
Background Elevated cerebrospinal fluid (CSF) total protein (TP) concentration (mainly due to a dysfunctional blood-CSF barrier (B-CSFB)) with normal cell count is a hallmark for the diagnosis of Guillain-Barré syndrome (GBS). Aims This work presents the evaluation of B-CSFB dysfunction with respect to the course, severity, and clinical features of GBS. Materials and Methods A sample of CSF was collected on admission from 68 patients of both genders (15 children and 53 adults) diagnosed with GBS. A follow-up CSF sample was obtained approximately 15 days after admission. TP concentration was determined in the CSF and 7.5% polyacrylamide gel electrophoresis was employed for serum and CSF protein fractioning. A low percentage of prealbumin fraction was considered a test of impaired B-CSFB. Results Elevated TP concentration and lower prealbumin were observed in almost 70% of the patients on admission, but this percentage was lower (52.4%) during the first week from onset of symptoms. Both variables were directly associated with the time of evolution of the disease and also with a greater clinical severity. Follow-up CSF studies showed higher CSF TP and lower prealbumin percentages, while deceased patients did not display this response pattern in the follow-up CSF. Conclusions B-CSFB dysfunction was present in only half of the patients with GBS during the first week from onset and it was directly associated with progression and clinical severity; nevertheless, a low B-CSFB dysfunction response during follow-up was associated with a lethal outcome, suggesting it could also serve a ‘protective’ effect during regeneration.


Aim To investigate the capability of a biochemical and clinical model, BioClinM, in predicting the survival of cirrhotic patients. Methods We prospectively evaluated the survival of 172 cirrhotic patients. The model was constructed using clinical (ascites, encephalopathy and variceal bleeding) and biochemical (serum creatinine and serum total bilirubin) variables that were selected from a Cox proportional hazards model. It was applied to estimate 1-, 5- and 10-year survival. The model’s calibration using the Hosmer-Lemeshow statistic was computed at 104 wk in a validation dataset. Finally, the model’s validity was tested among an independent set of 85 patients who were stratified into 2 risk groups (low risk ≤8 and high risk >8).

Results In the validation cohort, all measures of fit, discrimination and calibration were improved when the biochemical and clinical model was used. The proposed model had better predicive values (c-statistic: 0.90, 0.91, 0.91) than the Model for End-stage Liver Disease (MELD) and Child-Pugh (CP) scores for 12-, 52- and 104-wk mortality, respectively. In addition, the Hosmer-Lemeshow (H-L) statistic revealed that the biochemical and clinical model (H-L, 4.69) is better calibrated than MELD (H-L, 17.06) and CP (H-L, 14.23). There were no significant differences between the observed and expected survival curves in the stratified risk groups (low risk, P = 0.61; high risk, P = 0.77). Conclusion Our data suggest that the proposed model is able to accurately predict survival in cirrhotic patients.


This paper aims at augmenting the frameworks proposed by Rifkin in 1996 to distinguish between target-oriented and empowerment approaches to participation in community-based health interventions. In her paper, Rifkin defined three criteria: who makes decisions on resource allocation, expected outcome and outcome assessment. We propose five additional criteria: the definition of community, the characteristics of the capacity-building process, the leadership characteristics, the documentation process, and ethical issues regarding participation. Derived from our analysis of a community-based project, the proposed criteria are discussed in the light of the principles of Popular Education and other literature on community participation. The augmented frameworks are intended to assist health professionals and planners interested in the empowerment approach of community participation to consciously sharpen their practice.


