Relation of rainfall pattern and epidemic leptospirosis in the Indian state of Kerala

Leptospirosis epidemics in tropical countries are often related to heavy rainfall and flooding.1 The Indian state of Kerala has witnessed post-monsoon epidemics of leptospirosis in recent years. We investigated the relation between the pattern of daily rainfall and the incidence of disease in Calicut, North Kerala by plotting the number of confirmed cases having onset of illness on each day with the daily rainfall recorded for the district by the state meteorology department between July and October, 2002 (fig 1). The day of onset was calculated by subtracting the duration of fever from the day of admission. Diagnosis was by positive microscopic agglutination test titres above 1/100; 282 of the 340 suspected cases. IgM enzyme linked immunosorbent assay was also positive in 255 of the 282 cases.

The three peaks of disease onset were in August, September, and October. Each of these was preceded by heavy rainfall peaking about 7–10 days previously. Rainfall peaks were followed by rain cessation resulting in troughs in the graph. The baseline of the troughs preceded the disease onset peak by five to six days. The patients did not have direct occupational exposure to animals. Some 62.9% of the patients had either fissures or wounds on the feet.

Thus, periods of heavy rain followed by days of little or no rain seemed to be the setting for leptospirosis epidemics in this part of the world. Most cases seemed to occur by cutaneous exposure of the legs while walking in stagnant water or moist soil. This implied that leptospirosis multiplied in the walking paths where water remained undrained for a period of two to three days after the rains was responsible for most cases. Most people in the state wore rubber chappals during the rainy season, which offered little protection against possible infection.

Climatic and environmental factors were probably responsible for epidemic leptospirosis seen in Kerala in the recent years. The pattern of rainfall has changed in the western ghats region of India—which includes Kerala—in the past century, with more rainless days during the monsoon months.2 There had also been rapid urbanisation and construction activities in the past two decades, resulting in blockage of natural drainage of rainwater and consequent water logging near human habitations.

If our hypothesis is correct, future epidemics of leptospirosis can be anticipated by studying daily rainfall patterns. The thrust of community action can then be oriented towards improved water drainage and if necessary by disinfection or salination of water paths and wearing of effective protective footwear.

References

Figure 1 Daily rainfall and leptospirosis incidence (disease onset) for the months July–October 2002.

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Edited by F X Bosch, R Molas. Barcelona:
Archie Cochrane: Back to the front
Edited by Alexander Irwin, Joyce Millen,
Global AIDS: myths and facts
The book is conceived as homage to A
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as no surprise that much of their text is
(page 184). Given this raison d’etre it comes
with understanding and control of biases and measurement
layout: from initial definitions to the descrip-
tory text, the authors give the reader a
further on introduced and explained in a very
didactic way with real but simple examples
are briefly enumerated and at this point the
reasons why results sometimes seemed contradictory
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units of measurement, and permit comparisons.
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BOOK REVIEWS

Archie Cochrane: Back to the front
In 1978 one of the authors of this book (the Catalan epidemiologist Xavier Bosch) and
Archie Cochrane (probably one of the most influential personalities in the field of the
health care) carried out a journey to the places that the latter knew during the Spanish civil
war, as a member of the International Brigades that went to help the Spanish
legitimate republican government.
This journey constitutes the starting point
of this singular book, carefully edited and
illustrated (including some of the legendary
photographs of Capa on the Spanish civil
war). To a large extent, the book consists of a
series of brief comments (not always lauda-
tory) on the biography of A Cochrane, carried
out by epidemiologists as Richard Doll, Peter
Elwood, and Lester Breslow, among others.
An important part of the text is formed by
fragments of well known historians and
writers as Gabriel Jackson, Hugh Thomas,
and George Orwell, which help to understand
the social meaning of the Spanish civil
war and the second world war, during which
he was imprisoned in a Nazi concentration
camp (where he could carry out a nutritional
clinical trial). Especially interesting are the
comments that connect these first profes-
sional experiences with the theoretical thesis
that Archie Cochrane would defend later on.
We mention, for example the following lines of
his autobiography about his clinical
practice in the concentration camps, in which
it is not difficult to recognise the desire of an
evidence based clinical practice:
I remember at that time reading one of
those pamphlets considered suitable
for POW medical officers about clinical freedom and
democracy. I found it impossible to under-
stand. I had considerable freedom of clinical choice of therapy; my
problem was that I did not know
which to use and when. I would
happily have sacrificed my freedom for
a little knowledge.
The book is conceived as homage to A Cochrane, probably one of the most influential personalities in the field of health care, carried out a journey to the places the latter knew during the Spanish civil war, as a member of the International Brigades that went to help the Spanish legitimate republican government. This journey constitutes the starting point of this singular book, carefully edited and illustrated (including some of the legendary photographs of Capa on the Spanish civil war). To a large extent, the book consists of a series of brief comments (not always laudatory) on the biography of A Cochrane, carried out by epidemiologists as Richard Doll, Peter Elwood, and Lester Breslow, among others. An important part of the text is formed by fragments of well known historians and writers as Gabriel Jackson, Hugh Thomas, and George Orwell, which help to understand the social meaning of the Spanish civil war and the second world war, during which he was imprisoned in a Nazi concentration camp (where he could carry out a nutritional clinical trial). Especially interesting are the comments that connect these first professional experiences with the theoretical thesis that Archie Cochrane would defend later on. We mention, for example the following lines of his autobiography about his clinical practice in the concentration camps, in which it is not difficult to recognise the desire of an evidence based clinical practice:

I remember at that time reading one of those pamphlets considered suitable for POW medical officers about clinical freedom and democracy. I found it impossible to understand. I had considerable freedom of clinical choice of therapy; my problem was that I did not know which to use and when. I would gladly have sacrificed my freedom for a little knowledge.

The book is conceived as homage to A Cochrane, probably one of the most influential personalities in the field of health care, carried out a journey to the places the latter knew during the Spanish civil war, as a member of the International Brigades that went to help the Spanish legitimate republican government. This journey constitutes the starting point of this singular book, carefully edited and illustrated (including some of the legendary photographs of Capa on the Spanish civil war). To a large extent, the book consists of a series of brief comments (not always laudatory) on the biography of A Cochrane, carried out by epidemiologists as Richard Doll, Peter Elwood, and Lester Breslow, among others. An important part of the text is formed by fragments of well known historians and writers as Gabriel Jackson, Hugh Thomas, and George Orwell, which help to understand the social meaning of the Spanish civil war and the second world war, during which he was imprisoned in a Nazi concentration camp (where he could carry out a nutritional clinical trial). Especially interesting are the comments that connect these first professional experiences with the theoretical thesis that Archie Cochrane would defend later on. We mention, for example the following lines of his autobiography about his clinical practice in the concentration camps, in which it is not difficult to recognise the desire of an evidence based clinical practice:

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