Cuban Research in Current International Journals


Objective The diagnosis of tuberculosis in patients with negative acid-fast bacillus smears poses a challenge to both clinicians and public health authorities. In an attempt to aid diagnosis in such cases, an expert committee was established in Ciudad de La Habana, Cuba in 1995. The aim of this study was to describe the progress of the committee’s work and the corresponding results for the period 1996 through 2003. Patients and Methods For each patient studied by the commission, we analyzed the following data: patient’s residence and referring center, tentative diagnosis proposed by the attending physician, history of antibiotic treatment, and final diagnosis made by the commission. Results Of the 1,703 patients studied, 84.8% were from La Habana, 48.4% were 55 years or older and 63.8% were men. Between 2001 and 2003, 11.3% of patients were already on tuberculosis treatment when their case was studied by the commission. The corresponding percentage for 1996 through 2000 was 16.9% (P = .001). Active tuberculosis was confirmed in 43.1% of a total of 918 patients with full test results during the period 1996–2000 and in 52.2% of a total of 619 patients during the period 2001–2003 (P = .001). Of 344 patients with suspected pulmonary tuberculosis and negative acid-fast bacillus smears between 2001 and 2003, 128 (37.2%) were diagnosed with active tuberculosis. Conclusions These findings indicate that the work of the commission is viable, sustainable, and useful for preventing overdiagnosis and inappropriate treatment, and that it also serves an educational purpose.


Introduction Two population-based studies of neuromyelitis optica (NMO) in nonwhite populations provided prevalence rates of 0.32 and 3.1 per 100,000 population. Objective To estimate NMO prevalence in the multiethnic Cuban population by nation-wide case ascertainment. Methods The study was conducted from October 1, 2003 to November 30, 2004. Ninety percent of general practitioners and all neurologists responded positively to the request for information on cases suspected of optic neuritis (ON), transverse myelitis (TM), multiple sclerosis (MS), or NMO. Among the population of 11,177,743 there were 798 suspected cases, including 89 with possible NMO, relapsing ON (RON) and TM. Of the 89, 87 were examined by two of us (Cabrera JA, Lara R) who selected the NMO cases according to the 1999 Mayo Clinic criteria as well as those with relapsing TM and RON. Results 88 cases provided a prevalence rate of 0.52 per 100,000 (95% CI: 0.39–0.67). Rates for the 7 males and 51 females were 0.13 (CI: 0.05–0.26) and 0.91 (CI: 0.68–1.20). The estimated average annual incidence rate was 0.053 per 100,000 (CI 0.040–0.068). Prevalence rates did not differ significantly among the three ethnic groups. Black NMO cases were significantly older, with more relapses and motor deficit, as well as more abnormalities in brainstem evoked potentials and in brain MRI (not meeting MS criteria). The predominant clinical form was relapsing over monophasic. Conclusions This Cuban multiethnic population had a prevalence of NMO of 0.52 per 100,000 and an estimated average annual incidence rate of 0.053 per 100,000 with no differences by ethnicity. Black patients were older, with more relapses and motor impairment.


In this work, we attempt to extend to the schizophrenia’s research the evidence that different frequency bands may emerge from different sources during early-stage visual processing, in a mental state-specific manner, while subjects are passively viewing a visual stimulus. We applied standard pattern reversal stimulation (checkerboard), a task with low cognitive demands, coupled to a dense EEG recording system to estimate the neural correlates of the evoked θ, α, β, and γ frequency band responses by means of brain electrical tomography (BET). After filtering the evoked activity using different bandpasses, a very different picture about the current sources during P100 will emerge. The results showed notable differences between the two groups. In healthy subjects we localized the significances in the anterior cingulate, caudate nucleus, thalamus, precuneous region, and superior parietal that were more active for γ band. In patients with schizophrenia, differences occupy the hippocampus, parahippocampus, thalamus, midbrain, precuneous, and superior parietal regions. Most areas were more active for γ band except precuneous and superior parietal region more active for θ and α frequency band. These sets of regions, in both groups, reflect events that are parallel to, and partly independent of the P100 component, while in the schizophrenia, these regions have been previously linked to the major symptoms of the disease. We concluded that this result provides important evidence indicating that the proposed method is able to differentiate electro-physiological patterns in healthy subjects from those in patients with schizophrenia.


