

SKELETAL MANIFESTATIONS OF LATE SYPHILIS

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That Syphilis is a disease of antiquity has been confirmed by the discovery of syphilitic bones at different places of the globe specially in the ancient burial places in North America. "Almost universally symmetrical" involvement and evidence of periostitis, osteitis and exostosis of tibia, fibula, radius, sternum and cranial bones indicate unmistakable syphilitic involvement. "The diseased bones which I collected," says Professor Joseph Jones, the discoverer, "from the stone graves of Tennessee and Kentucky, are probably the most ancient syphilitic bones in the world".

Demonstration of *Treponema Pallidum* in the bonemarrow of experimental animal, in the periosteum, bonemarrow and also in the line of ossification of dead syphilitic foetuses, in the bone lesions and synovial fluid of a syphilitic joint has proved its role in the pathogenesis of skeletal lesions.

It is said that rich lymphatics of bonemarrow and periosteum, dependent position of long bones and slow circulation are important factors for localisation of *Treponemes* in bones. To these, low surface temperature and trauma may be added as important predisposing factors.

Twenty years have passed since Mahoney et al first introduced Penicillin as an anti-treponemal drug in the year 1943. One may be interested to know about any change in the incidence and the pattern of late skeletal manifestations, so many years after the introduction of Penicillin.

The aim of the present study is to collect as much information as possible regarding the late skeletal lesions of Syphilis seen in the Department of Venereology and Sexual Disorders, Medical College, Calcutta during the last few years.

The total number of cases with 'late skeletal' lesions under this study is 88, 59 males and 29 females.

TABLE I

Showing cases of Syphilis and late skeletal on year basis.

Year	Total cases of Syphilis		Late Skeletal		Total late skeletal	Percentage
	Male	Female	Male	Female		
1954	1589	—	5	—	88	Male 0.62% Female 1.52% Total 0.77%
1955	1140	—	4	—		
1956	1073	—	4	—		
1957	965	—	6	—		
1958	1052	—	4	—		
1959	1047	—	8	—		
1960	837	650	4	4		
1961	728	492	6	10		
1962	526	438	9	6		
1963	528	321	9	9		
Total :	9535	1901	59	29	88	

The data of female cases from 1954 to 1959 are inadequate and hence left out. If we consider the last four years only, the number of 'late skeletal' becomes 57 out of 4570 syphilitics (1.25%). Of them 28 were males (1.05%) and 29 females (1.52%). It can also be seen from the above table that during last three years the incidence of 'late skeletal' remains practically constant though the clinic incidence of Syphilis is on the decline.

TABLE II

Showing number of cases under study according to sex and mode of infection.

Sex	Acquired	Congenital	Unspecified	Total
Male	16	32	11	59
Female	15	6	8	29
	31	38	19	88

In the unspecified group, nature of infection could not be determined due to inadequate anamnesis and/or collateral evidence. It is worth noting that the number of male congenitals is twice that of acquired which is practically reversed in females and the number of acquired males during the ten years period is nearly the same as that of the females during the last four years only.

TABLE III

Showing number of cases with different age groups

Years	Number of cases	
	Male	Female
Up to 10	5	2
11 - 20	26	10
21 - 30	14	8
31 - 40	5	6
41 - 50	7	0
51 - 60	2	3
	59	29

58 (66%) were between 11 to 30 years. Age of the 'unspecified' group varied between 18 to 36, average being 22 years. Age of the congenitals varied between 3 and 30 average being 14.5 years.

TABLE IV

Showing number of cases with different occupations

Labourer	...	...	...	...	41
Student	...	...	...	...	17
Housewife	...	...	...	...	18
Prostitute	...	...	...	...	3
Teacher	...	...	...	...	1
Business	...	...	...	...	1
Nil	...	...	...	...	7

Nearly 48% were labourers who were liable to different types of trauma and low nutrition.

Of the acquired group, 16 males admitted exposures beyond social folds. 14 of them and 3 females had definite history of genital lesions and/or rash. The shortest interval between infection and manifestation was 3 years, longest 41 years and the average being 15.5 years. 8 had inadequate treatment and 23 none. Of the 4 husbands available for investigations 2 were seropositive and the other two had some sort of treatment (? incomplete).

18 mothers of the 38 congenitals were available for examinations. 14 gave bad obstetrical histories and 3 were seropositive. 2 of the 5 fathers available were seropositive.

Definite history of trauma was present in 4 (3 males and 1 female) : 3 acquired and 1 congenital.

