



ESCV WORKSHOP ON EMERGING VIRUS INFECTIONS

23rd - 24th January 2020
University Clinic of Dentistry
Vienna, Austria



In cooperation with



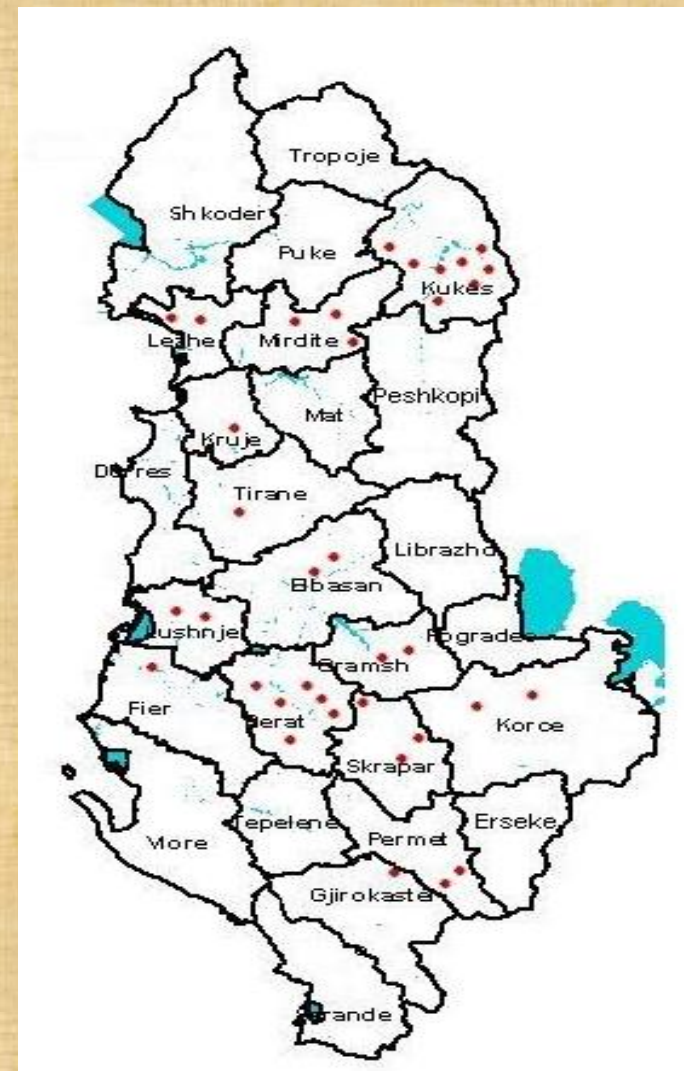
A short panoramic view of hemorrhagic fever in Albania

Edmond Puca PhD
Service of Infectious Diseases,
University Hospital Center
Tirane, Albania



Short story of CCHF in Albania

- In Albania, an outbreak of hemorrhagic fever (CCHF and hantavirus) was described in 1986-1987, and than in 1989.
-
- Since 1990, sporadic cases of hemorrhagic fever (CCHF) have been reported each year.
- Number of cases are decreasing year by year.
- *Hyalomma marginatum* serve as transmitter vector in Albania.



CCHF 2001 -2006

- May 2001 – September 2010, 190 suspected cases
- Only 70 cases confirmed
- After 2010 sporadic rare cases



