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CLINICAL ARTICLES

CLIMATIC INFLUENCE ON THE PREVALENCE OF 'DONOVANOSIS' IN INDIA.

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The city of Madras can justifiably be proud about its substantial contribution to the knowledge of 'Venereal or Inguinal Granuloma' now also known as 'Donovanosis'. It is indeed in this city that the condition was first recognised and labelled as 'serpigenous ulcer' by MacLeod in 1882. The causative agent was identified by Lt. Col. Donovan, I. M. S. in 1905 at the Government General Hospital, Madras and a monograph under the caption of 'Donovanosis' was published by Rajam and Rangiah in 1954 from the Institute of Venereology, Madras

This granulomatous condition has been reported by earlier workers under various names like the lupoid form of the so-called "groin ulceration" (Conyers- and Daniels 1896); Ulcerating granuloma of the pudenda (Galloway 1897); Chronic venereal sores (Maitland 1898); Ulcerating granulomata (Fowler 1899); Cicatrizing granuloma (Maitland 1906); Infectious granuloma (Demwolff 1898) and Granuloma inguinale tropicum (Crocker 1903).

The present term 'Donovanosis' has been coined (Marmell and Santora 1950, Rajam and Rangiah 1954) to honour Lt. Col. Donovan - the discoverer of the aetiological agent D. granulomatis However, the synonyms like 'Granuloma Venereum' and 'Granuloma Inguinale' are also used even today.

Many problems are yet to be solved in this disease. This report is intended to focus the attention on the possibi lity of climatic conditions influencing the disease in this country.

MATERIALS AND METHODS

The information for this paper has been obtained on a proforma sent to various clinics throughout India for the year 1969. The percentage of donovanosis to the total number of V. D. cases for the year 1969 were analysed according to the number of cases recorded per clinic in different states and correlated the

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percentage incidence of donovanosis with that of annual temperature, relative humidity and rainfall variations. The results are shown in the table (vide figure also).

COMMENTS AND CONCLUSIONS

India is a subcontinent of different climates, ethnic groups and life patterns. North of the Vindhya mountain ranges and south of the Himalayas lies the Gangetic plains, west of it is a semi desert region of camels and drought, and east of it is a heavily forested well watered land of rice and tea. South of the Vindhyas, the peninsular India is swept by three seas. Slightly inland from the West and East coasts encircling the Deccan plateau lie the thi kly forested Western ghats and the thinly forested Eastern ghats respectively. Thus, India a sub-continent of climatic contrasts where temperature, humidity and rainfall vary considerably from one region to another seems to be an ideal country to study the medical geography or geographical pathology of any particular di-ease as regards its endemicity as well as the changing pattern of the disease to certain environmental conditions.

Though the V. D. morbidity in India is comparatively high and is presumed to be well above 3% of the total population, it is only during the last decade or so, efforts have been made to collect statistics, investigate, control and institute proper therapy for venereal diseases in India. At present, there are only 261 special clinics for V. D which are quite inadequate to cover India's 550 million people. As the relative incidence of donovanosis itself is low compared to other venereal infections, it seems to us that in many clinics, much attention is not drawn to diagnose Donovanosis. Even large number of teaching institutions did not furnish us with any data. Thus the presented data are not actual statistical figures but they can give an overall view of the subject under analysis.

Collected data show very high incidence of Donovanosis in Andhra, Tamil Nadu and Mysore (Table & figure). In these states, there is contantly a high temperature of 75-90°F throughout the year; the annual range of temparature variations being only 10 to 15°F. A moderate relative humidity of 50-70% is associated with this high temperature. The rainfall is moderate (less than 100 cms). This is a sultry climate.

In the other states of monsoon climate, viz., Maharashtra, Kerala, Bengal, Gujarat, Orissa, Assam and Bihar, the prevalence of this infection discreases in the order given. The annual range of temperature in Maharashtra is 17.5; Bengal 22.5; Kerala 7.5; Gujarat 22.5; Orissa 22.5; Assam 22 5 and Bihar 30°F. It appears here that higher annual variations in temperature account for a lower incidence of this disease except in Kerala. In Kerala, temperature variation is lower than in the neighbouring states of Tamil Nadu, Mysore and Andhra Therefore, the incidence of Donovanosis may be expected to be more or less the same as in the neighbouring States. On the other hand only a lower incidence has been reported in Kerala. The high relative humidity and heavy rainfall present in Kerala seem to adversely affect the prevalence of this infection. Similar climatic factors affecting the incidence of donovanosis is also observed in Bihar and Assam from where no cases have been reported, while the neighbouring states showed a certain incidence of this infection. From this, it may be assumed that a constantly high temperature alone is not an influencing factor for the prevalence of donovanosis, but a moderate relative humidity and a moderate rainfall are also necessary.