TABLE V
Showing duration of complaints

Minimum	...	...	1 month
Maximum	...	...	15 years
Less than 1 year	...	...	40
Between 1 to 5 years	...	...	29
More than 5 years	...	...	14
No complaint	...	...	5 (all congenitals with Interstitial Keratitis. Skeletal lesions were discovered on clinical or radiological examination).

TABLE VI
Number of cases with different presenting manifestations.

	Acquired		Congenital		Unspecified	
	Male	Female	Male	Female	Male	Female
Swelling	9	2	8	1	1	-
Pain	6	2	10	-	1	1
Nasal voice	-	-	2	-	1	-
Nasal voice with regurgitation	-	-	3	-	1	-
Regurgitation	1	-	2	-	-	-
Ulcer	3	2	2	-	4	-
Depressed nose	1	4	1	-	1	4
Perforation nasal septum	-	-	-	-	-	1
Headache	-	1	-	1	-	-

TABLE VI (contd.)

	Acquired		Congenital		Unspecified	
	Male	Female	Male	Female	Male	Female
Weakness lower limbs	1	-	-	-	-	-
Vertigo	-	-	-	-	1	-
Watering eyes with redness	-	-	6	1	-	1
Photophobia	-	-	5	1	-	-
Hoarseness of voice	-	-	1	-	-	-
Short of hearing	-	-	-	1	-	-
Corneal opacity	-	-	-	1	-	-

Of the 11 active gummatous ulcers 2 were on the scalp, 1 on sternum, 5 on nose and 3 on legs. Pain and swelling were two most common manifestations and next came the gummatous ulcers and depressed nose.

TABLE VII

Showing number of cases affecting different members of skeletal system

Bone or joint.	Acquired		Congenital		Unspecified	Total
	Male	Female	Male	Female		
Frontal	3	-	-	-	2	5
Parietal left	1	-	-	-	-	1
Temporal right	-	-	-	-	1	1
Zygomatic right	1	-	-	-	-	1
Hard palate	2	4	9	2	4	21
Mandible	1	-	-	-	1	2
Nose	2	9	10	3	12	36
Clavicle right	3	-	2	-	-	5
Clavicle left	1	-	2	-	1	4
Sternum	2	1	-	-	1	4
Rib right	1	-	-	-	-	1
Humerus right	2	-	-	-	-	2
Radius right	-	-	2	-	1	3
Radius left	-	-	3	1	2	6
Ulna right	-	-	3	-	1	4
Ulna left	-	-	4	1	2	7
Tibia right	1	2	10	-	2	15
Tibia left	1	2	12	1	2	18
Fibula right	-	-	3	-	-	3
Fibula left	-	-	3	-	-	3
Knee right	3	-	3	-	-	6
Knee left	1	-	3	-	-	4

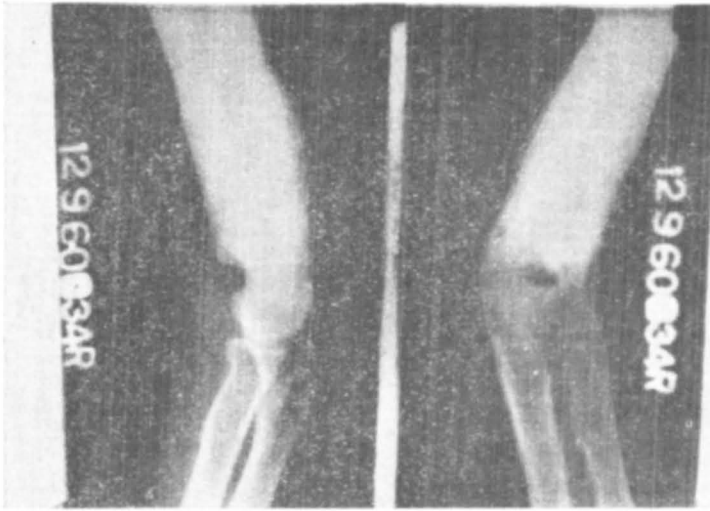


Fig. 1.
Skiagram of right humerus showing osteoperiostitis.

