4.	R. C. H. Md, Labourer 30	Sore on penis 6 weeks Pain right shoulder & left leg 2 weeks Malaise 2 weeks Rash 1 week	Nearly healed chancre on the panis Tenderness right shoulder and left leg bones	Blood VDRL 64 dil	6.0 mega	Do
5.	M. B. H. Single Service 30	Sore on anus 4 weeks Swelling left knee, left wrist and left elbow 2 weeks	Maculopapular rash Condyloma lata on anus Hydrarthrosis left wrist, left knee and left elbow	D G Pos Blood VDRL 64 dil C. S. F. normal X' Ray N. A. D.	6.0 mega	Do

6.	S. W. M, Md, Labourer 32	Headache 4 weeks Pain forearm and leg bones 4 weeks Rash 6 weeks	Maculopepular rash Tenderness both parietal bones, forearm and leg bones	Blood VDRL 64 dil C. S. F. normal	7.8 mega	Do
7.	K. C. D. H. single Labourer 14	Sore on anus 8 weeks Difficulty in walking 6 weeks	Condyloma lata on anus Tenderness both knees	D. G. Pos Blood VDRL 128 dil	10.2 mega	Cured
8.	S. D. M. Single Labourer 18	Sore on anus 6 weeks Difficnlty in walking 4 weeks	Condyloma lats on anus Tenderness both knees	D. G. Pos Blood VDRL 32 dil	10.2 mega	Do
9.	S. K. M. H. Single Student 16	Sore on anus 3 weeks Sore on Penis 2 weeks Difficulty in walking 2 weeks	Condyloma late on anus and scrotum Mucous patch on prapuce and glans Tenderness both knees and ankles	D. G. Pos Blood VDRL 64 Dil	6.0 mega	Do
10.	A. M. H. Md, Service 40	Rash 8 weeks Headache 8 weeks	Maculopapular rash Tenderness parietal region both side Cervical lymph adenepathy	Blood VDRL 64 dil	6.0 mega	Do
11.	S. A. M, Single Labourer 15	Sore on auns 12 weeks Difficulty in walking 4 weeks	Condyloma lata on anus Tenderness both knees and ankles	D. G. Pos Blood VDRL 64 Dil	10.0 mega	Do
12.	H. D. H, Md, Labourer 30	Rash 4 weeks Pain leg bones both sain 4 weeks	Maculopapular rash Tenderness leg bones both side & clavicles Generalized lymph adenopathy	Blood VDRL 64 Dil	6.0 mega	Do
13.	P. S. H. Md, Labourer 28	Rash on palms and soles 4 weeks Pain knees joints 1 week	Papular rash on palms and soles Tenderness knees and ankles	Blood VDRL 64 Dil	6.0 mega	Do

No.	Name, age etc.	Symptoms	Signs	Investigations	Treatment	Result
14.	B. P. H. Md, Labourer 26	Painful swelling left forearm & right leg 3 weeks Sore throat 2 weeks	Papular rash on face Healed chancre edge of phimotic prepuce Firm, tender swelling middle of left forarm right leg Generalized lymph adenopathy	Blood VDRL 64 Dil X'Ray localised cortical destruction and periosteal bone formation in shaft of left radius and ulnea & right tibia	6.0 mega	Cured
15.	H. P. H. Md, Labourer	Rash 4 weeks Pain leg bones 2 weeks	Maculopoepular rash Generalized lynph adenopathy Tenderness both leg bones	Blood VDRL 64 Dil	6.0 mega	Do
16.	K. T. H. Single Labourer 17	Sore on penis 8 weeks Rash 4 weeks Pain joints 4 weeks	Healing chancre on prepuce Maculo papular rash Tenderness all big joints specially knees	G. D. Pos Blood VDRL 64 Dil	6.0 mega	Do
17.	R. K. D. H. Md, Labourer 25	Rash 2 weeks Paid leg bones 1 week	Maculo papular rash Generalised lymph adenopathy Tenderness both leg bones	Blood VDRL 120 Dil	6.0 mega	Do
18.	K. T. H. Single Barbar 17	Sore on penis 8 weeks Pain joints 4 weeks	Healing chancre, on penis Maculopapula rash Tenderness kness, elbows and ankles.	D. G. Pos Blood VDRL 64 Dil	6.0 mega	Do

10 were married. Age varied from 14 to 40 years, average being 24.8 years. 15 admitted exposures; of them 5 were the victims of sodomy and showed condyloma lata on the anus. In all, skeletal manifestations appeared within twelve weeks of exposures. 8 had either history or evidence of chancre skeletal manifestations appeared between 4 to 6 weeks after the appearance of chancre. Only one had one unknown intramuscular injection before secondary lesions appeared.

TABLE-III.

