

## Sickle Cell and Mental Health

Chair: Dr Carole Rattray and Professor Michael Boyne

### (O – 16)

#### The detection of $\Delta^9$ -tetrahydrocannabinol ( $\Delta^9$ -THC), 11-hydroxy- $\Delta^9$ -THC (11-OH-THC) and 11-nor-9-carboxy- $\Delta^9$ -tetrahydrocannabinol (THC-COOH) in latent fingerprints, using immunoassay: a pilot study

G Williams, S Turfus, S Haughton

Department of Basic Medical Sciences (Forensic Science Programme), The University of the West Indies, Mona, Kingston, Jamaica

**Background:** Cannabis continues to be an abused drug worldwide, and drug testing using a sampling matrix such as urine is plagued with disadvantages such as invasiveness and adulteration. Latent fingerprints are non-invasive and unadulterated and hence is ultimately preferred. Drugs such as cocaine and its metabolites have been detected in fingerprints successfully. A major issue in drug testing involves using expensive and time-consuming methods of analysis for large amounts of samples. It is therefore essential to develop methods that are economical and can analyse evidence rapidly. Immunoassay provides a rapid, highly sensitive, specific and reproducible method of screening samples containing minute traces of cannabinoids.

**Objective:** To develop a method using immunoassay for the detection of cannabinoids in latent fingerprints of cannabis users and determine if cannabinoids could be detected in latent fingerprints of cannabis users.

**Methods:** Ten latent fingerprints, oral fluids and a urine sample were obtained from five consenting habitual cannabis users. Hands were washed and dried, and sweat was allowed to accumulate for 10 minutes. Fingerprints were deposited onto clean glass slides, labelled and stored in an airtight container, until analysis. A minimum of 3 mL of oral fluid was collected, centrifuged and stored at  $-20^{\circ}\text{C}$  until analysis. A 3:1 volume of methanol mixed with 0.2 M sodium acetate buffer (pH 5.0) was used to extract the cannabinoids from the fingerprints. The extraction solutions were shaken at 156 rpm for 30 minutes and analysed with immunoassay.

**Results:** Four out of five oral fluid samples tested positive for  $\Delta^9$ -tetrahydrocannabinol. The urine sample tested positive for 11-nor-9-carboxy- $\Delta^9$ -tetrahydrocannabinol. Latent fingerprints taken from the urine specimen donor tested

positive for cannabinoids. The fingerprints collected from the oral fluid donors yielded false positive results due to a faulty or compromised microplate.

**Conclusion:** The positive findings could be used for screening and should be confirmed using confirmatory techniques (GC-MS/LC-MS). However, with studies on drug detection in fingerprints being few and non-existent for cannabis detection, using immunoassay, the findings of this study will offer the forensic community a thrust in the direction of developing new or improved drug testing procedures using latent fingerprints.

### (O – 17)

#### Disease knowledge, illness perceptions and quality of life in adolescents with sickle cell disease: is there a link?

M Asnani<sup>1</sup>, A Barton-Gooden<sup>2</sup>, M Grindley<sup>1</sup>, J Knight-Madden<sup>1</sup>

<sup>1</sup>Sickle Cell Unit, Caribbean Institute for Health Research, The University of the West Indies, Mona, Kingston, Jamaica and <sup>2</sup>UWI School of Nursing, Faculty of Medical Sciences, The University of the West Indies, Mona, Kingston, Jamaica

**Objective:** To examine the association between illness perceptions and quality of life (QOL) outcomes in adolescents with sickle cell disease (SCD).

**Methods:** A total of 150 adolescents (mean age = 16.1 years; SD = 1.9; 49.3% males) were tested using a piloted, interviewer-administered questionnaire. We report on associations among sociodemographics, disease severity, disease knowledge, illness perceptions and QOL at baseline. Data were analysed using STATA<sup>TM</sup> 14 software.