Acute gastrointestinal illness is an important public-health issue worldwide. Burden-of-illness studies have not previously been conducted in Cuba. The objective of the study was to determine the magnitude, distribution, and burden of self-reported acute gastrointestinal illness in Cuba. A retrospective, cross-sectional survey was conducted in three sentinel sites during June–July 2005 (rainy season) and during November 2005–January 2006 (dry season). Households were randomly selected from a list maintained by the medical offices in each site. One individual per household was selected to complete a questionnaire in a face-to-face interview. The case definition was three or more bouts of loose stools in a 24-hour period within the last 30 days. In total, 97.3% of 6,576 interviews were completed. The overall prevalence of acute gastrointestinal illness was 10.6%. The risk of acute gastrointestinal illness was higher during the rainy season (odds ratio [OR]=3.85, 95% confidence interval [CI] 3.18–4.66) in children (OR=3.12, 95% CI 2.24–4.36) and teens (OR=2.27, 95% CI 1.51–3.41) compared to people aged 25–54 years, in males (OR=1.24, 95% CI 1.04–1.47), and in the municipality of Santiago de Cuba (OR=1.33, 95% CI 1.11–1.61). Of 680 cases, 17.1–38.1% visited a physician, depending on sentinel site. Of the cases who visited a physician, 33.3–53.9% were requested to submit a stool sample, and of those, 72.7–100.0% complied. Of the cases who sought medical care, 16.7–61.5% and 0–31.6% were treated with antibiotics and antibiotics respectively. Acute gastrointestinal illness represented a substantial burden of health compared to developed countries. Targeting the identified risk factors when allocating resources for education, food safety, and infrastructure might lower the morbidity associated with acute gastrointestinal illness.


Background Nonalcoholic fatty liver disease (NAFLD) is a significant health problem for which there is no universally accepted pharmacological treatment. The combination of weight loss and antioxidant drugs to ameliorate insulin resistance and improve steatosis, inflammation, and fibrosis, provide the rational for therapeutic trials. Aim Our study evaluated the efficacy and safety of Viusid® in association with diet and ex-
ercise for NAFLD. Methods A randomized, controlled, and parallel-group trial was conducted at a tertiary care academic center (National Institute of Gastroenterology, Havana, Cuba). We randomly assigned 60 patients with liver biopsy-proven NAFLD to 6 months of treatment with a hypocaloric diet plus aerobic exercise daily and 3 Viussi® sachets daily or a hypocaloric diet and exercise. End points were improvement in the NAFLD activity score (NAS), fibrosis and normalization of serum aminotransferase levels. Results A significant improvement in steatosis, necroinflammation, and fibrosis was seen in each group of treatment ($P < 0.01$ for each feature). The Viussi® group, as compared with the control group, significantly reduced the mean of NAS (from 4.18 to 0.54 points in the Viussi® group versus 4.45 to 2.2 points in the control group ($P < 0.001$). On between-group comparison, Viussi® was associated with a significantly greater improvement in steatosis ($P < 0.001$), ballooning ($P = 0.002$), and lobular inflammation ($P = 0.025$), but not in fibrosis ($P = 0.07$). Viussi® was well tolerated. Conclusions Our results indicate that treatment with diet and exercise leads to a notable improvement in the histological features of NAFLD; however, the administration of Viussi® intensifies the improvements of histological findings, especially of steatosis and inflammation.


Objective To assess the effectiveness of an integrated community-based environmental management strategy to control Aedes aegypti, the vector of dengue, compared with a routine strategy. Design Cluster randomized trial. Setting Guantánamo, Cuba. Participants 32 circumscriptions (around 2000 inhabitants each). Interventions The circumscriptions were randomly allocated to control clusters ($n=16$) comprising routine Aedes control program (entomological surveillance, source reduction, selective adulticiding, and health education) and to intervention clusters ($n=16$) comprising the routine Aedes control program combined with a community based environmental management approach. Main outcome measures The primary outcome was levels of Aedes infestation: house index (number of houses positive for at least one container with immature stages of Aedes aegypti/100 inspected houses), Breteau index (number of containers positive for immature stages of Aedes aegypti/100 inspected houses), and the pupae per inhabitant statistic (number of Aedes aegypti pupae per inhabitant). Results All clusters were subjected to the intended intervention; all completed the study protocol up to February 2006 and all were included in the analysis. At baseline the Aedes infestation levels were comparable between intervention and control clusters: house index 0.25% vs 0.20%, pupae per inhabitant 0.44x10^-3 vs 0.29x10^-3. At the end of the intervention these indices were significantly lower in the intervention clusters: rate ratio for house indices 0.49 (95% confidence interval 0.27 to 0.88) and rate ratio for pupae per inhabitant 0.27 (0.09 to 0.76). Conclusion A community based environmental management embedded in a routine control program was effective at reducing levels of Aedes infestation. Trial registration Current Controlled Trials ISRCTN88405796.