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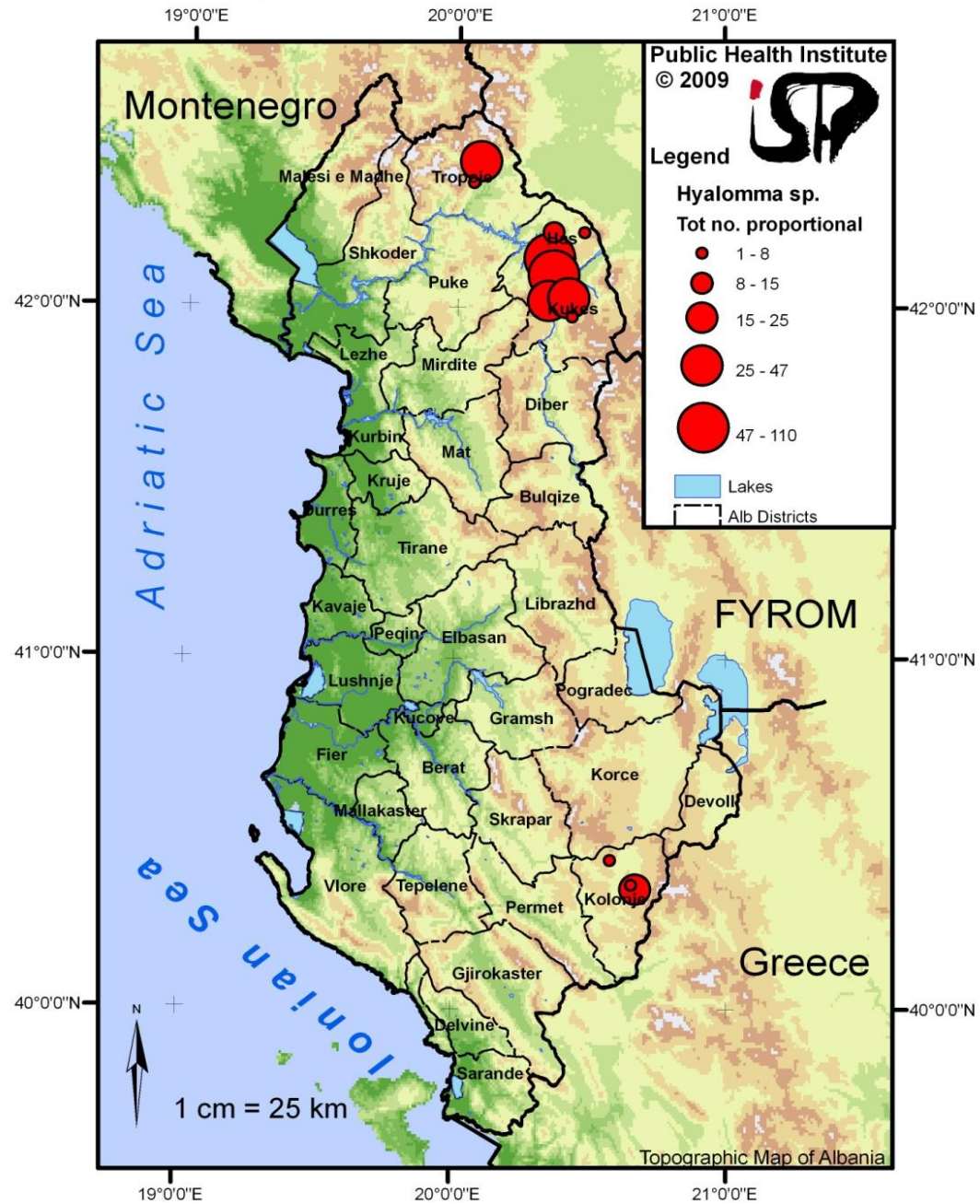
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MEDICAL FACULTY OF VIENNA



Hyalomma sp. 2003 - 2006



VECTOR-BORNE AND ZOO NOTIC DISEASES
Volume 00, Number 00, 2009
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VBZ-2008-0141-Papa
Type: research-article

