

A Theoretical View in studies of Cholera diseases

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Abstract

Statistical evidence of the endemic of cholera in the Bengal Presidency and adjacent areas, long suspected of being the principal endemic centre, if not the home, of the disease, seems to have been furnished first by Bryden, statistical officer with the Sanitary Commissioner of India, in a series of four publications which began to appear in 1869 and were issued in collected form in 1874.

Keywords: Endemic; Statement; Southern china; Epidemic areas; Tropical medicine; Deltaic;

Introduction

In Bryden's opinion the endemic area comprised the western part of Assam, all the regions of lower Bengal and Orissa up to the low Rajnahal and Cuttack hills to the west of this basin as well as eastern Bihar. At the same time Bryden denied that cholera was endemic in any other part of India. However, according to Swaroop, he failed to give detailed data with regard to the Bombay and Madras Presidencies, hence his statements do not present a complete picture [1]. The same may be said to hold true of the statement made by Koch at the 1885 cholera conference in Berlin that Bengal alone was the home of cholera. This is the tenth of a series of studies which will be published as a monograph on cholera in separate editions in English and French-ED. In contrast to these observers, judging from a study of the records of the cholera incidence in India from 1862 to 1881, maintained that a state of endemic existed, not only in Bengal and the adjacent areas, but also in the inter-fluvial tracts of the Godavari, Kistna and Cauvery rivers in Madras, in the southern coastal districts of the then Bombay Presidency, in Oudh and the southern Gangetic districts of the north-western provinces, and possibly even in part of the Punjab. As pointed out by Bellew, generally speaking the endemic areas appeared to be characterized by a low-lying alluvial soil, which is more or less supersaturated with ground water in a state of stagnation or but comparatively very slight motion, and which is subject to periodical inundations or water-logging by the seasonal floodings of the great rivers by which those areas are traversed in deltaic formation [2]. These physical characteristics of the endemic areas are coupled with equally striking features characteristic of their climatic conditions, viz. with those of a moist and hot tropical climate, and they are among the most densely populated parts of the country. The almost invariable validity of these general statements by Bellew has been conceded by all subsequent observers. Before continuing with a consideration of further studies on cholera endemic in India attention has to be paid to contentions made by a considerable number of writers that endemic areas existed in other countries besides India. Summarized that Apart from India, cholera is endemic in parts of the East Indies, Java having suffered as far back as 1629. It also occurs yearly in Southern China and the Philippine Islands.

Discussion

To the west the disease is so frequently carried to Persia and Arabia that it is difficult to say if it has become endemic in those countries or not. From 1851 to 1861 it was certainly present every year in Persia, but appears to have been frequently absent in subsequent years, so that it is probably not permanently located in that country [3]. The same remark

applies to parts of South-East Russia. Rogers' opinions were not shared, who denied that cholera was endemic in Indochina, Indonesia or the Philippine Islands and doubted that the infection was permanently entrenched in China. That such divergent opinions were expressed by different authors regarding the status of the various cholera-affected areas is easy to understand, because there can be no doubt that in place of a permanent entrenchment of the infection in a given locality a state of temporary endemic may exist. Attention to the latter was drawn, for instance, who, pointing out that cholera sometimes persisted throughout the winter in the Himalayas and the northern part of the Punjab, to become epidemic in the following spring, stated that There would thus appear a temporary form of endemic which although lasting for one winter only, is capable of causing a widespread epidemic mainly in the northern half of the Punjab in the following summer [4]. The existence of secondary of cholera, where the infection persisted for three or four years, ultimately to disappear, was postulated by Bernard. In his opinion certain cholera considered as permanent, like those in Indochina and China, were actually due to such a temporary entrenchment of the infection. The validity of Bernard's contention was proved through observations made at Changteh, situated on an affluent of the Yangtze river in Hunan Province, were able to confirm the diagnosis of cholera in several patients seen in January 1938 as well as to isolate V. cholera from some samples of the Yuan river water, and learns from the local doctors that similar outbreaks of varying extent had taken place practically every winter throughout a number of years. It seemed likely that these manifestations stood in causal connection with the frequent summer epidemics occurring in that area as well as in the adjacent Yangtze valley and that thus the problem of cholera endemic in the latter, postulated by many authors, had been solved. However, when a few years later the present writer again stayed at Changteh to combat a plague outbreak, he was unable to find any evidence of the continued existence of cholera and, as far as is known, the region continued to remain free from the infection. Again turning attention to the problem of cholera endemic in India, reference has to

