The 2008 leptospirosis epidemic in New Caledonia: weather context, diagnosis, burden of disease and future research

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Leptospirosis is endemic in New Caledonia, with epidemic bursts after heavy rainfalls, making it a major public health problem. As the local reference laboratory for human leptospirosis, the Institute Pasteur of New Caledonia is studying this disease, notably developing and implementing molecular diagnostic tools. In the first half of 2008, a high incidence of leptospirosis occurred, possibly related to the meteorological context. Under the influence of a "La Niña" event, the rainfall was much higher (sometimes more than 3 times the average) causing a number of floods favoring survival of - and human exposure to - pathogenic leptospires. The temperature, not different from the average, did not contribute to this epidemic.

Because of a simultaneous dengue epidemic, leptospirosis probably went under-diagnosed during the first trimester, until the epidemic was recognized, increasing public and medical awareness. At the end of June, 135 human cases were confirmed, an extrapolated incidence of more than 100 annual cases per 100 000 inhabitants.

The mean age of cases was 35.2 years (4-84) and more than 2/3 were males (93, versus 42 females). Eighty eight patients were admitted at the hospital (65\%) for a total of 627 days (7.12 days per hospitalized patient) including 5 in the intensive care unit for 39 days and 5 people died (mean age 60.3).

Within these 135 confirmed cases, real time PCR detection of Leptospira DNA in blood or urine accounted for 53 \% of the diagnosis and serology for 56 \%. This ratio, together with the ability of an earlier diagnostic highlights the usefulness of PCR as a first-line diagnostic approach of leptospirosis. Future work will focus on identifying circulating Leptospira strains using direct sequencing of PCR products to better decipher the epidemiology of this complex disease and increase the analysis of the cost of this endemic-epidemic disease.

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