Ecology of the Crimean-Congo Hemorrhagic Fever Endemic Area in Albania

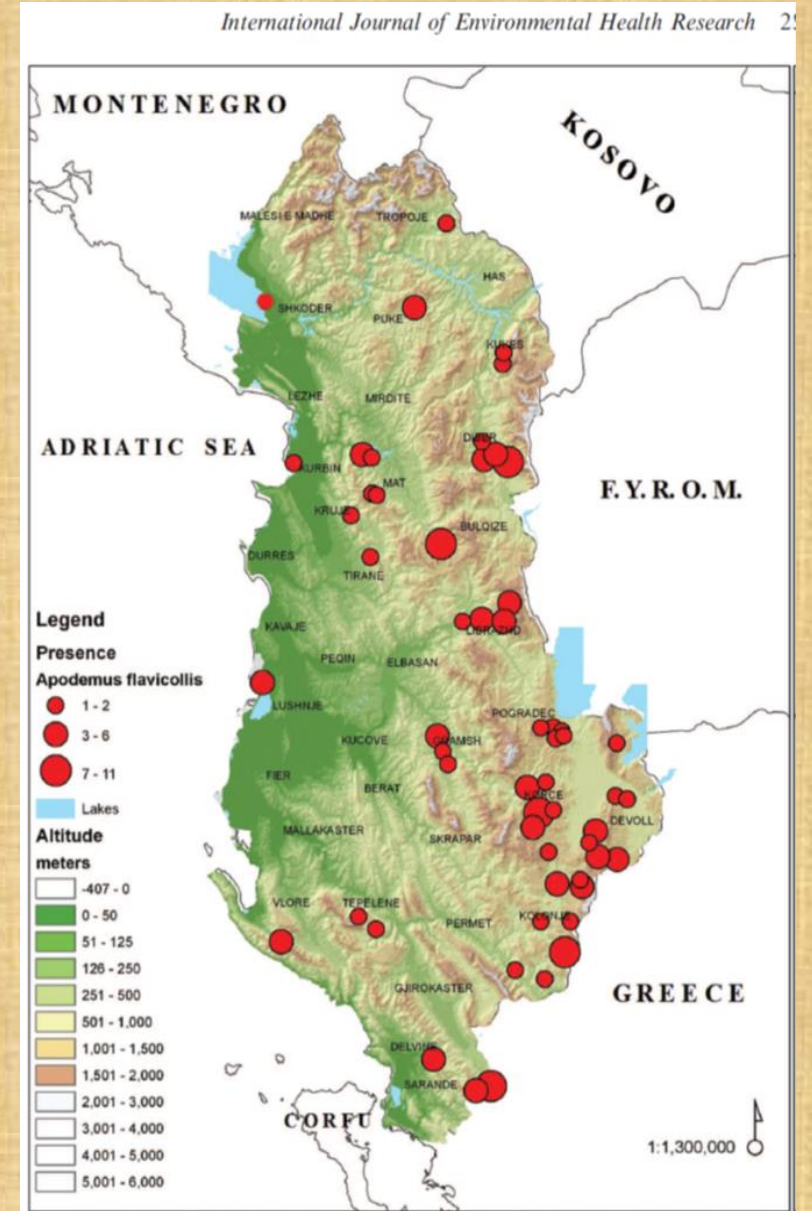
Anna Papa,¹ Enkelejda Velo,² Evangelia Papadimitriou,¹ Gjyle Cahani,³ Majlinda Kota,² and Silvia Bino²

Abstract

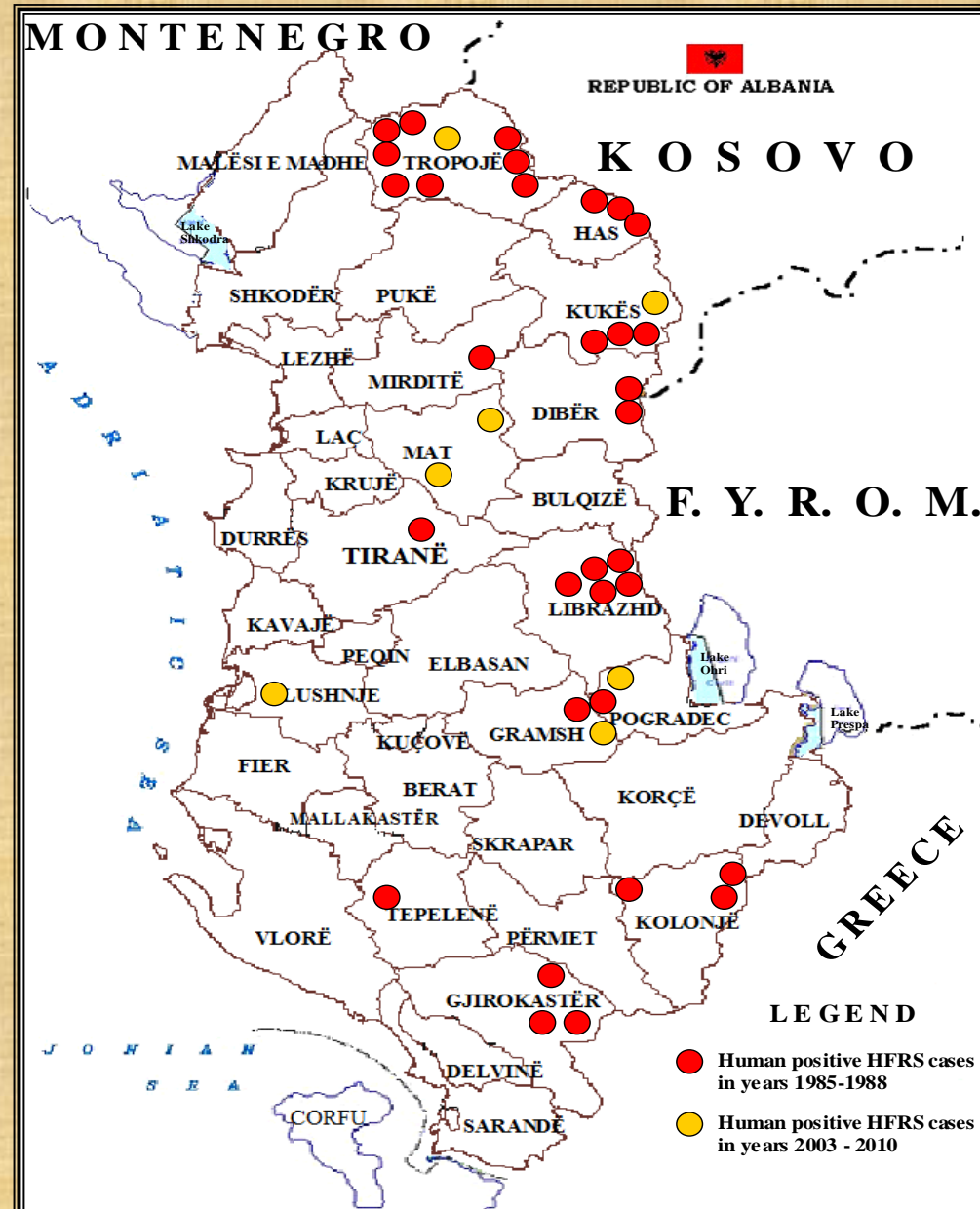
Crimean-Congo hemorrhagic fever virus (CCHFV) is endemic in Albania. Ticks collected from cattle grazing in the endemic areas of Albania were tested for presence of CCHFV RNA, while serum samples collected from goats, cattle, hares, and birds were tested for the presence of specific IgG antibodies to CCHFV. One of the 31 pools prepared, consisting of four female *Hyalomma* spp. ticks, was found to carry CCHFV RNA with 99.2–100% homology to sequences detected in patients from the same region. Antibodies were not detected in cattle, hares, and birds, but 2/10 goats presented high titers of IgG antibodies. The shepherd of that flock was a member of a family affected by CCHF 10 days before the collection of goats' sera, and he presented a mild form of the disease.

