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**P1507 Serologic and molecular-genetic data for infection with *Borrelia burgdorferi* sensu lato, *Anaplasma phagocytophilum* and *Francisella tularensis* in wild rodents**

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**Objectives:** The aim of this study was to generalise serologic and molecular-genetic data for infectious of wild rodents with aetiological agents of Lyme disease (*B. burgdorferi* sensu lato), Human granulocytic anaplasmosis (*A. phagocytophilum*) and tularaemia (*F. tularensis*).

**Methods:** A total of 70 rodents from whole country from the species *Rattus rattus*, *Mus musculus* and *Apodemus agrarius* were studied by PCR and serological methods – ELISA and agglutination.

**Results:** Our PCR results demonstrated that the most common pathogen was *B. burgdorferi* sensu lato – a total of 18 positive samples (18/70; 25.71%). Infection with *F. tularensis* was on the second place only from rodents in Meshtitza – a total of 9 positive samples (9/42; 21%) of spleens of the rodents. The infection with *A. phagocytophilum* was the most rare – a total of 5 positive samples (5/70; 7.14%). Twenty-three positive samples (23/70; 32.86%) of *B. burgdorferi* sensu lato and 15 positive samples (15/70; 21.43%) of *A. phagocytophilum* were detected by ELISA. Nine positive samples (9/42; 21%) of *F. tularensis* were detected by agglutination in Meshtitza.

**Conclusions:** Molecular-genetic methods demonstrated DNA of the infectious agents before antibody-responses of the macroorganism. Combining of PCR and serological methods of diagnosis was adequate tool for quick and effective surveillance on circulation of different infectious agents among populations of the rodents. Data for infections of wild rodents with *B. burgdorferi* sensu lato, *A. phagocytophilum* and *F. tularensis* showed prevalence with different pathogens among main reservoirs of tick borne infections and warning possible contraction for human population in different regions in the country.

**P1508 Usefulness of C6 peptide antibody assay in early localised Lyme borreliosis**

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**Objectives:** In early localised Lyme borreliosis (erythema migrans, EM), ELISA's detecting antibodies against flagellin of *Borrelia burgdorferi*, followed by immunoblot, usually have a sensitivity of about 50%. Recently, ELISA's have been developed detecting antibodies against C6 peptide, a conserved and immunodominant region of the VlsE antigen of *B. burgdorferi*. Initial reports showed a specificity of this assay equal to that of immunoblot and a sensitivity in disseminated Lyme borreliosis of more than 90%. In a recent Dutch study, the sensitivity in 40 patients with EM was 22.5% (AP van Dam et al Abstract. Bussiness Meeting Dutch Society of Medical Microbiology, April 2004).

**Methods:** We evaluated the performance of the C6 peptide (Immunitics Inc, Boston, USA) six months after introduction in our laboratory, which is connected to a large, regional hospital in the Western part of the Netherlands. In a preliminary study using 39 sera of patients with disseminated Lyme-borreliosis, the correlation between C6 assay and flagellin ELISA (Dade Behring, Marburg, Germany) combined with immunoblot (Mikrogen GMBH, Neuried, Germany) was 90%. All aforementioned assays were performed in 90 selected sera.

**Results:** Thirteen of the 15 patients showing a seroconversion in the flagellin ELISA were also positive in the C6 assay. In 39 patients with EM, the C6 assay showed a sensitivity of 69%. Sensitivity in 20 patients with disseminated Lyme-borreliosis was 100%. Specificity of the C6 assay was 95%. No crossreactive antibodies were detected in 20 sera with positive rheumafactor, IgM antibodies to Epstein-Barr virus or cytomegalovirus, or specific antibodies against *Treponema pallidum*.

**Conclusion:** The C6 assay showed a high specificity, an excellent sensitivity in late Lyme-borreliosis and a sensitivity of nearly 70% in EM, making immunoblot unnecessary and the C6 assay suitable for use in diagnostic laboratories to detect both disseminated and localised stages of Lyme disease. Performance of the updated version of the C6

peptide ELISA and validation of the assay for cerebrospinal fluid are under evaluation.

## Travel medicine

**P1509 Impact of pretravel medical consultation on behaviour and health status of travellers**

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**Background:** The Center for Travel Medicine and Yellow Fever Vaccination, Institute for Hygiene and Environmental Medicine, University of Giessen (Germany) offers special consultation and immunisation for travellers. This centre advises approximately 400 travellers every year. A trained physician provides standardised advice about their particular destination, general as well as local health-risks, and administers any necessary vaccination. Some travellers use further information sources to find out more about their destination (for example the internet, books and locals), therefore status of information varies interindividually.

**Methods:** We study the quality of pretravel information and measures in relation to behaviour during travel as well as post travel health status and medical consultations.

