Q Fever in Portugal: A One Health-Oriented Literature Review

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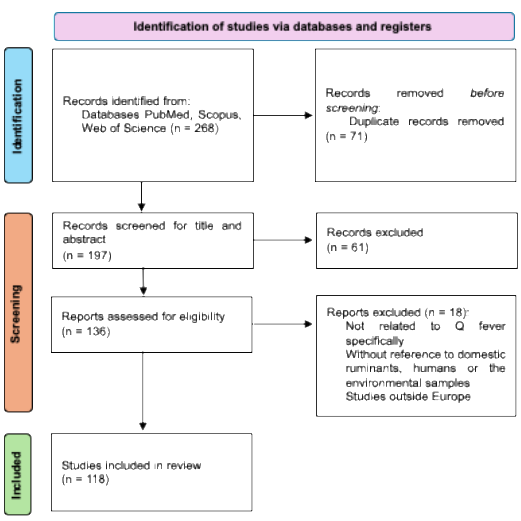
Introduction

Q fever, caused by *Coxiella burnetii*, is a neglected zoonosis in Portugal, with mandatory notification (1). Transmission to humans occurs mainly by inhalation of contaminated aerosols generated in small-ruminant settings, with shedding peaking around parturition (placenta, bedding, dust) (2 - 4).

Evidence from Portugal documents showed animal exposure, peripartum PCR positivity and signals among occupational groups (5-7), but surveillance remains fragmented and methodologies are heterogeneous across studies (5, 4). Regional gaps persist, including in the Portuguese northeastern region (5, 7).

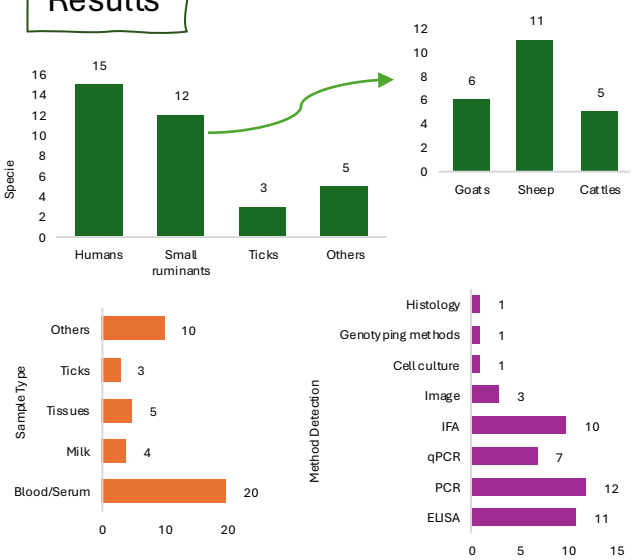
Methodology

The search was conducted in the PubMed, Scopus and Web of Science databases, using combinations of controlled descriptors (MeSH) and keywords related to *C. burnetii*, Q fever, Europe, Portugal and the "One Health" concept.



Focusing on studies in Portugal (n=31), data extraction was primarily based on species, sample type, methods (ELISA/IFA, PCR/qPCR), and reported seroprevalence or positivity rates.

Results



Small ruminants

- Ovine seropositivity 11.4% overall; (regional 0–17.9%) whit 56.6% of positives classified as “strong” (5).
- Goats showed higher individual ELISA positivity than sheep (approx. 30% vs. approx. 27%) (8).
- Longitudinal ovine seroconversion 10.9% against a 17.3% baseline(6).
- Dairy-sheep bulk-tank milk qPCR showed approx. 0.6% positivity at herd level (4).
- Placenta and abortion materials were repeatedly PCR-positive in diagnostic submissions (2–3).

Humans

- Cheesemakers/shepherds 30.7% (23/75), higher than community comparators from the same setting (7).
- Portuguese case reports expand descriptions of acute vascular and chronic presentations but are not suitable for prevalence estimation (9).

Environment / ticks

- Farm-adjacent dust and soil showed sporadic PCR positives; ticks (*Rhipicephalus* spp.) also tested positive. Methods were heterogeneous, suggesting these as ecological signals (10, 11).

Evidence concentrates in central and dairy-producing areas; integrated human–animal–environment study designs are scarce; the northeastern interior remains under-sampled (5, 7).

Discussion/Conclusion

Evidence from Portugal documents showed endemic exposure in small ruminants, in which peripartum PCR/qPCR positivity is associated with abortion and placental material (2–5). Longitudinal data indicate continuous but low-level transmission, as shown by qPCR detection of bulk-tank milk (BTM) at the herd level, consistent with intermittent shedding and dilution within herds (6, 4). At the human level, occupational cohorts show higher seropositivity (30.7%) than community cohorts, quantifying an exposure gradient (7). Comparability across studies is limited by assay cut-offs, mixed sample matrices, and variable georeferencing, resulting in few integrated human–animal–environment approaches; the northeastern region remains under-sampled (5, 7, 9).

Portugal should adopt serological detection of herds via BTM screening as a routine target, peripartum PCR/qPCR for abortion surveillance, seasonal environmental sampling at farms, and occupational surveillance incorporating early clinical PCR and confirmatory serology (4, 7, 10, 11). These methods should be harmonized and integrated with georeferencing and strain typing, highlighting the northeastern region as a priority area for future research.

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