

A SEROLOGICAL SURVEY: Q FEVER AMONG ABATTOIR WORKERS IN FREE STATE AND NORTHERN CAPE, SOUTH AFRICA, 2018

Background

Q fever is a ubiquitous bacterial disease, originating from livestock and affecting individuals working with animals/animal products such as farm, veterinary, abattoir or laboratory workers. Infection usually occurs following inhalation of the *Coxiella burnetii* bacteria either in aerosols (close contact with infected animals or the bacteria) or in contaminated dust (spreads more distantly). The spectrum of symptoms ranges from mild flu-like illness to serious complications, e.g. infective endocarditis or chronic fatigue. Little is known of the prevalence of Q fever in South African abattoir workers. This study aimed to estimate the seroprevalence of Q fever and examine factors associated with seropositivity in a sample of abattoir workers in South Africa's Free State and Northern Cape regions.

Methods

This study was a secondary analysis of data from a cross-sectional zoonotic disease survey of abattoir workers conducted in 2018. Previous infection with Q fever was determined using an enzyme-linked immunosorbent assay test for IgG antibodies against *C. burnetii* phase II antigen. Survey logistic regression methods, for clustering and sampling fraction of the data, were then employed to estimate seroprevalence and correlates of seropositivity. Potential confounders such as age, sex and former occupational exposure were adjusted for in the multivariable analysis. A sensitivity analysis was conducted to confirm if the individuals with equivocal test results differed from analysed individuals.

Results

382 abattoir workers were sampled from 16 facilities. The proportions of workers who reported wearing gloves, masks and protective eyewear when performing activities with high risk of QF transmission were 26-35%, 10-17% and 2-7% respectively. Overall, Q fever seroprevalence was 33% (95% confidence interval: [28-38%]), but facility-level

seroprevalence ranged between 8 and 62%. The multivariable logistic regression model suggested that contact with carcasses/meat products for the whole day (AOR 4.66 [1.51 – 14.41], p 0.011) and prior work experience at an abattoir/butchery (AOR 1.89 [1.13 – 3.17], p 0.019) were associated with seropositivity. In contrast, increasing age (AOR 0.96 [0.94 – 0.98], p <0.001) and livestock ownership (AOR 0.32 [0.15 – 0.71], p 0.008) were associated with seronegativity. The sensitivity analysis confirmed that all the individuals with equivocal test results were similar to the rest of the group.

Discussion & conclusion

A high Q fever seroprevalence was detected. The study findings suggest that exposure may occur at the workplace and that workers who spend all day in contact with carcasses/meat products could be at higher risk. We recommend increased precautions to protect the health of personnel who work all day in contact with carcasses/meat products and health education for all abattoir staff.