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be made first to large-scale investigations undertaken. As the former summarized at the 1927 Conference of the Far Eastern Association of Tropical Medicine in Calcutta, a study of the cholera mortality over a long period of years had made it possible to divide the provinces of India into three groups: The first group includes the provinces of Assam, Bengal, Bihar and Orissa and the United Provinces, where more or less uniform figures are registered annually and where the average incidence is high. These areas are very likely to be endemic in nature [5]. In the second group are included the Central Provinces, Bombay Presidency and the Punjab and North-West Frontier Province, where sudden peaks in cholera incidence occur at irregular intervals. These areas are normally free from cholera epidemics and infection is probably always brought in from outside. The Northern and Central Districts Groups of Madras Presidency are epidemic areas, while the Southern Districts Group, which presents a more uniform incidence, might almost be included in Group I as an endemic area. Russell added that the differentiation of the areas of India into epidemic and endemic groups had been confirmed by various other statistical methods. His and Sundararajan's investigations had established that cholera tended to recur repeatedly in river deltaic tracts, the main endemic areas of India including the delta areas of the Ganges, Brahmaputra and Cauvery rivers. The outbreaks commenced in the towns or villages lying on the banks of these and other rivers, the infection then rapidly and systematically spreading down the waterways [6].

Recommendations

Moreover, Russell added, there is no question that, in endemic areas, cholera spontaneously appears, year after year, in the same villages and towns. In other areas, per contra, it is necessary for other favourable conditions to be present before cholera becomes diffused, e.g. overcrowded and insanitary conditions associated with religious fairs and festivals. Rogers, studying the incidence and spread of cholera in India, claimed that a state of endemic existed not only in Lower Bengal, Orissa and Assam, but also in the extra-deltaic western divisions of Bengal and the north-eastern sub-Himalayan divisions of the United Provinces; the extensive low-lying districts of South-East Madras and a small low alluvial district of the North Konkan districts of Bombay Presidency lying in an area already incriminated by Bellew. Rogers admitted, however, that the last three endemic areas differed from the hyper-endemic area of lower Bengal, Orissa and Assam in that, although cholera is never absent for a whole year, yet the rate per mile not very rarely falls to less than one-tenth of the average rate [7]. It is also interesting to note that according to an account published in the 1941 report of the Indian Research Fund Association a spurious form of endemic existed in the Tanjore district of Madras State, which was due to differences in the seasonal incidence of cholera in the various parts of this region with the result that outbreaks were apt to commence in some of its parts at the time when they terminated in others. In the first of a series of three most important articles devoted to a statistical study of the cholera incidence in south-west pointed out that the various districts of this area present considerable heterogeneity

in regard to their cholera experience and that there are also evidences of heterogeneity within the districts themselves. For a closer study of the entomology and epidemiology of the disease it was necessary, therefore, to divide up south-west Bengal into what the authors called homogeneous cholera districts [8]. The following steps were adopted for this purpose: Taking the thana as a unit the total variability of cholera incidence has been split up into three variables, viz., seasonal, yearly and residual, by the method of analysis of variance. Contagious thanas showing similarity in respect of different types of variation, mean cholera incidence and type of seasonal curve have been combined and the districts so obtained tested for homogeneity by trivariate analysis of variance [9,10].

Conclusion

Those satisfying tests of homogeneity have been constituted into cholera districts. It was found that the size of the 19 cholera districts thus created varied considerably from single thanas to combinations of up to 20 such local administrative units. As stated in the third article of the series of publications presently under review. Found that in 9 of these 19 cholera districts a state of endemic existed, whereas 10 experienced only epidemic cholera.

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Conflict of interest

None

References

1. Sue LJ (2004). Zoonotic poxvirus infections in humans. *Curr Opin Infect Dis* MN 17: 81-90.
2. Pisarski K (2019). The global burden of disease of zoonotic parasitic diseases: top 5 contenders for priority consideration. *Trop Med Infect Dis* EU 4: 1-44.
3. Kahn LH (2006). Confronting zoonoses, linking human and veterinary medicine. *Emerg Infect Dis* US 12: 556-561.
4. Bidaisee S, Macpherson CNL (2014). Zoonoses and one health: a review of the literature. *J Parasitol* 2014: 1-8.
5. Cunningham AA, Daszak P, Wood JLN (2017). One Health, emerging infectious diseases and wildlife: two decades of progress? *Phil Trans UK* 372: 1-8.
6. Slifko TR, Smith HV, Rose JB (2000). Emerging parasite zoonosis associated with water and food. *Int J Parasitol* EU 30: 1379-1393.
7. Samad MA (2011). Public health threat caused by zoonotic diseases in Bangladesh. *BJVM IND* 9: 1-26.
8. Schuster FL, Visvesvara GS (2004). Amebae and ciliated protozoa as causal agents of waterborne zoonotic disease. *Vet Parasitol* EU 126: 91-120.
9. Chlebicz A, Śliżewska K (2018). Campylobacteriosis, salmonellosis, yersiniosis, and listeriosis as zoonotic foodborne diseases: a review. *Int J Environ Res Public Health* EU 15: 1-28.
10. Sprong H, Cacciò SM, Giessen JWBVD Identification of Zoonotic Genotypes of *Giardia duodenalis*. *PLoS Negl Trop Dis* US 3: 1-12.