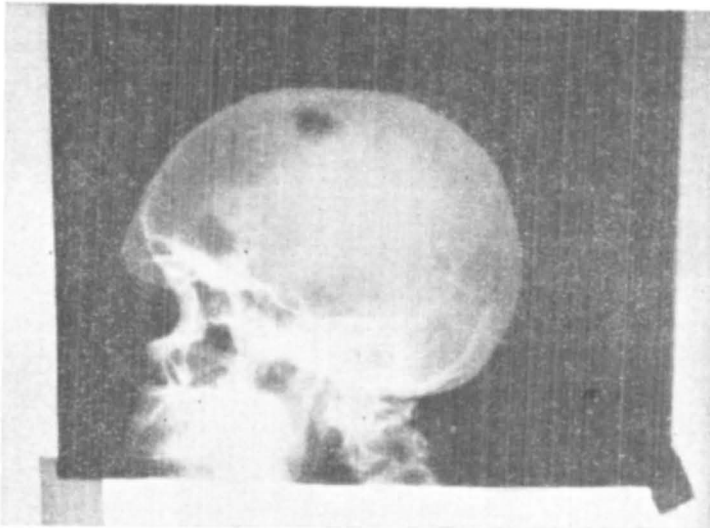


Fig. 2
Lateral view of skull showing multiple areas of gummatous destruction.

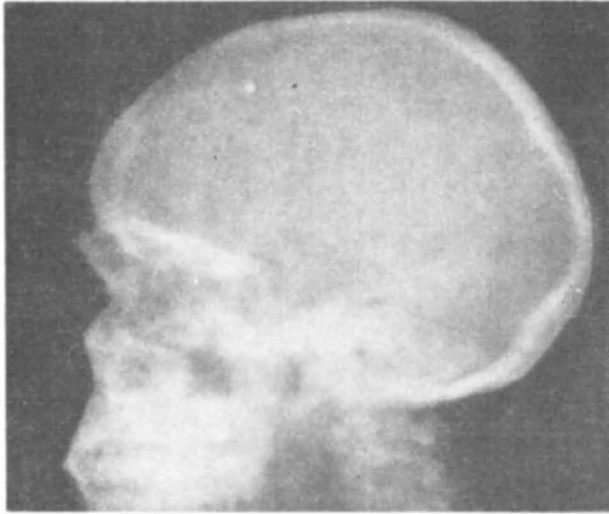


Fig. 3

Lateral view of skull showing destruction of both tables of frontal bone which is unusual in syphilis.

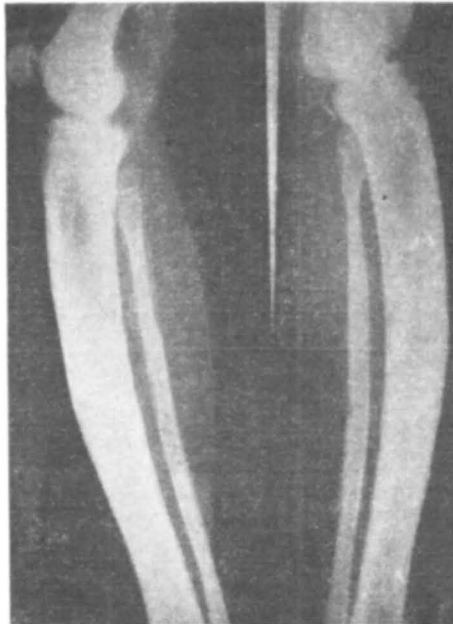


Fig. 4

Skiagram of right leg bones showing diffuse gummatous osteoperiostitis in a congenital syphilitic of 18 years.

Commonest structure involved was nose. Then came hard palate, left tibia and right tibia in order of frequency. Not a single case affecting the spine was recorded.

TABLE VIII

Cases showing Involvement of different bones and joints.

Frontal ...	1	Nose and both Clavicles	1
Frontal and Parietals	1	Tibia, Fibula. Radius and Ulna of both sides	1
Frontal and 1 Humerus	1	1 Radius, 1 Ulna, both Tibia and Fibula	1
Mandible ...	2	Tibia and Fibula both side	1
Hard palate ...	11	Clavicles	1
Hard palate and nose	8	Radius, Ulna and Fibula of both side	1
Nose	25	Frontal, Hard palate and Nose	1
Sternum and Clavicles	1	1 Tibia and 1 Fibula	1
Sternum, ...	3	Frontal, 1 Temporal, 1 Clavicle, 1 Radius, 1 Ulna and 1 Tibia	1
1 Clavicle ...	1	Knees	4
1 Humerus ...	1	1 Knee	2
1 Knee and 1 Tibia	1		
1 Tibia ...	1		
Hard palate, Tibia and Fibula of both sides	1		
Hard palate and both Tibia	1		
Both Tibia and Ulna	1		
Both Tibia ...	5		

The above table shows that involvement of multiple units was fairly common.