HF with Renal Syndrome

- First Hantaan virus isolated in 1985
- **During the period 1985-1987 Hantaan hemorrhagic fever** were found in: Gjirokaster 3 cases, Librazhd 6 cases, Berat 3 cases, Kolonje 4 cases, Gramsh 1 case, and Tropoje 13 cases.
- The total number of identified positive human HFRS in years 1985-2010 was 39 cases.
- Mortality has been 25.6% (10 out of 39 cases).
- From January 2011- November 2016 were 35 patients and mortality is ~ 10%
- *Apodemus flavicollis* serve as vector in Albania



Map of Albania that shows the distribution of 39 human positive HFRS confirmed cases during 1985 – 2010



Why are important Viral hemorrhagic fevers ?



Daily activities tourism



Problems in Diagnosing of HFRS

- Symptoms often confused with influenza or other infection and non infection diseases
- Abdominal pain often misinterpreted as appendicitis
- Many doctors outside endemic regions fail to recognize it
- Or have insufficient testing
- **BUT clinicians need to focus on:**
 - a. Epidemiology
 - b. Clinical data
 - face and nose edema
 - c. Laboratoric examinations
 - thrombocytopenia
 - renal failure
 - free abdominal liquid



Macroscopic urine view

Helping in clinical
diagnosis,

Proteinuria in patients
with HFRS



Scrolled shrimps of
HFRS in one of my
interesting cases



Our most interesting and publishing cases



VIROLOGICA SINICA, August 2011, 26 (4): 285-288
DOI 10.1007/s12250-011-3182-0

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Hemorrhagic Fever with Renal Syndrome Complicated by Orchitis

Edmond Puca^{1**}, Arben Pilaca², Pellumb Piperi², Silva Bino^{2,3}, Majlinda Kote³,
Elton Rogozi³, Entela Puca⁴ and Dhimiter Kraja²

(1. Service of Infectious Diseases, University Hospital Center "Mother Teresa"; 2. Department of Infection Diseases and Dermatology, University of Tirana; 3. Institute of Public Health, Tirana, Albania; 4. Neo-Style Clinic, Tirane, Albania)

