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Seroprevalence of Antibodies against *Coxiella burnetii* among Young Children and Adolescent with Fever of Unknown Origin (FUO): a Prospective study

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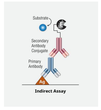
PURPOSE / OBJECTIVES

Fever of unknown origin (FUO) is usually described on the period of primary infection with *C. burnetii* and without an early diagnosis can require prolonged treatment.

- The goal of the present study is to estimate the prevalence of antibodies against *C. burnetii* (Q fever) among children and adolescent with fever of unknown origin (FUO) in Bulgaria from 01 January 2019 to 30 May 2021.

MATERIALS & METHODS

Blood samples from 19 children (0 – 12 years old) and 56 adolescents with FUO were collected in healthcare facilities of Bulgaria and examined with the commercial indirect enzyme-linked immunosorbent assay (ELISA) by detecting *anti-C. burnetii* phase II IgM and IgG antibodies.



RESULTS

Seven percent (n = 5) of tested children were seropositive for Q fever. The study population included mainly adolescents (70%, 13 – 18 years of age). An additional, 4% (n = 3) of all patients included in our study were seropositive for *anti-C. burnetii* IgM only (suspected acute Q-fever).The most frequently reported symptoms (n ≥ 15% of respondents) mentioned by seropositive children were: FUO (69%), headache (52%), epigastric pain (37%), constipation (26%) and fatigue (24%). There was a marked increase in seroprevalence between the ages of 10–14 and 15–19 years (2.5% *v* 6.6%; *P* = 0.051).

Q fever, a worldwide zoonotic disease caused by *Coxiella burnetii*, is endemic in Bulgaria, where it has been reported as responsible for numerous sporadic cases, small and large epidemic outbreaks among humans and domestic ruminants from different regions in the country. The absence of signs characteristic only of Q fever does not allow an accurate clinical diagnosis to be made with accuracy. Therefore, laboratory tests are crucial. Serological methods are quick and useful tests for early diagnosis of patients suspected of Q fever.

RESULTS

The mean length of symptoms before admission was 9.7 ± 6.0 days and total days of fever averaged 15.5 ± 8.6 days (range 3 – 41 days). More males were seropositive (6.9%; 95% CI) than females (4.2%; 95% CI). A distinct seasonality was noted with acute Q fever infections, and this may be related to the parturient season in domestic and wild animals Milk consumption and residence of area with differing intensities of Q fever transmission are considered risk factors for seropositivity.

SUMMARY/CONCLUSION

We conclude that pediatric acute Q fever mimics other common respiratory and/or influenza-like illnesses, and is clinically difficult to distinguish from other pathogens. Our study shows that it is difficult to accurately identify acute Q fever in chil dren based on signs and symptoms alone. They appear to have no predictive power. Clinicians have to rely on diagnostic tests to confirm or reject the diagnosis. Only the determination of the rate of Q fever among seropositive patients can give an answer to the question, of which role Q fever plays in the complex of FUO. The National Reference Laboratory “Cell cultures, rickettsiae and oncogenic viruses” at National Centre of Infectious and Parasitic Diseases (NCIPD) – Sofia employs methods that allow quick diagnosis of cases and differentiation between current and past Q-fever infection of suspected cases in Bulgaria.

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