**Results:** Females were significantly older ( $p = 0.04$ ), had higher knowledge scores ( $p = 0.004$ ) and lower QOL scores ( $p = 0.02$ ) and perceived their illness to be more unpredictable ( $p = 0.03$ ). Those with more severe disease perceived their illness to be more unpredictable and had more symptoms and worse outcomes. Those with higher knowledge scores perceived their illness to be chronic, made more sense of their illness, and perceived greater personal and treatment control. Final hierarchical regression model showed that secondary school education as compared to primary school education ( $\beta = 15.2$ ; CI = 8.0, 22.4;

$p < 0.001$ ) was positively correlated, whereas disease severity ( $\beta = -4.9$ ; CI: -6.5, -3.4;  $p < 0.001$ ), perceived unpredictability ( $\beta = -1.13$ ; CI: -2.11, -0.15;  $p = 0.024$ ) and more negative emotions ( $\beta = -0.65$ ; CI: -1.24, -0.06;  $p < 0.001$ ) were negatively correlated with QOL.

**Conclusion:** It is important to recognize the importance of focusing on illness perceptions as disease knowledge alone will not translate to better QOL. Encouraging continuing schooling and addressing emotional/psychological problems are also important in improving QOL of adolescents with SCD.

### (O – 18)

#### **Pneumococcal carriage, serotype and resistance patterns in persons attending a Caribbean sickle cell unit**

*J Knight-Madden<sup>1</sup>, A Nicholson<sup>2</sup>, MR Jacobs<sup>3</sup>, A Foster<sup>2</sup>  
<sup>1</sup>Sickle Cell Unit, Caribbean Institute for Health Research, The University of the West Indies, Mona, Kingston, Jamaica, <sup>2</sup>Department of Microbiology, The University of the West Indies, Mona, Kingston, Jamaica and <sup>3</sup>Case Western Reserve University and University Hospitals Cleveland Medical Center, Cleveland, OH, United States of America*

**Objective:** The prevalence of nasopharyngeal pneumococcal carriage as well as the serotypes and resistance patterns of the isolates cultured were ascertained. It was determined whether carriers had previous vaccination against the serotypes identified.

**Methods:** A convenience sample of children and adults aged 50 years or older who attended the Sickle Cell Unit of the Caribbean Institute for Health Research, Kingston, Jamaica, for health maintenance visits were recruited between November 2015 and June 2016. Pneumococcal vaccination status was ascertained. A nasopharyngeal swab was collected from each patient. Pneumococci were isolated using standard culture techniques. Serotypes of *Streptococcus pneumoniae* isolates were determined by the capsular swelling method using commercial group- and type-specific sera. Antimicrobial drug susceptibilities were determined by CLSI broth microdilution.

**Results:** Ten of the 21 adults (48%) and 129 of 141 children aged below one year (91%) recruited had been fully or partially immunized. Pneumococci were cultured from one adult (4.8%) and three children (2.1%). The adult, who had not been immunized, carried serotype 23F, which is included in all pneumococcal vaccines. The three paediatric carriers were all fully immunized. They carried serotypes 15B, 16B and 23B, serotypes which are not included in any pneumococcal vaccines. Two of the four pneumococcal isolates were susceptible to all agents tested, while the other two were resistant to penicillin, amoxicillin and azithromycin, but susceptible to clindamycin.

**Conclusion:** Pneumococcal carriage was low in this sample. No pneumococcal serotypes included in pneumococcal vaccines were carried by immunized individuals. Clindamycin may have a role in patients carrying pneumococci resistant to antibiotics usually used for prophylaxis.

### (O – 19)

#### **Causes of death and early life determinants of survival in sickle cell disease: the Jamaican Cohort Study**

*GR Serjeant<sup>1</sup>, N Chin<sup>2</sup>, M Asnani<sup>2</sup>, BE Serjeant<sup>1</sup>, KP Mason<sup>1</sup>, IR Hambleton<sup>3</sup>, J Knight-Madden<sup>2</sup>*

*<sup>1</sup>Sickle Cell Trust, Jamaica, <sup>2</sup>Sickle Cell Unit, Caribbean Institute for Health Research, The University of the West Indies, Mona, Kingston, Jamaica and <sup>3</sup>Chronic Disease Research Centre, Caribbean Institute for Health Research, The University of the West Indies, Cave Hill, Barbados*

**Objective:** Causes of death and estimates of survival to midlife in homozygous sickle cell (SS) disease, unbiased by symptomatic selection, were ascertained in the Jamaican Cohort Study of sickle cell disease, in which all cases were detected by newborn screening. The utility of early life biomarkers and genetically determined phenotypes to predict survival was assessed.