Abstract: Hemorrhagic fever with renal syndrome (HFRS) is a disease caused by viruses of the family *Bunyaviridae*, genus *Hantavirus*. HFRS from Dobrava virus (DOBV) is a seldom reported disease in Albania. Clinically HFRS is manifested as mild, moderate, or severe. Therefore, the number of cases of Hantavirus infection may be underestimated, and should be included in the differential diagnosis of many acute infections, hematologic diseases, acute abdominal diseases and renal diseases complicated by acute renal failure. We report

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Abstract: Hemorrhagic fever with renal syndrome (HFRS) is a systemic infectious disease caused by Hantaviridae, genus *Hantavirus*. HFRS from Dobrava virus. Clinically HFRS is manifested as mild, moderate or severe infection may be underestimated, and should be included in the differential diagnosis of hematologic diseases, acute abdominal diseases and

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Hemorrhagic Fever with Renal Syndrome Associated with Acute Pancreatitis

Edmond Puca^{1**}, Arben Pilaca^{1,2}, Pellumb Pipero^{1,2}, Dhimiter Kraja^{1,2} and Entela Y Puca³

(1. Service of Infectious Diseases, University Hospital Center "Mother Teresa", Tirana 1007, Albania; 2. Department of Infection Diseases and Dermatology, University of Tirana, Tirana 1007, Albania; 3. Service of Endocrinology, American Hospital No2, Tirana 1007, Albania)

Abstract: Hemorrhagic fever with renal syndrome (HFRS) is a systemic infectious disease caused by Hantaviruses and characterized by fevers, bleeding tendencies, gastrointestinal symptoms and renal failure. It encompasses a broad spectrum of clinical presentations, ranging from unapparent or mild illnesses to fulminant hemorrhagic processes. Among the various complications of HFRS, acute pancreatitis is a rare find. In this report, based on clinical data, laboratory and radiologic examination findings, we describe a clinical case, with HFRS from Dobrava virus, associated with acute pancreatitis. The patient was successfully treated by supportive management. Clinicians should be alert to the possibility of HFRS when examining patients with epidemiological data and symptoms of acute pancreatitis.

Key words: Hemorrhagic fever with renal syndrome (HFRS); Pancreatitis, Dobrava virus

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Abstract: Hemorrhagic fever with renal syndrome (HFRS) is caused by Hantaviruses and characterized by a broad spectrum of hemorrhagic processes. Amorphous based on clinical data, laboratory findings from Dobrava virus, associated with acute pancreatitis management. Clinicians should be aware of the data and symptoms of acute pancreatitis.

Key words: Hemorrhagic fever with renal syndrome, acute pancreatitis

Journal of Microbiology and Infectious Diseases / JMID

2014; Special Issue 1: S54-S57
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REVIEW ARTICLE

A short review of hemorrhagic fever with renal syndrome and its extra renal complications

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Infectious Diseases, University Hospital Center "Mother Teresa" Tirane, Albania

ABSTRACT

Hantaviruses are enveloped tri-segmented negative-stranded RNA viruses. Infection from these viruses is growing in last decades. They are causative agent for two types of diseases:

- Hemorrhagic fever with renal syndrome (HFRS), mostly observed in Eurasia and
- Hantavirus cardiopulmonary syndrome (HPS), mostly observed in American continent.

There are several Hantaviruses known to infect humans, and their main hosts are rodents. HFRS is caused from Hantaan, Dobrava, Saaremaa, Seoul and Puumala virus. The main factor, which determines the severity of Hantavirus infection, is the degree of increased permeability of infected endothelium, and the most common clinical findings in those patients are fever, headache, abdominal pains, backache, myalgia and nausea or/and vomiting. There are already numerous publications with regards to the involvement of two major systems such as renal and pulmonary in patients with HFRS. In this paper we would try to make a short review about the involvement of other organs and systems of our body in those patients. Extrarenal manifestations of Hantavirus infection include: acute ocular impairment with visual function,

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Key words: hemorrhagic fever, with renal syndrome, extra renal, acute, pancreatitis, HFRS

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Full length article

Hemorrhagic fever with renal syndrome in Albania. Focus on predictors of acute kidney injury in HFRS

Rista Elvana^{a,*}, Pilaca Arben^b, Akshija Ilir^c, Rama Arloi^d, Harja Endri^b, Puca Edmond^e, Bino Silvia^f, Cadri Vilma^g, Thereska Nestor^g, Harxhi Arjan^d

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- ^e Department of Nephrology, University Hospital Center "Mother Teresa" Tirana, Albania
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ARTICLE INFO

Keywords:
HFRS
AKI
Albania

ABSTRACT

Background: Hemorrhagic fever with renal syndrome (HFRS) is a rodent borne zoonosis, caused by the members of the family *Bunyviridae*, genus *Hantavirus*. The main clinical features of the infection by this virus family are fever, thrombocytopenia and acute kidney injury.