We compared in a 5-year intervention study the cost-effectiveness of community-based environmental management intertwined with routine vertical Aedes control and of routine vertical control only. At baseline (year 2000), Aedes infestation levels and economic costs for vector control were comparable in intervention and control areas (house index 2.23% versus 2.21% and US$21 versus US$24/yr/inhabitant, respectively). By 2004, house indices became 0.22% versus 2.36% and the costs were 29.8 US$ versus 36.7 US$/yr/inhabitant, respectively. The community cost made up 38.6% of the total economic cost in 2004 in the intervention areas against 23.5% in 2000. The average cost-effectiveness ratio for the intervention period 2001–2004, expressed as the societal cost incurred for the reduction (from baseline) of Aedes foci, was US$381.1 per focus in the intervention areas versus US$2,465.6 in the control areas. The intervention produced economic savings and health benefits that were sustained over the whole observation period.


Background Cerebrospinal fluid (CSF)/serum quotient graphs have been used previously to determine local synthesis in brain of immunoglobulins and C4 complement component. The aim of this study was to use the same technique to construct quotient graphs, or Reibergrams, for the beta globulin C4 and to evaluate the method for assessing intrathecal synthesis in neurological disease. Methods The constants in the previously defined Reibergram for immunoglobulin IgA were used to calculate the CSF/serum quotient for C4. CSF and serum were analyzed for C4, IgA and albumin from a total of 12 patients with meningoencephalitis caused by encapsulated microorganisms and 10 subjects without infections or inflammatory neurological disease, some of which had dysfunction of the blood-CSF barrier. Results The formula and C4 Reibergram with the constants previously found for IgA, determined the intrathecal C4 synthesis in CSF. The intrathecal C4 fraction in CSF (C4 loc in mg/l) was compared to the C4-Index (fraction of CSF: serum for C4 fraction of CSF: serum for albumin). There was a significant correlation between the two formulae. The CSF/Serum quotient graph was superior for detecting intrathecal synthesis of C4 under variable conditions of blood-CSF barrier permeability. Conclusion The C4 Reibergram can be used to quantify the intrathecal synthesis of this component of the complement system in different infectious diseases of the central nervous system and is especially useful for patients with blood-brain barrier dysfunction.


Using a serological test, different criteria have been established for classifying a case as primary or secondary dengue virus infection. Considering the dengue epidemiological situation in Cuba, IgG antibody response to dengue virus infection in serum samples from children and adults with a dengue 3 infection, in Havana city during the 2001–2002 epidemic was evaluated. Samples were collected on days 5–7 of fever onset and tested by an ELISA inhibition. A total of 713 serum samples positive for IgM
antibody, 93 from children and 620 from adult patients were studied. Serum samples collected from healthy blood donors and patients not infected with dengue were included as controls. An IgG primary infection pattern was observed in sera collected from children, with titers of ≥20 in the 89.3% of the patients, while both, a primary and secondary patterns were observed in sera collected from adult patients with titers of ≥20 (13.4%) and ≤280 (83.9%), respectively. These results permitted the definition of a primary or secondary case of dengue virus infection in serum samples collected during the acute phase of dengue virus infection.