Number of cases showing different manifestations

Symptons			Signs	
Rash	13	...	Rash–Maculopopular	9
			Papular	4
Bone pain	7	...	Generalised lymph adenopathy	10
Joint pain	7	...	Condyloma lata	5
Sore on anus	5	...	Tenderness joints	8
Difficulty in walking	4	...		
Sosr on penis	3	...	Tenderness bones	5
Headache	2	...	Tenderness of bones and joints	2
Swelling of joints (Painless)	2	...	Chancre or healing chancre	4
Sore throat	1	...	Hydrathrosis	2
Deafness	1	...	Mucous patch	1
Fever	1	...	Tender, sharply localised bony swelling middle of	
Malaise	1	...	left forearm and	
Painful swelling left forearm & right leg	1		right leg	1

Typical bone pain was present in 5. 13 out of 18 had rash. In 5 of the 13, skeletal manifestations appeared along with the rash but in 7 from 1 to 4 weeks after the appearance of rash. In one, arthralgia right shoulder, ostalgia left leg bones and malaise appeared one week before the appearance of rash and four weeks after the appearance of chancre.

Chancre or healing chancre was present in 4 cases. One had sharply localised extremely tender swelling over the middle of left ulna and right libia.

TABLE-IV

Showing number of cases with involvement of different bones and or joints.

Bones		Joints		Bones and Joints	
Parietals	1	Knees	3	Leg bones both side and knees	1
Leg bones both sides and clavicles	1	Ankles	1		
Left ulna and radius & right tibia	1	Knees & ankles	3	Rt shoulder & left leg bones	1
Leg bones both side	2	Left knee, left wrist and left elbow	1		
Parietal bones, forearm and leg bones both sides	1	Knees, ankles and elbows	1		
		All big joints specially knees	1		
	6		10		2

The above table shows that long bones of the extremities, knee and ankle joint are commonly involved; joints more than the bones.

Seven had dark field positive lesions. Blood V.D.R,L. was positive in high titre in all. W.R. of C.S.F. was positive in one of the three examined.

All but one were treated with inj. crystalline Penicillin G-1 lac unit intramuscularly, four hourly round the clock for a minimum dose of 6.0 meg a unit to a maximum of 10.2 meg a units 4 weekly injection of Diamine penicillin 1.2 mega unit each was given to one only. Results were excellent in all.

DISCUSSION

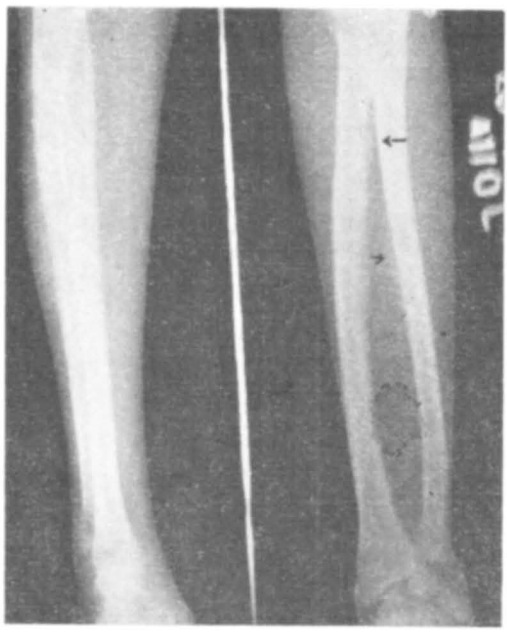
The incidence of skeletal involvement in this study closely follows that of Stokes et al. Though the cases were distributed during the period of last ten years, the group has lost much of its representative character due to noninclusion of female cases for lack of adequate data. Incidence of relapse could not be determined as not a single case of relapse was admitted during that period probably due to its rarity after the advent of penicillin.

Eightythree percent of the cases admitted exposures and none had history of trauma. Manifestations appeared within twelve weeks of infection and four to six weeks after the appearance of chancre. There was bone pain in seven, joint pain in seven, headache in two and swelling of joints in two. Five out of seven had

bone pain of classical description. Only one had painful swelling left forearm and right leg.

Rash was the commonest concomitant secondary lesion; next came the lymph adenopathy. In five, skeletal manifestations appeared along with rash. in seven one to four weeks after and in one, one week before the rash. Four were with chancre or healing chancre; condyloma lata were present in all the five victims of sodomy and mucous patch in one.

According to King and Nicol (1964), joints are rarely involved in secondary syphilis but occasionally effusion occurs. The present study shows that joints were more commonly involved than the bones. Of the joints, knees and ankles were predominently involved and often bilateral. So also were the long bonhs of the extrimities than that the smal ones. Involvement was very often of multiple bones and joints.