TABLE IX

Number of cases with different types of lesions

	Periostitis	Gummatous osteoperiostitis or osteo chondritis diffuse or localised	Synovitis	Neuropathic
<i>Acquired</i>				
Male	2	14	-	3
Female	-	15	-	-
<i>Congenital</i>				
Male	5	28	3	-
Female	1	5	-	-
<i>Unspecified</i>				
Male	1	12	-	-
Female	1	7	-	-
	10	81	3	3

9 had two types of lesions concurrently. Out of 81 gummatous variety, 58 were localised, mostly affecting nose and palate.

TABLE X
Showing details of cases with joint lesions

No. of cases	Sex	Age	Joint or joints involved	Type of involvement	Main or associated clinical feature	Blood and C.S.F.
1.	M	14	knees	Synovitis	I.K. Periostitis	V.D.R.L. Pos 32 dils
2.	M	17	-do-	-do-	-do-	V.D.R.L. Pos 16 dils
3.	M	21	-do-	-do-	I.K.	V.D.R.L. Pos 8 dils
4.	M	45	Rt knee	Neuropathic (Hypertrophic)	Tabis Dorsalis	V. D. R. L. Pos 1 dil C.S.F. Normal
5.	M	33	-do-	-do- (Hypertrophic)	Tabis Dorsalis and Gumma Rt Tibia	C.S.F.-Cells 7/cmm V.D.R.L.-Neg
6.	M	56	-do-	-do- (Osteoarthritic)	Tabis Dorsalis	V. D. R. L. Pos 1 dil C.S.F. Normal

No other form of the joint lesion was recorded.

23 congenitals (18 males and 5 females) showed collateral evidences.

TABLE XI

Showing congenital cases with different concomitant manifestations

Facies - 3	Lymphadenopathy
Active I. K. - 9 (7 males and 3 females)	Generalised - 2
	Epitrochlear - 1
Old I. K. 2	Hepatomegaly - 2
Deep Keratitis - 1	Deafness (nerve) - 1 (female)
Iridocyclitis - 1	Stenosis of nose - 1
Optic Neuritis - 1	Duboi's little finger sign 1
High arch palate 2	Atrophic Rhinitis - 1
Hutchinson's teeth - 4 (3 male and one female)	Mental ill development 1
Moon's tooth - 1	

Eye lesions were the commonest concurrent feature being present in 14 out of 38 cases. Next came the dental signs.

Of acquired group 8 males showed collateral evidences.

Neurological manifestations were present in 8.

Tabes Dorsalis - 3	} Acquired
Left recurrent nerve palsy - 1	
Auditory neuritis - 1	} Congenital
Optic neuritis - 1	
Facial nerve palsy - 2	} unspecified
(lower motor neuron type)	

Syphilitic aortitis was present in one.

TABLE XII
Showing number of cases with different serological status

Type	Negative					Positive					Total	
	1	4	8	16	32	64	128	256	512	1024		
<i>Acquired</i>												
Male	1	4	2	-	3	2	1	1	1	-	-	16
Female	2	4	1	2	2	-	2	1	1	-	-	15
<i>Congenital</i>												
Male	2	3	3	3	4	6	7	2	1	-	1	32
Female	1	1	-	1	1	-	-	-	1	1	-	6
<i>Unspecified</i>												
Male	-	2	3	-	1	1	4	-	-	-	-	11
Female	2	-	1	2	-	1	1	1	-	-	-	8
	8	14	10	8	11	10	16	5	4	1	1	88

8 (9%) were seronegative, 24 were positive upto 4 dils and 45 between 8 and 64 dils.

Cerebrospinal fluid was examined in 25 cases. 17 of them were normal so far cells, sugar and chloride contents were concerned. All were V.D.R.L. negative.