Background In Caucasian populations neuromyelitis optica (NMO-IgG) antibody has been detected in 27.1%/27.2% of patients with relapsing-NMO (R-NMO). The prevalence reported for the disease in the Caribbean is 3.1/100,000 in the French West Indies (FWI) and 0.52/100,000 in Cuba, but the NMO antibody status is unknown. Objective To assess the NMO-IgG antibody status of Cuban/FWI R-NMO patients, comparing with European cases tested at the same laboratories. Methods Serum NMO-IgG antibodies were assayed in 48 R-NMO patients (Wingerchucks 1999 criteria): Cuba (24)/FWI (24), employing Lennon et al’s method. We compared the demographic, clinical, disability and laboratory data between NMO-IgG +/− patients. All the data were reviewed and collected blinded to the NMO-IgG status. Results Seropositivity of the NMO-IgG antibody demonstrated a lower rate in the Caribbean (33.3%), as compared with Caucasian patients from Spain/Italy (62.5%) and France (53.8%). Caribbean patients with NMO-IgG + displayed more attacks, more spinal attacks and a higher EDSS than NMO-IgG − cases, while brain and spinal cord MRI lesions were more frequent during remission, with more vertebral segments, more gray, white matter and holocord involvement. Conclusions NMO IgG positive antibodies in NMO patients had a lower rate in the Caribbean area—where the population has a predominant African ancestry—than in Caucasian Europeans, suggesting the influence of a possible ethnic factor in the pathogenesis of the disease, but they confer a worse course with more attacks, more disability and MRI lesions.


Overexpression of the epidermal growth factor (EGF) receptor (EGFR) in cancer cells correlates with tumor malignancy and poor prognosis for cancer patients. For this reason, the EGFR has become one of the main targets of anticancer therapies. Structural data obtained in the last few years have revealed the molecular mechanism for ligand-induced EGFR dimerization and subsequent signal transduction, and also how this signal is blocked by either monoclonal antibodies or small molecules. Nimotuzumab (also known as h-R3) is a humanized antibody that targets the EGFR and has been successful in the clinics. In this work, we report the crystal structure of the Fab fragment of Nimotuzumab, revealing some unique structural features in the heavy variable domain. Furthermore, competition assays show that Nimotuzumab binds to domain III of the extracellular region of the EGFR, within an area that overlaps with both the surface patch recognized by Cetuximab (another anti-EGFR antibody) and the binding site for EGF. A computer model of the Nimotuzumab-EGFR complex, constructed by docking and molecular dynamics simulations and supported by mutagenesis studies, unveils a novel mechanism of action, with Nimotuzumab ab blocking EGF binding while still allowing the receptor to adopt its active conformation, hence warranting a basal level of signaling.


It is becoming increasingly evident that poor nutrition plays an important role in inducing cardiovascular disease. Just as importantly, data now support the contention that appropriate nutritional interventions may have just as important an effect in preventing or delaying the appearance of cardiovascular disease. If this is indeed true, then it is critical that these advances in our knowledge of the effects of nutritional interventions be translated into effective strategies to combat cardiovascular disease. It is argued in this paper, with a few specific examples, that the translation of nutritional interventions can provide powerful approaches to alleviating the clinical challenges currently facing us today in the cardiovascular field. Furthermore, the value-added economic advantages of translating nutritional strategies on a wide scale into the public become another intriguing argument to further support investigations in this growing field.


Meningococcal outer membrane proteins have been used for over 20 years in more than 80 million doses; either as carrier protein in a Hae-

**Abstracts**


Intestinal protozoan infections are a worldwide problem in both industrialized and unindustrialized countries; in the latter they may be the cause of significant morbidity and mortality. Children, in particular, are more likely to experience considerable morbidity. Most intestinal protozoan infections can cause acute or chronic diarrhea in healthy individuals and may result in intractable, life-threatening illness in patients with immunosuppressive diseases such as AIDS. Adequate identification and treatment of these infections may provide significant benefit for individual patients and public health. This article presents an update on the pharmacotherapy currently available for amoebiasis, giardiasis and other intestinal protozoan infections.