Two trained medical students recruit travellers during pretravel consultation with an informed consent and a first data assessment using a specially developed form on general travel and personal information, the content of medical consultation/measures in the Center for Travel Medicine and Yellow Fever Vaccination and from other information sources. Travellers are followed-up six to eight weeks after their journey to capture post-travel health status. The questionnaire applied at this time point has some similarities to the pretravel assessment form and contains additional items on during travel health status, physician consultations, medication and risk behaviours as well as preventive measures. Post travel medical history is also assessed. The questionnaire comprises forty items offering the option of completion via telephone, print-out or internet.

**Results:** About seventy-five percent of the travellers agreed to participate in the study. The posttravel follow-up questionnaire has been completed by twenty-five travellers so far. The travellers were 17 to 64 years old, eight men and 17 women. Travel destinations were in and outside Europe (e.g. Africa, Uganda). The mean duration of travel was 29 days. Results of this first assessment will be presented.

**P1510 Traveller diarrhoea. Aetiological study in a tropical medicine unit**

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**Introduction:** The number of international travels is increasing continuously. 12 million Spaniards travelled abroad last year; 900,000 of them had tropical countries as final destination. Over 10% of travellers went to a doctor at their arrival. Diarrhoea was the most frequent cause (over 40%).

**Material and Method:** 43 patients incoming to Tropical Medicine Unit were under study, in a four months period, showing diarrhoea after a travel to the tropic as main symptom. 24 (55.8%) female and 19 (44.2%) male. Final travel destination by continent was 25 (58.4%) to Africa, 10 (23.26%) to Asia and 8 (18.6%) to Latin America. 3 faeces samples from different times were collected from all of them, and microbiological study (bacteriologic and parasitic) was done. When *Escherichia coli* was diagnosed by coproculture we tried to identify the strain diarrhogenic character using PCR, looking for ETEC, EAEC and EPEC-EHEC strains.

**Results:** 100% exhibit diarrhoea, with a duration of:

<7 days, 9 cases (20.9%, average 4.8 days). Aetiology: *E. coli* (8): 1 ETEC + *Entamoeba histolytica*, and 1 EAEC. Parasites (1): *Giardia intestinalis*.

7–30 days, 19 cases (44.2%, average 18 days). Aetiology: *E. coli* (14): 2 ETEC (1 + *Blastocystis hominis*); 4 EAEC (1 + *Cyclospora cayotensis*, 1 + *B. hominis*) and 1 EPEC. Parasites (2): *Cryptosporidium*

*parvum*, *Endolimax nana* + *B. hominis*. Others: *Shigella flexneri* (1), Dengue (1), Rickettsiosis (1).

>30 days, 15 cases (34.9%, average 54 days). Aetiology: *E. coli* (11): 1 ETEC + *E. histolytica* and 1 EAEC. Parasites (4): *G. intestinalis* (1 + *B. hominis*).

In 3 cases of the last group diarrhoea lasted more than 300 days.

From the beginning of the travel, diarrhoea started in <7 days in 10 cases (23.3%), between 7–15 days in 21 cases (48.8%) and >15 days in 12 cases (27.9%). 20 cases (46.5%) developed invasive diarrhoea. Fever in 16 cases (37.2%) and abdominal pain in 31 cases (72.1%) appeared as associated symptom.

**Conclusions:** *Escherichia coli* was the most frequent isolated germ in an important number of parasite-associated cases (multifactorial aetiology?). *E. coli* diarrhoeagenic strain was not able to be confirmed by PCR in some cases. In this study we cannot conclude that chronic diarrhoeas are of parasitological aetiology. Microbiological study of faeces of travellers with diarrhoea arriving from tropical countries must be done to rule out potentially treatable bacterial and parasitological aetiology.

#### **P1511** A retrospective study of 230 consecutive patients hospitalised after transcontinental travel

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**Objectives:** With the current craze for transcontinental travels, infectious diseases consultants practicing in Europe or Northern America hospitals need to be well aware of the distribution of diseases in hospitalised returning travelers and migrants. Our study adds to the previous which tried to characterise causes of consultation and/or hospital admission after traveling. Its purpose is to better define preventive measures in patients who consult before traveling and to guide diagnostic investigations in patients who return ill after traveling abroad.

**Methods:** We reviewed 230 consecutive patients who were hospitalised in our infectious diseases unit between January 2000 and March 2006 after traveling to another continent. We conducted a retrospective observational study. Cases were identified by our computerised database system. Data were extracted from medical charts, including demographic variables, travel conditions, diagnostic workup, treatment and outcome.