Background The chemokine receptor CCR3 mediates the migration of cells that play an important role in the pathogenesis of asthma to inflammatory foci. Interferon (IFN)-γ is known to downregulate the expression of some chemokine receptors. Therefore, we decided to analyze the regulation of CCR3 by IFN-γ in asthmatics and to characterize the dependence of this process on immunoglobulin E (IgE) levels. Methods Atopic asthmatics were treated with IFN-γ or placebo, and the IgE concentration in the blood was measured using an ultra-micro-ELISA for total IgE. Mononuclear cells from patients and controls were isolated by Ficoll-Hypaque gradient and incubated in the absence or presence of IFN-γ for different periods of time. After incubation, the cells were washed and lysed for RT-PCR analysis, which was performed using a Perkin-Elmer kit. Results IFN-γ treatment apparently improved the evaluated clinical variables; however, the differences were not significant compared to the placebo group. We found that IFN-γ downregulated CCR3 mRNA expression ex vivo and in vivo in those patients with IgE levels higher than 500 IU/ml, whereas IFN-γ upregulated CCR3 mRNA expression in patients with IgE levels lower than 500 IU/ml. Correspondence between ex vivo and in vivo results was observed using this approach. There was found to be a direct correlation between total serum IgE and CCR3 mRNA expression. Conclusions In those asthmatic patients with high levels of IgE, who are thus susceptible to downregulation of CCR3 by IFN-γ, a significant therapeutic effect with systemic IFN-γ might be expected.

Background Eosinophilic meningonecrophilias caused by the helminth Angiostrongylus cantonensis, an emerging infectious disease in America. The objective of this paper was to determine if the intrathecal synthesis of immunoglobulin E is produced during the acute phase of the disease. Methods Thirteen patients, mean age 4.5 years were studied; a diagnostic lumbar puncture was performed and serum samples were taken. Immunoglobulin E (IgE) in serum and in cerebrospinal fluid (CSF) was quantified by nephelometry. Control patients had other infections or other neurological diseases. Results The mean cell count in the CSF was 500 × 10^6 cells/L and of these 23% were eosinophils. In blood the eosinophils was 13%. The chief symptoms of the patients were migraine, vomiting and fever and 50% presented some meningial signs. IgE intrathecal synthesis analyzed by the corresponding quotient diagram (Reibergram) was observed in all patients. No intrathecal IgE synthesis was seen in control patients. Conclusion Intrathecal synthesis of IgE demonstrates the participation of this immunoglobulin in the destruction of the third stage larvae of the parasite in the CSF. The test should be considered in our environment as a tool to aid diagnosis.


Background Microvascular disease is proposed as a cause of segmental myocardial blood flow abnormalities and heterogeneous myocardial perfusion in cardiac syndrome X. Objective To assess if myocardial ischemia can be evidenced through both perfusion abnormalities and poststress left ventricular ejection fraction (LVEF) reduction by gated single photon emission tomography (SPECT) myocardial scintigraphy in women with syndrome X in a similar way to those with epicardial coronary lesions. Methods Three groups of postmenopausal women were studied: group I, 20 women with angina, perfusion defects, and normal coronary angiography; group II, 20 women with epicardial coronary lesions (≥50% of coronary lumen reduction); group III, 20 women with epicardial coronary lesions (≥50% of coronary lumen reduction by gated single photon emission tomography (SPECT) myocardial scintigraphy (protocol: exercise-stress-rest), brachial artery endothelial function measured by ultrasonography, and lipidogram. Results Groups I and III patients had a higher body mass index (BMI). There were more smokers in groups I and II. Very low density lipoprotein cholesterol (VLDL-C) and triglycerides were higher in group II patients. The brachial artery vasodilator responsiveness after 5 minutes of ischemia was similarly lower in patients of groups I and II compared with those of group III (3% vs. 6.5%, respectively; p = 0.03 group III vs. group I and group II). Mean ∆LVEF (LVEF poststress minus LVEF at rest) was –3.86%, –2.90%, and 4.18% in groups I, II, and III, respectively (p = NS between I and II, p = 0.005 between II and III, and p = 0.003 between I and III). In 43% of group I patients and in 10 of 18 group III patients with perfusion defects, there was a posttest LVEF reduction of >5%.

Conclusions Stress-induced ischemia is associated with poststress LVEF reduction as a probable manifestation of myocardial stunning in postmenopausal women with typical angina and normal coronary angiography.


The extracellular domain of E2 glycoprotein outer surface of the classical swine fever virus was expressed in epithelial kidney pig cells. The N-glycosylation determined by combination of Normal Phase-HPLC, Weak Anion Exchange-HPLC, exoglycosidase digestions and Mass Spectrometry revealed a complex mixture of neutral and monosialylated multiantennary N-glycans with variable number of alpha1-3-Gal-Gal antennae terminals. The most abundant neutral N-glycan has a composition of Hex(7)HexNAc(4)Hex(1). Negative ion ESI-MS/MS confirmed the presence of the alpha1-3-Gal-Gal motif on each arm of the fucosylated biantennary N-glycan. The most abundant monosialylated glycan was Hex(6)HexNAc(4)Hex(1) Neu5Ac(1), with the sialic acid linked to the terminal beta1-4-Gal-GlcNAc. Sialic acid on the antenna capped position was predominantly of the N-acetyl form.

Conclusions This study described the prevalence of HIV-OL in 154 HIV-infected patients which represent about 80% of those known to be infected in the province of Sancti Spiritus. The prevalence of HIV-OL was lower than those reported from developing countries. Oral hairy leucopaklia and oral candidiasis were the most prevalent HIV-OL. Smoking and CD4+ cells count <500 cells/mm³ were the two factors independently associated with the presence of HIV-OL.