Objective: The aim of our study was to identify, for the first time, characteristic features of HFRS in the Albanian population.

Study design: The study comprised 33 consecutive patients admitted with suspected HFRS from April 2011–April 2016 at one center. Clinical diagnosis was confirmed by ELISA and real-time PCR. Statistical analysis was performed to identify prognostic markers and indicators of disease severity.

Results: The virus strain causing HFRS was Dobrava type in all 33 cases. The disease outbreaks occurred during the period June–July. Mean hospital stay was 15.7 ± 6.9 days. 29 (88%) of the patients were male. The mean age was 30.7 ± 14.1. 16 (48.5%) patients were from Northeast Albania. 8 (24.2%) patients required dialysis. The strongest correlation was the inverse relationship of nadir platelet count with urea and creatinine, $p < 0.0001$ and $p < 0.0079$ respectively. Creatinine and hyponatremia were inversely correlated $p = 0.0007$, whereas hypo-

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Key words: hemorrhagic fever with renal syndrome, extra renal complications, pancreatitis



Full length article

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CASE REPORT

Hemorrhagic Fevers with Renal Syndrome Presenting with Pregnancy Interruption

Elda Qyra¹, Edmond Puca¹, Arjan Harxhi¹, Majlinda Kote², Pellumb Pipero¹

¹University Hospital Center of "Mother Teresa", Department of Infectious Diseases, Tirana, Albania
²Institute of Public Health, Tirana, Albania

ABSTRACT

Hemorrhagic fever with renal syndrome is presented with so many different clinical symptoms. It can present mild form of the disease or the severe symptoms. We reported two cases with HFRS, at pregnant women, ended with pregnancy interruption. Both of them had nearly the same age, both 18 weeks pregnant. They presented with fever, malaise, muscle pain and headache. They were febrile when presented at the hospital, hypotensive, hyperemia on the face. They complained about oligo-anuria too. One of them continued to be hypotension, despite the supportive therapy she had an abortion after 8 hours. The other patient had the abortion on the 4th day of hospitalization. The diagnose was set based on the clinical, epidemiological findings and the serological positive confirmation for IgM Hantavirus by enzyme-linked immunosorbent assay and immunofluorescence assay IFA.

The abortion is a rare complication of HFRS in pregnancy. The symptoms are not specific. Early diagnosis and appropriate management are necessary to improve the maternal and fetal outcome. *J Microbiol Infect Dis 2017; 7(4):198-201*

Keywords: Hemorrhagic fever with renal syndrome, pregnancy, interruption

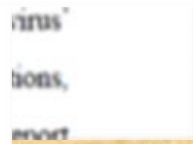
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CASE REPORT

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IN DEVELOPING COUNTRIES

Brief Original Article

Pancreatitis in patients with hemorrhagic fever with renal syndrome: A five-year experience

Edmond Puca¹, Arjan Harxhi¹, Pellumb Piperero¹, Elda Qyra¹, Gentian Stroni¹, Ermira Muco¹, Zhenisa Hysenaj¹, Elvana Rista², Gjek Tosku³, Silvia Bino⁴

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² Service of Nephrology, Hygela Hospital, Tirana, Albania

³ Service of Radiology, University Hospital Center, Tirana, Albania

⁴ Institute of Public Health, Tirana, Albania

Abstract

Introduction: Pancreatitis is a rare complication of hemorrhagic fever with renal syndrome (HFRS). The causative agents of HFRS are hantaviruses, which belong to the genus *Hantavirus*, family *Bunyaviridae*. The purpose of this study was to evaluate cases of acute pancreatitis (AP) in patients with HFRS at the Service of Infectious Diseases, Tirana, Albania.

Methodology: In this retrospective study, clinical and laboratory data was obtained from 36 patients with confirmed HFRS, between January 2011 and December 2016. The diagnosis had been confirmed by a positive enzyme-linked immunosorbent assay (ELISA) for IgM or IgG antibodies to hantavirus.