**Results:** Male to female ratio was 1.58; median age was 33 years and median time from travel to hospitalisation was 13 days. Among the travelers, 52% were tourists, 28% were long term expatriates, 8% worked for humanitarian organisations, 10% visited their relatives or friends, and 26% couldn't be classified. The main destination of travel was sub-Saharan Africa (70.9%), much more frequent than Southern Asia (8.2%) or Northern Africa (8.2%). Malaria was the most common diagnosis (49.1%), followed by gastroenteritis (13.0%), viral hepatitis (6.1%), and bacterial pneumonia (4.3%). A significant proportion of patients were diagnosed with tuberculosis (5.2%) or HIV infection (4.3%) but the link between recent travel and these pathologies could not be ascertained. Rare diseases with potential nosocomial transmission were also observed, including severe acute respiratory syndrome (SARS) and Crimean-Congo haemorrhagic fever.

**Conclusion:** Even if the study was not limited to febrile illnesses, malaria remains the first cause of hospitalisation after traveling to another continent. Owing to the diversity of tropical pathologies and to the increase of travel to developing countries, this study underscores the need to maintain tropical expertise for physicians in charge of patients who return ill from travel. A substantial proportion of these diseases may be prevented by validated protective measures.

#### **P1512** Wave of undocumented migrants in the Canary Islands: new challenges for European microbiologists

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**Introduction:** From June to October 2006, 25,000 undocumented immigrants from West Africa have reached the Canary Islands by boat

from the coast of Senegal and Mauritania, i.e. 3 times the number during the first 5 months of 2006 and around five times the total for the whole of last year. Most have arrived in Tenerife. The aim of this work was to evaluate the impact of this immigrants' wave for the laboratory of microbiology of the University Hospital of Canary Islands (HUC).

**Methods:** The samples received and the results obtained in the section of parasitology were assessed differentiating two periods: January–May and June–October, 2006. Parasite examination was performed in faecal specimens, urine and broncho-alveolar lavage (BAL) after concentration by microscopic exam with iodine, trichrome and Kinyoun staining. Graham test to pinworm screening was also performed. Blood samples were analysed by thin and thick blood films stained with Giemsa stain.

**Results:** During the first period of study (January–May) approximately 8,000 undocumented immigrants arrived to Canary Islands. During this period the parasitology section of the HUC received a total of 953 samples for detection of parasites: 783 stool samples, 160 Graham tests and 10 blood samples. Only 3 samples were positives for *Giardia lamblia* (1) and *Entamoeba coli* (2) and no cases of malaria were detected. From June to October the number of immigrants rose 25,000 individuals. The total number of samples received for detection of parasites ascended to 1,527: 1,239 stool samples, 221 Graham tests, 7 urines, 2 BAL and 58 blood samples. Significant increase in the number of isolates and diversity of pathogens were observed comparing to the first period: *Ancylostoma duodenale* (2), *Ascaris lumbricoides* (7), *Giardia lamblia* (6), *Entamoeba coli* (29), *Endolimax nana* (8), *Iodamoeba bütschlii* (2), *Enterobius vermicularis* (5), *Schistosoma haematobium* (2) and *Plasmodium falciparum* (12).

**Conclusion:** Both the number and the variety of samples and techniques realised as well as the parasites observed have increased in the last five months coinciding with a new wave of undocumented migrants arrived this summer to the Canary Islands. This should make us think about the need to guarantee the necessary human and material resources as well as training and update courses in parasitology.

#### **P1513** KAP evaluation about travel medicine in international travellers and medical students in Chile

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**Objectives:** To determine knowledge, attitude and practices (KAP) about Travel Medicine on International Travelers and Medical Students.

**Methods:** A KAP instrument was designed, constituted by 24 questions (questionnaire), answered by 100 international travelers (at the "Arturo Merino Benítez" International Airport of Santiago), and 100 Antofagasta's Medical Students (randomly selected), exploring knowledge about Travel Medicine, traveler diseases, morbidity and prevention of them among interviewed people. Analyses were made with SPSS 10 and Epi Info 6 (confidence 95%).

**Results:** Mean age was 44.9±12.3 y-old (travelers) and 22.6±3.0 y-old (medical students) (p < 0.001). In travelers 83% were university professionals. Medical students, 49% were at 3<sup>o</sup> year. From the total, 78.5% stated as unknowners of Travel Medicine (90% travelers, 67% medical students; p < 0.001); 92% perceived health risks traveling (94% and 90% respectively). Malaria was the disease recognized as more risky (10%; 13% medical students and 7% travelers). From the total, 5% stated get sick during international trips (6% and 4%, respectively). Travelers stated in 56% being non-informed about sanitary conditions of their destinations and 3% have some vaccination (2% YF, 1% HBV). Travelers were 93% Chilean going in 60% to tropical countries.

**Conclusions:** These results indicated the importance of Travel Medicine in those countries where the knowledge of tropical diseases (malaria, dengue, yellow fever, etc), is lower given their inexistence, and where the traveling pattern indicates a great proportion of people visiting risk zones for the acquisition of these pathologies, and without the prevention due to lack of knowledge and immunisation against them.