Acute Renal Failure as the Main Complication of Acute Infection with *Coxiella burnetii*

M.	Miro	Morović ^a
B.	Boris	Dželalija ^a
S.	Suzana	Novaković ^b
S.	Slavko	Stanković ^a
J.	Josip	Dujella ^a

^aMedical Center of Zadar, Croatia; ^bMedical Faculty of Ljubljana, Institute of Microbiology, Ljubljana, Slovenia

Miro Morović, MD, Assistant Professor, Medical Center of Zadar, Department of Infectology, 57000 Zadar (Croatia)

Dear Sir,

Herein we present a case in which acute renal failure (ARF) occurred as the main complication of acute infection with *Coxiella burnetii*. Renal failure due to acute Q fever has in our experience not been described to present.

The patient was a previously healthy 32-year-old man living in the semirural area of North Dalmatia (known as endemic region of Q fever) [1]. He became ill 7 days before admittance. Initially, he had headache, fever (40 °C), generalized myalgias and extreme fatigue. He was treated with β -lactams per os for 5 days because of chest x-ray finding of bronchopneumonia, but with no change in his symptoms. Anamnestically, there was no data suggesting allergic reactions to these antibiotics. The day before hospitalization he noted a generalized pruritic exanthema. When he was admitted he was subfebrile but still complaining of fatigue. Generalized maculopapulous exanthema was noted. Except for mild epigastric tenderness, the rest of his examination was normal. No clinical sign of dehydration was evident. Blood pressure was 18/11 kPa. The laboratory findings at this time showed a sedimentation rate of 87 mm/h, WBC count of $12.7 \times 10^9/l$ with normal differential cell count, hemoglobin 124 g/l, urea 15.9 mmol/l, creatinine 516 $\mu\text{mol/l}$ and urine containing 1 + protein and 2 + blood by reagent sticks.

Two days later the patient's condition worsened, he developed anuria and was transferred to the hemodialysis unit. Blood pressure was 17/10 kPa. Tests showed a raised creatinine value of 754 $\mu\text{mol/l}$, urea 34.1 mmol/l, WBC of $13.6 \times 10^9/l$ with normal differential cell count, hemoglobin of 124 g/l, platelets of $190 \times 10^9/l$. The rest of his blood chemistry was normal. Conservative therapy was started with daily monitoring of fluid, electrolyte balance and body weight. No dialytic therapy was necessary. In the meanwhile, the skin rash has disappeared. Clinical improvement occurred gradually toward the end of the second week of the treatment when both renal function became normal. Control chest x-ray showed a complete resolution of the pulmonary finding. EKG was normal. Intravenous pyelography and ultrasound examination of the kidneys were normal as was the differential renogram. Blood, throat and urine bacterial cultures were negative. Acute and convalescent leptospirae, legionellae and Hantaan virus serology were negative. The dynamics of antibody titers for C.

burnetii (antigen phase II) by indirect immunofluorescent test and ELISA was of diagnostic value (titers to phase I antigen were negative).

The patient was discharged 6 weeks after admission with normal pulmonary, renal and general status.

It is surprising that kidney disorders are rarely described as a consequence of rickettsial diseases in general, since renal tissue is particularly rich in microvasculature, the main target of most rickettsiae. Moreover, in those rare cases where rickettsiae were implicated in the pathogenesis of ARF, their exact role in the precipitation of the failure remains putative [2-5]. ARF occurred in our patient in the absence of any pre- and postrenal causes, so we considered specific renal disorders. Among these, the infective cause was confirmed by serologic evidence of acute Q fever and by the exclusion of other infective agents that usually affect the kidneys.

In conclusion, we are of the opinion that ARF in this case could be considered a true complication of acute Q fever rather than merely a simultaneous disease or perhaps a result of the effect of extrarenal contributory

factors. In this regard the list of acute Q fever complications [6, 7] could be extended.

Conclusions regarding the pathogenesis of ARF in this case are difficult to draw, since, in contrast to other rickettsiae, the principal host cells of *C. burnetii* are macrophages. In this sense, the similarities of the disease mechanisms to those of legionellosis (particularly when pneumonia and renal failure coexist) may represent a fingerpost.

References

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