Results: The average patient age was 39.7 ± 14.1 years with a range of 15-59 years. From 36 HFRS patients, four (11.1%) were found to have

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Hemorrhagic Fever with Renal Syndrome Complicated by Orchitis

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Travel Medicine and Infectious Disease 28 (2019) 86-90



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Two cases of imported hemorrhagic fever with renal syndrome and systematic review of literature

Edmond Puca^{a,d,*}, Migena Qato^a, Pellumb Pipero^a, Ilir Akshija^b, Majlinda Kote^c, Dhimiter Kraja^a

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ARTICLE INFO

Keywords:
Hemorrhagic fever with renal syndrome (HFRS)
Immigrant
Travel
Imported diseases

ABSTRACT

Many factors are involved in the epidemiology of hemorrhagic fever with renal syndrome (HFRS). Imported cases, as well as those by emigrants, have been reported in literature worldwide. Our goal is to document two cases of HFRS, imported by two immigrants from two countries, and to make a review of the imported HFRS literature data. We performed a systematic literature review (PRISMA guidelines) of imported cases of HFRS and herein describe our two clinical cases. We found 20 published papers, with 16 of them in English and 4 in other languages. Twenty-three patients with travel- or immigration-associated HFRS, including our two cases, were identified. We included only papers that were in English. The average age of the patients was 35.9 ± 15.13 years, and the ratio of male to female was 8:1. Imported disease from Europe to Europe occurred in seven cases, America to Europe occurred in four cases, Europe to America occurred in two cases, America to America occurred in two cases, Asia to Asia in one case, Asia to Europe in one case, and Europe to Asia in one case. The results of the two cited cases are based on the clinical-laboratory, anamnestic, and serologic data for both the patients who tested positive for HFRS. Our systematic analysis shows that international travelers are important sources of infectious diseases. HFRS related to travel and immigration is a rare event. Principal risk factors for travelers and immigrants are camping outside recommended areas or under unsuitable conditions. In recent years, various publications have shown that international travelers and immigrants have expanded the spectrum of imported infectious diseases. The literature data show that the actual reported numbers of imported case of HFRS are limited.

Two cases of imported hemorrhagic fever with renal syndrome and systematic review of literature

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Full length article

Hemorrhagic fever with renal syndrome in Albania. Focus on predictors of kidney injury in HFRS

Rista Elvana^{a,*}, Pilaca Arben^b, Akshija Ilir^c, Rama Ariol^d, Harja Endri^b, Puca Edmond^d, Bino Silvia^e, Cadri Vilma^e, Thereska Nestor^e, Harxhi Arjan^d

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VIROLOGICA SINICA, August 2011, 26 (4): 285-288
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Journal of Microbiology and Infectious Diseases / 2014; Special Issue 1: S54-S57
JMID / doi: 10.5799/jhid.02.2014.S1.0142

REVIEW ARTICLE

A short review of hemorrhagic fever with renal syndrome and its extra renal complications

Edmond Puca, Arben Pilaça, Pellumb Pipero, Tritan Kalo, Gentian Stroni, Elda Qyra, Entela Y. Puca, Dhimiter Kraja
Travel Medicine and Infectious Disease 28 (2019) 86-90

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Travel Medicine and Infectious Disease

journal homepage: www.elsevier.com/locate/tmaid




Two cases of imported hemorrhagic fever with renal syndrome and systematic review of literature

Edmond Puca^{a,d,*}, Migena Qato^b, Pellumb Pipero^a, Ilir Akshija^b, Majlinda Kote^c, Dhimiter Kraja^d

^a Service of Infectious Diseases, University Hospital Center, Tirana, Albania
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ARTICLE INFO

Keywords:
Hemorrhagic fever with renal syndrome (HFRS)
Immigrant
Travel
Imported diseases

