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*Rickettsia*e in human and in blood feeding arthropods in Northern Tunisia

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Statement of the Problem: Rickettsioses are considered as emerging infectious diseases. These affections are classically transmitted to humans via arthropods vector bites. In Tunisia, about 200 cases were registered every year. Despite medical importance and longstanding presence of this disease, relationship between *Rickettsia* species and potential arthropod vectors has been poorly investigated. Based on the epidemiological understood and the control of emerging diseases spread in Mediterranean region, a survey of *rickettsia*l diseases was carried out to have an overview about the circulation of these diseases in Northern Tunisia. Nevertheless, this data is necessary in order to target surveillance and control of this vector-borne disease nationwide.

Methodology & Theoretical Orientation: A total of 2452 ectoparasites (ticks and fleas) infesting domestic animals (dogs, sheep and goats) were collected in five studied cities in which sera and blood of patients, suspected to have *rickettsia*l infection on the basis of clinical criteria, were tested serologically (IFI) and molecularly. Extracted DNA was subject to *Rickettsia* identification using qPCR. To confirm our findings, some amplified positive samples from vectors and humans were sequenced.

Findings: During our survey (March-November 2015), the seroprevalence of 40 suspected patients was 54%. Three positive biopsies were identified infected by R. conorii. The global prevalence of infected ticks and fleas by *Rickettsia* was 46% and 63% respectively. Specific qPCR showed the infection of 92% of positive fleas by R. felis. The molecular sequencing, using 3 target specific genes *(gltA, ompA, OmpB)*, allows the identification of *R. massiliae in Rh. turanicus, R. helvetica in Ixodes ricinus and R. aeschlimannii in Hyalomma marginatum and Hy. excavatum.*

Conclusion & Significance: In terms of public health, this study gives a global vision of the distribution of *Rickettsia* in human and vectors in endemic regions. Ticks and fleas, both abundant arthropods, seem to be the most significant *Arthropoda* species carrying *Rickettsia* agents and may play an important role in maintaining *rickettsia*l infections and their transmission to human. Further investigations in humans and animals are needed to confirm these data.

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