TABLE XIII
Showing details of abnormal C.S.F. cases

No. of cases	Age	Clinical condition	C.S.F.		Blood V.D.R.L.	Type
			Cells Cmm	Protein mgm %		
1.	24	Facial nerve palsy Perforation nasal septum	8	25	32	Unspecified
2.	24	Gumma mandible	18	50	4	Acquired
3.	16	I. K. both eyes, Hutchin- nson's teeth, Depressed nasal bridge	15	105	64	Congenital
4.	59	Gumma orbit	7	156	16	Acquired
5.	33	Tabes Dorsalis, Charcot's right knee, Gumma upper end of rt tibia	7	156	16	Acquired
6.	18	Osteoperiostitis both tibiae	nil	231	64	Congenital
7.	22	Periostitis left tibia Gummatous ulcer left leg, Depressed nasal bridge	4	8	64	Congenital
8.	27	Osteoperiostitis frontal, 3 right temporal, left clavicle, left radius and ulna, left tibia, Facial nerve palsy right side.	3	100	4	Unspecified

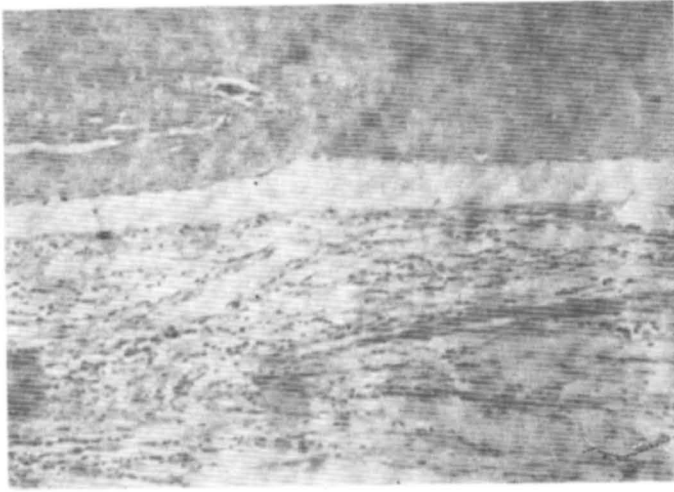


Fig. 5 (a)

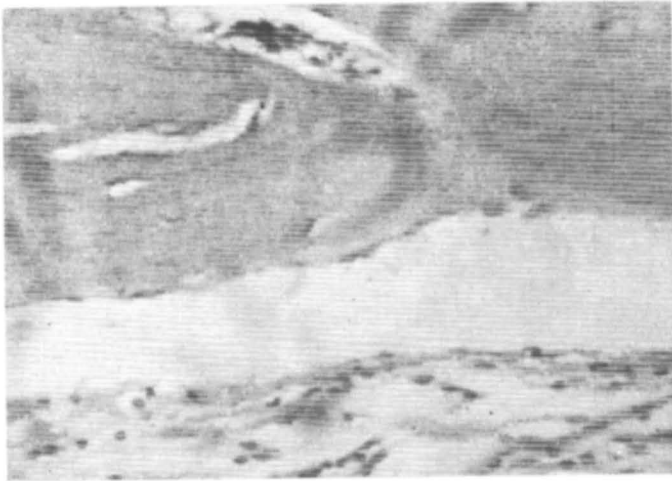


Fig. 5 (a) & Fig. 5 (b)

Microphotograph of biopsy from right tibia of the above patient (Fig. 4) showing structure of compact bone with evidence of dilation of Haversian canal with a few inflammatory cell infiltration and condensation and marked calcification of bone tissue around them.

Colloidal Gold test was not done due to lack of facilities.

Of the 62 patients examined radiologically 61 showed evidence in favour of syphilis and in one no lesion was detected (periosteal gumma of sternum).

Cases were treated with minimum dose of 10 mega units of Penicillin to a maximum of 20 mega units with slight modification in individual and total dosage in some of the congenital syphilitic children. Other ancillary treatments were undertaken as and when required.

Treatment was complete in 72, incomplete in 11 and nil in 5. Result was excellent in 12, improved with relief of symptoms in 38 and no demonstrable improvement in 32.

DISCUSSION

Percentage of skeletal involvement during the late stage of Syphilis could not be determined due to lack of adequate data. In this series the overall incidence of late skeletal comes to about 0.77 percent of total syphilis.

During the last few years though the clinic incidence of syphilis is decreasing, that of late skeletal remains the same if not increasing. It is worth noting that about two third of them were referred to us by other departments of the hospital specially Ear, Nose & Throat, Orthopaedic and Eye departments.

