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Chronic Q fever-related complications and mortality: data from a nationwide cohort

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Background: Chronic infection with *Coxiella burnetii* (chronic Q fever) can cause life threatening conditions such as endocarditis, infected vascular prostheses and infected arterial aneurysms. Prognosis and nature of complications and their associated risk factors are largely unknown.

Material/methods: We evaluated mortality and the incidence of complications in all chronic Q fever patients registered in the Dutch national chronic Q fever database, an ongoing registration of the largest cohort of chronic Q fever patients ever described. Complications and attributable mortality were assessed by predefined criteria.

Results: We identified 439 chronic Q fever patients: 73% was male, mean age was 65 years. Complications occurred in 166 patients (38%): 153/249 patients with proven (61%), 11/74 with probable (15%) and 2/116 with possible chronic Q fever (2%). Most complications occurred prior to initiation of therapy (n=101; 61%). Most commonly observed complications were acute aneurysms (n =

63; 14%), heart failure (n = 55; 13%) and non-cardiac abscesses (n = 45; 10%). Factors associated with complications were positive serum PCR at any moment during disease (OR 2.25; 95%CI 1.36-3.72), presence of prosthetic material prior to diagnosis (OR 1.79; 95%CI 1.07-2.99) and higher age (1.04; 95%CI 1.02-1.06). Overall mortality was 27% (n = 118). Mortality was considered related to chronic Q fever in 66 patients (15%): 63 patients (25%) with proven chronic Q fever and 3 patients (4%) with probable chronic Q fever. No patients with possible chronic Q fever died of a chronic Q fever-related cause. Presence of complications at any moment in the course of disease was associated with chronic Q fever-related mortality (OR 8.20; 95%CI 3.65-18.45). Patients with four-fold phase I IgG titer decrease during treatment had a decreased risk of chronic Q fever-related mortality (OR 0.27; 95%CI 0.12-0.58).

Conclusions: In chronic Q fever patients, complications occur frequently and strongly contribute to mortality. Patients with proven chronic Q fever have the highest risk of complications and chronic Q fever-related mortality. Prognosis in patients with possible chronic Q fever is favorable in terms of complications and mortality.

Table 1. Factors associated with complications and mortality in proven and probable chronic Q fever patients.

| | Complications | Multivariable analysis (OR,95%CI) | Q fever related-mortality | Multivariable analysis (OR,95%CI) |
|---|----------------------|--|----------------------------------|--|
| No. patients (total) | 164 (323) | NA | 66 (323) | NA |
| Age (mean) | 72 years | 1.04 (1.02-1.06) | 74 years | 1.03 (1.00-1.06) |
| Presence of prosthetic material | 105 (64%) | 1.79 (1.07-2.99) | 43 (65%) | ns* |
| No identified focus of infection | 1 (1%) | 0.04 (0.01-0.34) | 1 (2%) | ns |
| Positive serum PCR | 89 (54%) | 2.25 (1.36-3.72) | 39 (59%) | ns |
| Four-fold titer decrease | 52 (32%) | ns | 10 (15%) | 0.27 (0.12-0.58) |
| Complications | NA | NA | 58 (88%) | 8.20 (3.65-18.45) |

*ns=non-significant

Figure 1. Overall-survival of chronic Q fever patients.

