CXCL9, a promising biomarker in the diagnosis of chronic Q fever

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ECCMID
Q fever

Coxiella burnetii


Dutch Q fever epidemic (2007-2011)
Clinical entities

**Acute Q fever infection**
- Flu-like illness
- Pneumonia
- Hepatitis

**Chronic Q fever 1-5%**
- Vascular infection
- Endocarditis
- Spondylodiscitis

**Cure**
Diagnosis chronic Q fever

Combination of

• Symptoms

• Microbiological evidence
  • PCR blood/ tissue
  • Serological

• Imaging

• Aspecific!
  • Sensitivity <50%!
  • False positives & negatives
  • Interlaboratory differences

Can we identify biomarkers for diagnosis of chronic Q fever?
Microarray

Chronic Q fever patients
Healthy control subjects

Gene expression

Cb NM HK
Microarray

Chemokines
- CXCL9: MIG
- CXCL10 (2): IP-10
- CXCL11: I-TAC
- CCL8: MCP-2

IFN\(\gamma\) inducible
- CXCR3 receptor
- Tuberculosis biomarkers

Differential gene expression of all genes

Patient/Control ratio

Cb NM HK
Production in stimulated whole blood

![Graphs showing CXCL9, CXCL10, CXCL11, and CCL8 protein production in different conditions: healthy control, past Q fever, and chronic Q fever.](image-url)
Serum concentration

![Diagram depicting serum concentration levels across different conditions]

- Healthy
- Past
- Acute
- Chronic

CCL8 levels are compared across these conditions, with 'ns' indicating no significant difference.
Concentration during treatment

High correlation among chemokines

No correlation with time after start treatment

Weak correlation with IgG phase I titers

Weak correlation with CRP
Preliminary data:

CXCL9 protein production and serum concentration is a promising biomarker

Reflection of IFNγ production
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