Of the 88 cases, 38 were definitely congenital which is an index of the prevalence of congenital syphilis in and around the city of Calcutta. In 19, nature of

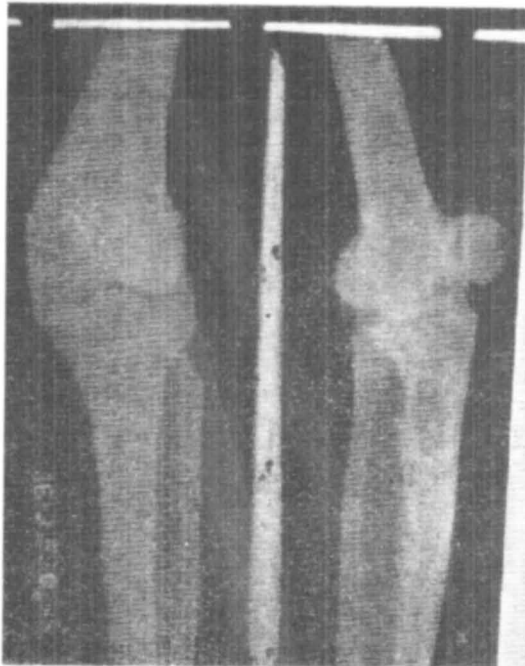


Fig. 6

Skiagram showing Charcot's joint right knee and gumma of the upper end of right tibia.

infection could not be determined. It is possible that some of them acquired infection during their childhood. From this study it appears that females were affected slightly more than the males when we considered both acquired and congenital together. Because of large number of congenital cases, 66% of this series were between 11 to 30 years. Most of the students belonged to the congenital group. Labourers constituted the largest single group reminding trauma as one of the possible predisposing factors. Definite history of trauma followed by appearance of skeletal lesions at the site of trauma were obtained only in 4 cases.

Inadequate treatment during early stage in 8 could not prevent late skeletal involvement.

Predominant bone lesion was of gummatous type either diffuse or localised.

The commonest structure involved in this series was the nasal architecture (40%), with slight to severe destruction. Can it be due to relatively low temperature resulting from constant passage of air? The same may be true of the hard palate which occupies the second position in this study.

The tibiae were predominantly involved in congenital variety. The hard palate was also involved more in the congenital than in the acquired group. Other long bones were also the frequent site of involvement.

Late lesions of vertebrae, intervertebral joints and other arthritic manifestations except few cases of Clutton's and Charcot's were absent in this series.

The ratio of joint to bone involvement was 1:14.6 against 1:5 of Buchman and Lieberman (1941). When we consider acquired variety only it was 1:10 against 1:7 of Stokes et al (1945) and 1:3 of Wile and Senear.

Neurological manifestations were present in 8 (9%) cases and cardiovascular in one. Gummatous ulcers either superimposing the skeletal lesion or elsewhere were seen in 11 (12.5%). Hepatomegaly was present in 2 of the 38 congenital cases. No other visceral lesion was seen in this series.

8 (9%) of 88 were seronegative. The percentage of seronegativity in the acquired group is also practically the same. Speed and Boyd (1936) found positive serology in 90% of untreated acquired syphilis group.

About 64% had high titre positive serology. C. S. F. was abnormal in 8 out of 25 examined.

Poor response in high proportion of cases was due to permanent damage before treatment was started. Pain was relieved in most of the cases. All the gummatous ulcers healed. But organic changes in bones either in the form of excess production or gross destruction failed to respond to treatment to an appreciable extent.

SUMMARY

The present study includes 88 cases with skeletal manifestations of late Syphilis. Incidence seems to be lower than what was reported before. In 19 mode of infection could not be determined.

66% were between 11 and 30 years and 48% were labourer. Three fourth of the acquired group and one third of congenital group had positive anamnesis. Definite history of trauma was present in only 4 Eight (26%) of the acquired group had incomplete treatment.

Average duration of infection was 15.5 and 14.5 years in acquired and congenital groups respectively.

Duration of complaints was less than one year in about 45% of cases. Pain(23%) and swelling (24%) were the two most common complaints.

60% of congenitals and 26% of acquired group showed collateral evidences.

Nose was involved in 41%, hard palate in 24%, left tibia in 20% and right tibia in 17%. Involvement of long bones of the extremities were fairly common. Of the joints, involvement of knees, ankles or both were only observed.

About 92% had gummatous osteoperiostitis.

Blood V.D.R.L. was negative in 9%.

C.S.F. in 8 out of 25 examined was abnormal.

Most of the cases X' rayed showed radiological findings in favour of syphilis.

Treatment was complete in about 82% and satisfactory result was obtained in about 55% cases.

REFERENCES

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

King A. J. et al (1959) – British Journal of Venereal Diseases 35--166.

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

Stokes, Beerman and Ingram (1945) Modern Clinical Syphilology, Saunders, Philadelphia.