ABSTRACT

Many factors are involved in the epidemiology of hemorrhagic fever with renal syndrome (HFRS). Imported cases, as well as those by emigrants, have been reported in literature worldwide. Our goal is to document two cases of HFRS, imported by two immigrants from two countries, and to make a review of the imported HFRS literature data. We performed a systematic literature review (PRISMA guidelines) of imported cases of HFRS and herein describe our two clinical cases. We found 20 published papers, with 16 of them in English and 4 in other languages. Twenty-three patients with travel- or immigration-associated HFRS, including our two cases, were identified. We included only papers that were in English. The average age of the patients was 35.9 ± 15.13 years, and the ratio of male to female was 8:1. Imported disease from Europe to Europe occurred in seven cases, America to Europe occurred in four cases, Europe to America occurred in two cases, America to America occurred in two cases, Asia to Asia in one case, Asia to Europe in one case, and Europe to Asia in one case. The results of the two cited cases are based on the clinical-laboratory, anamnestic, and serologic data for both the patients who tested positive for HFRS. Our systematic analysis shows that international travelers are important sources of infectious diseases. HFRS related to travel and immigration is a rare event. Principal risk factors for travelers and immigrants are camping outside recommended areas or under unsuitable conditions. In recent years, various publications have shown that international travelers and immigrants have expanded the spectrum of imported infectious diseases. The literature data show that the actual reported numbers of imported case of HFRS are limited.

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Journal of Microbiology and Infectious Diseases

2017; 7 (4):198-201
doi: 10.5799/jmid.369267

CASE REPORT

Hemorrhagic Fevers with Renal Syndrome Presenting with Pregnancy Interruption

Elda Qyra¹, Edmond Puca¹, Arjan Harxhi¹, Majlinda Kote², Pellumb Pipero¹

¹University Hospital Center of "Mother Theresa", Department of Infectious Diseases, Tirana, Albania
²Institute of Public Health, Tirana, Albania

ABSTRACT

Hemorrhagic fever with renal syndrome is presented with so many different clinical symptoms. It can present mild form of the disease or the severe symptoms. We reported two cases with HFRS, at pregnant women, ended with

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Brief Original Article

Pancreatitis in patients with hemorrhagic fever with renal syndrome: A five-year experience

Edmond Puca¹, Arjan Harxhi¹, Pellumb Pipero¹, Elda Qyra¹, Gentian Stroni¹, Ermira Muco¹, Zhenisa Hysenaj¹, Elvana Rista², Gjok Tosku³, Silvia Bino⁴

¹ Service of Infectious Diseases, University Hospital Center, Tirana, Albania
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³ Service of Radiology, University Hospital Center, Tirana, Albania
⁴ Institute of Public Health, Tirana, Albania

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Hemorrhagic Fever with Renal Syndrome Associated

Muco *et al.* *Journal of Medical Case Reports* (2018) 12:118
<https://doi.org/10.1186/s13256-018-1665-4>

Journal of
Medical Case Reports

CASE REPORT

Open Access



Crimean-Congo hemorrhagic fever with hepatic impairment and vaginal hemorrhage: a case report

Ermira Muco^{1,4*}, Najada Como¹, Siva Bino², Arjan Harxhi¹, Pellumb Pipero³, Majlinda Kota², Jonida Mehmeti³, Arta Kushi¹ and Dhimiter Kraja¹

Abstract

Background: Crimean-Congo hemorrhagic fever is a tick-borne disease described in more than 30 countries in Europe, Asia, and Africa. Albania is located in the southwestern part of the Balkan Peninsula. In 1986, the first case of Crimean-Congo hemorrhagic fever was registered, and cases of patients with hemorrhagic fever are rising, and most of them present in a serious condition, when the mortality rate is very high. In districts like Mirdite, Lezhe, Gjirokaster, Skrapar, Erseke, and Kukes, there is delineated human-to-human transmission.

Case presentation: We report the case of a 32-year-old Albanian woman from a rural area of Albania. She was hospitalized at the Infectious Diseases Service, for a severe influenza-like illness of 4 days duration. Our patient had been bitten by a tick while working in her garden. She presented with nausea, vomiting, headache and muscle pain. A physical examination found a high fever of 40°C, an enlarged liver, petechia, and vaginal bleeding; flapping tremor and fetor hepaticus were found as a sign for hepatic encephalopathy; and confusion and disorientation were observed in her neurological examination. Her clinical and white blood cell count were similar to those of Crimean-Congo hemorrhagic fever.

Key words: hemorrhagic fever with renal syndrome, extra renal complications

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Two cases of imported hemorrhagic fever with renal syndrome and systematic review of literature

ISSN 1201-9712

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^dISCMED Study Group for Infections in Travelers and Migrants (ISGITM), Albania

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REPORT

Syndrom Presenting with Pregnancy Interruption

Harxhi¹, Majlinda Kote², Pellumb Pipero¹

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Elda Qyra¹, Gentian Stroni¹, Ermira Muco¹, Zhenisa Kote¹

Center, Tirana, Albania
Tirana, Albania

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