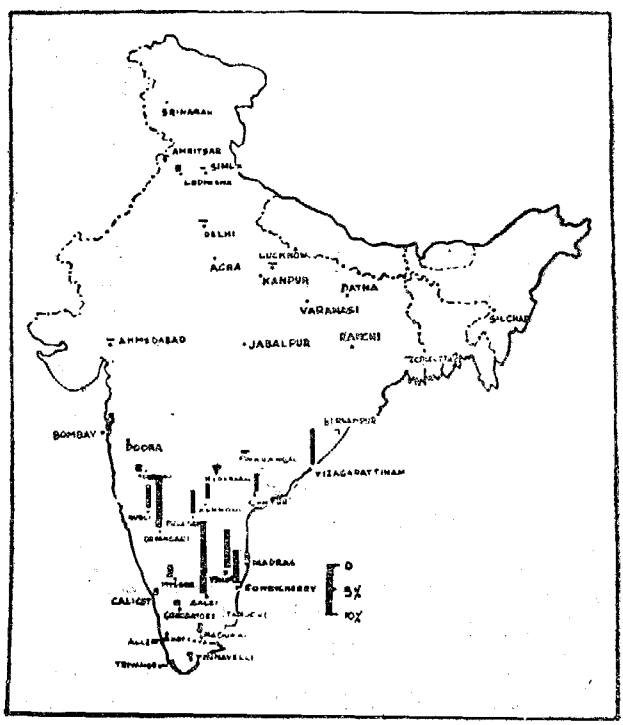
The state of Punjab and Himachal Pradesh, Delhi, Uttar Pradesh, Madhya Pradesh, Rajasthan and Jammu & Kashmir experience a continental climate marked by extremes of temperature in summer and winter. The annual range of temperature is between 32.5 and 35°F. Among them a lower incidence of donovanosis is reported from Punjab and Himachal Prdesh, Delhi and Uttar Pradesh where a relative humidity of 50-60% and moderate rainfall are observed. In Rajasthan a low relitive humidity and a high temperature variations seem to adversely affect the incidence of this infection. Here the importance of a moderate relative humidity and rainfall as influencing factors for the prevalence of this infection even with tempertaure variations are obvious. At the same time, the helpful influence of constantly high temperature on the incidence of Donovanosis may be noted from Bengal compared to Bihar as in both the states the humidity and rainfall are the same.

The incidence of donovanosis has been noted throughout India despite its ethnic, climatic and cultural diversities. It is true that a greater prevalence of this infection has been noted in peninsular India inhabited mostly by people of the Dravidian origin. But focussing much importance on racial factors for the susceptibility of donovanosis does not seem to be justified here since:

(I) a moderate prevalence of this infection is noted in north west India where the predominant population is not of Dravidian origin;

(II) the incidence of this infection is low in Kerala and Bihar, dispite their close ethnic relation with people of neighbouring states. Here the influence of climatic conditions seems to explain the endemic foci of donovanosis in India.

PREVALENCE OF 'DONOVANOSIS' IN INDIA



This study suggests that a constaintly high temperature of 75-90°F and moderate relative humidity of 50-60% with moderate rainfall, are favourable conditions for the endemic foci of donavanosis. A climate marked by extremes of temperature in summer and winter or a very high humidity with heavy rainfall may have adverse or no influence on this infection. From the foregoing data, a minor prevalence of donovanosis in Madhya Pradesh and Jammu & Kashmir is expected.

SUMMARY

The total number of cases of donovanosis from various clinics in India were collected for the year 1969. The data thus collected were analysed based on the influence of climatic conditions on the prevalence of this disease. The results suggest that a high contant temperature of 75-90°F and moderate relative humidity of 50-60% with moderate rainfall are favourable conditions for endemic foci of donovanosis. Racial factors seem to be unimportant. A minor prevalence of donovanosis in Madhya Pradesh and Jammu & Kashmir is expected.

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TABLE

Prevalence of Donovanosis and Annual Variations in Temperature Humidity and Rainfall

State	No. of clinics furnished data	Total donovanosis cases	Precentage of donovanosis to total VD cases	Average No. of donovanosis per clinic	Temperature Jan.to May - °F.	Relative humidity Jan.to May percentage	Rainfall in cmc.
1. Andhra	5	427	0.1-7.5	85	75-90	60-70	80-120
2. Assam	1	Nil	0	Nil	60-87.5	80	200-300
3. Bihar	3	Nil	0	Nil	60-90	70	120-160
4. Delhi	3	2	0-0.1	0.7	60-95	50-30	80-100
5. Gujarat	1	1	0 1	1	70-92 5	50-60	140-160
6. Jammu & Kashmir	1	Nil	0	Nil	55-90	70-40	20-40
7. Kerala	4	10	0-1.0	2.5	77.5-15	70-80	140-300
8. Madhya Pradesh	1	Nil	0	Nil	60-95	50-30	80-140
9. Maharashtra	4	56	0.15-3.7	14	72 5-90	50-70	40-140
10. Mysore	4	166	2.5-10.6	41	75-90	50-70	40-80
11. Orissa	1	1	0 1	1	70-92 5	60-70	80-16
12. Punjab&H.P.	3	6	0.03-1	2	57.5-92 5	60-40	80-100
13. Rajasthan	2	Nil	0	Nil	69-95	40-30	60
14. Tamilnadu	9	450	0 8-7 9	50	75 90	60-70	80-140
15. UttarPradesh	4	2	0-0.1	0.5	60-92 5	70-40	80-140
16. West Bengal	1	6	0-3	6	67.5-90	70-80	120-160

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