Half of the cases had tenderness of joints, one third of bones and one third had both. Joints were involved in 12 (4%) cases as against 1% of Stokes et al. Two of them had moderate degree of hydrarthrosis, painless, without limitation of movements and without any radiological abnormality. Tender joints showed no restriction of movements. Not a single case of arthritis was observed. Localised tenderness of bone was seen in five and diffuse in three. Localised tenderness of parietals bones was present in two. Unfortunately radiological examination was not done. Thompson and Preston (1952) quoted by King (1964), have shown rediological lesions of skull in 8.7% in 80 consecutive case of secondary syphilis. Two had concurrent lesions of bones of the extrimities. Though involvement of parietal and frontal bone was common, posterior part of skull was also involved. Symptoms were relieved within 48 hours of treatment but healing of bone

lesions was slow. The above observation justifies the suggestion put forward by Squiries and Weiner (1939) for routine X'ray of skull in secondary syphilis. Sharply localised tender point on skull what is thought to be due to early cranial osteo-periostitis by Stokes et al was not observed in this study.

"The osteoscopic pain" is due to periostitis but rarely with any objective sign (King, 1964) according to Stokes et al is due do to acute early osteitis. Periostitis is said to be the commonest manifestation of early syphilis but none in this series had clinical early periosties. In one, there was sharply localised extremely tender swelling on the middle of the left ulna and right tibia which radiologically showed cortical destruction and periosteal bone formation. Bone formation due to periostitis in early syphilis has been mentioned by Stokes et al (1944).

Cases with destructive bone lesions during the secondary stage were recorded by Mandlebaum and Seperstein (1936) following blood transfusion, Burrows (1937) leading to pathological fracture of the hunerus, Newman and Saunders (1938), Squires and Weiner (1939), Pian and Frazier (1941), Wile and Welton (1941), Reynal and Waserman (1942) and Cox (1950). Thompson et al (1944) reported two cases of osteomyelitis of skull following injuries. Both responded well to penicillin with disappearance of clinical symptoms and healing of destructive lesion of skull.

Long back, before the discovery of Taeponema Pallidum and W. R. Bumstead and Taylor (1883) wrote, "the bones most liable to early affections are those of the cranium, the ribs, the sternum: clavicle and tibia. According to Mauriac these lesions may occur even before cutaneous manifestation of syphilis. The lesions are generally accepted by others of secondary stage, they may occur even before disappearance of the primary sore. A mild form of hydrarthrosis is sometimes induced by their proximity to a joint".

To this, the present study shows that we have only a few things to add.

In one, positive W. R. of C. S. F. indicates possible a symptomatic involvement of central nervous system.

Result of treatment with penicillin was excellent. Symptoms disappeared within 48 hours of the beginning of treatment except in the cases of hydrarthrosis and osteoperiostitis. They were also practically cured by the time the treatment was complete.

SUMMARY

6% of 300 secondary syphilitics had skeletal manifestations within 12 weeks of infection.

About one third had bone complaint, half of joints and rest of both.

Typical bone pain was present in about one fourth of the cases.

Of 18, 8 had tenderness of bones, 10 of joints and 2 had hydrarthrosis.

One had acute osteoperiostitis left ulna, left radius and right tibia.

13 had rash and 10 lymphadenopathy.

Response to penicillin therapy was excellent.

FIGURE

X'Ray of left redius and ulna showing localised cortical destruction with periosteal reaction (Case-14).

ACKNOWLEDGEMENT

I am grateful to the Superintendent, Medical College Hospitals, Calcutta for his kind permission to publish this paper. I am also grateful to Dr. Sourin Ghosh F.R.C.S., Professor of Venereology and Sexual Disorders, Medical College, Calcutta for his kind guidance.

REFERENCES

Burke, E. T. (1940)-Venereal Diseases, H.K. Lewis & Co. Ltd., London.

Bumstead J. Freeman and Taylor W. Robert (1883)-The Pathology and treatment of Venereal Diseases, Henry Kinpton London.

King, Ambrose and Nicol Claude (1964)- Venereal Diseases, Cassell London.

King, Ambrose J and Catterall, R.D. (1959)-British Journal of Venereal Diseases 35, 1, 116.

King, Ambrose (1964)-Recent Advances in Venereology, J & A. Churchill Ltd., London.

Rangiah, P. N. (1960)-The Antiseptic, June.

Stokes, Beerman and Ingram (1944)-Modern Clinical Syphilology, Saunders, Philadelphia.

Thompson, R.G. Leedham, C.L. and Haily, H (1949)-American Journal of Syphilis, Gonorrhoea and Venereal Diseases quoted in abstract of Urolog and Cutan Review Vol. 53, 1949.

Turner, T.B. and Hollander, D.H. (1957)-Biology of The Treponematoses, W.H.O. publication.

Willcox, R.R. (1950)-A Text book of Venereal Diseases William Heinemann, London.