Plasmepsins are aspartic proteases involved in the initial steps of the hemoglobin degradation pathway, a critical stage in the Plasmodium falciparum life cycle during human infection. Thus, they are attractive targets for novel therapeutic compounds to treat malaria, which remains one of the world’s biggest health problems. The three-dimensional structures available for P. falciparum plasmepsins II and IV make structure-based drug design of antimalarial compounds that focus on inhibiting plasmepsins possible. However, the structural flexibility of the plasmepsin active site cavity combined with insufficient knowledge of the functional residues and of those determining the specificity of parasitic enzymes is a drawback when designing specific inhibitors. In this study, we have combined a sequence and structural analysis with molecular dynamics simulations to predict the functional residues in P. falciparum plasmepsins. The careful analysis of X-ray structures and 3D models carried out here suggests that residues Y17, V105, T108, L191, L242, Q275, and T298 are important for plasmepsin function. These seven amino acids are conserved across the malarial strains but not in human aspartic proteases. Residues V105 and T108 are localized in a flap of an interior pocket and they only establish contacts with a specific non-peptide achiral inhibitor. We also observed a rapid conformational change in the L3 region of plasmepsins that closes the active site of the enzyme, which explains earlier experimental findings. These results shed light on the role of V105 and T108 residues in plasmep-
Objective A characteristic feature of spinocerebellar ataxia type 2 (SCA2) is saccadic slowing at early disease stages. We sought to determine whether this sign is detectable before clinical manifestation and quantifies the disease progression throughout life in linear fashion.

Methods In a specialized ataxia clinic, 54 presymptomatic carriers of SCA2 polyglutamine expansions and 56 relatives without mutation were documented with regard to their maximal saccade velocity (MSV). Results Among the control individuals, a significant effect of aging on MSV was observed. After elimination of this age influence through a matched-pair approach, a presymptomatic decrease of MSV could be shown. The MSV reduction was stronger in carriers of SCA2 polyglutamine expansions and 56 relatives without mutation were selected according to their relevance to disease manifestation and quantifies the disease progression throughout life in linear fashion.

Conclusion Saccade velocity is a sensitive SCA2 endophenotype that reflects early pontine degeneration and may be a useful diagnostic parameter before the onset of ataxia. Significance Future neuroprotective therapies of polyglutamine neurodegeneration may be assessed by MSV from earliest to preclinical disease stages.


FemPure is a kit for the rapid diagnosis of vaginitis by Trichomonas vaginalis, Candida spp., and Gardnerella vaginalis, based on aggregation of latex particles joined to specific antibodies. The validation of the method involved the parameters specificity, detection limit, robustness, clinical sensitivity, and clinical specificity. Also, the samples analyzed in parallel by the validated test and other recognized tests conducted by external laboratory were included. The method was specific for the 3 infectious agents, and no cross-reaction with other microorganisms usually present in vaginal exudates. The detection limit ≥1 × 10^6 CFU/mL for Candida albicans and G. vaginalis avoids the detection of concentrations considered normal flora, whereas T. vaginalis was detected until 1 × 10^9 cells/mL. Values of clinical sensitivity ≥80%, clinical specificity ≥90% and concordance ≥90% were found between samples evaluated in parallel by different methods. Robustness showed that the test can be used in laboratories with different management systems; its simple implementation without equipment allows the use in primary health care areas.


Background and purpose Mortality’s seasonal variation has long been described all over the world for many death causes. Periodic changes in the weather conditions of temperate countries have been well recognized as risk factors for seasonal mortality but there is no sufficient evidence of this in tropical countries where seasons are not so well defined and there are no great differences in temperature. There are no recent studies about this matter in Cuba. The aim of this paper is to describe the seasonality of 5 different death causes (heart diseases, cerebrovascular diseases, accidents, suicides and homicides) based on monthly data collected during the period 1996–2006 using a simple and replicable method for undeveloped countries.

Methods The presence of seasonal variation in several causes of death was explored with box and whiskers plots. Monthly total numbers of deaths were adjusted to a standard 30 days month in all time series. Death causes were selected according to their relevance and data obtained from National Bureau of Statistics of the Cuban Ministry of Health for the period January 1996–December 2006.

Results A total of 868,982 deaths occurred during the 11 year period of the study in Cuba: heart diseases (232,829), cerebrovascular diseases (89,263), accidents (53,341), suicides (19,007) and homicides (7,316). Monthly deaths due to heart diseases showed high median values in January, February and December. Deaths by cerebrovascular diseases showed their highest median values during the months of January, February, March and December. The median number of monthly deaths by accidents was highest during July and August. Deaths due to suicides were higher in May, June and July. Seasonality of monthly deaths by homicides was not so evident.

Conclusions Seasonal variation of mortality for several death causes was highlighted using a simple, easy and replicable method to quickly ascertain the presence of seasonality of death causes which can be very attractive for undeveloped countries.