**Methods:** Screening of 100 000 deliveries detected 315 babies with SS disease, 311 of whom have been followed from birth for periods up to 43 years. Each participant was classified as alive, dead or defaulted (usually emigration) as of September 2016. Cause of death was ascertained from clinical records and/or post-mortem results. Survival was assessed using the Kaplan-Meier function. Gender-adjusted Cox semi-parametric proportional hazards and Weibull modelling were used to assess the effects of biomarkers on survival.

**Results:** The percentage of people surviving to 40 years was 55.5% (95% CI: 48.7%, 61.7%). Causes of death were often age-specific. Acute splenic sequestration ( $n = 12$ ) was the most common cause of early deaths. Stroke ( $n = 12$ ), trauma ( $n = 11$ ) and sudden death ( $n = 14$ ) were frequent causes of death in the second, third and fourth decades of life respectively. Acute chest syndrome and septicemia, caused by various pathogens, were significant causes of death at all ages. Survival was statistically significantly shorter in those with low haemoglobin at one year, high total nucleated count at one year, and a history of dactylitis ever.

**Conclusion:** In these hydroxyurea-naïve patients, survival into midlife was common. Causes of death at specific age groups may afford further targeted interventions. The ability to predict earlier un-intervened mortality in SS disease identifies a patient group that may benefit most from close clinical supervision and potentially high-risk therapies.

(O – 20)

**The association of perceived neighbourhood factors, social class and other demographic factors with depressive symptoms among Grade Six elementary school children in Jamaica**

*R Chung*

**Background:** Depression is a significant health problem in children. Past research has shown a correlation among adverse neighbourhood conditions, social class and depression. However, little research has been done on *perceived* neighbourhood factors associated with depressive symptoms in Jamaican youth.

**Objective:** To investigate the association between children's perception of their community and how various demographic factors influenced levels of depressive symptoms.

**Methods:** A cross-sectional design involving children who attended school in Kingston, Jamaica, was conducted. Participants were given the Neighbourhood Characteristics Questionnaire, Adolescent Depression Rating Scale and a demographic data collection questionnaire. Five subscales for the neighbourhood were assessed: neighbourhood network, neighbourhood attachment, neighbourhood quality, neighbourhood crime and neighbourhood disorder. Spearman's correlation, *t*-test, analysis of variance, and regression analysis were used to assess the relationship among neighbourhood factors, demographic factors and depressive symptoms.

**Results:** A sample of 321 students was obtained. They were aged 10 to 12 years, with a mean age of 10.79 years (SD = 0.71 year). Fifty-nine per cent attended primary school, and 41% attended preparatory school. There was a significant correlation between neighbourhood factors and depressive symptoms, with the exception of neighbourhood disorder. However, there was no association between social class and depressive symptoms. Additionally, analysis suggested that neighbourhood network and quality were most predictive of depressive symptoms.

**Conclusion:** Neighbourhood factors appeared to have an association with levels of depressive symptoms in school-aged children. However, there was no association with social class. Findings will help to fill the research gap in the pre-adolescent population.

(O – 21)

**Knowledge, beliefs and practices of Sickle Cell Unit (SCU) patients on sickle cell eye disease at The University of the West Indies, Jamaica**

*A Ajanaku, L Mowatt, J Madden-Knight*

**Background:** Sickle cell retinopathy is a complication of sickle cell disease (SCD) that can result in blindness. Adequate knowledge of the eye disease, screening and early referral are important in reducing the risk of visual loss.

**Objective:** To determine the knowledge, beliefs and practices on eye-related complications of SCD in a sickle cell unit.

**Methods:** A quantitative cross-sectional study of 100 patients attending the Sickle Cell Unit, at The University of the West Indies, Mona, Kingston, Jamaica, was done. Data collection was by a questionnaire comprising 26 questions relating to epidemiology (8), knowledge (7), beliefs (6) and practices (5).

**Results:** One hundred patients were recruited, aged 18 to 63 years (mean 34.1 years). Fifty-six were female. Most patients (61%) were unaware that floaters in the eye occurred in SCD, 24% did not know SCD could affect their eyes, and 72% did not get regular eye examinations. The mean scores for knowledge was 3.3/7 (47%), belief 3.6/6 (60%) and practice 2.2/5 (44%). Knowledge scores were higher in those with milder genotypes (HbSC), *versus* severe genotypes (4.0 *vs* 3.2,  $p = 0.013$ ). City residents had a higher Belief Score (3.8 *vs* 3.1,  $p = 0.03$ ) than those in the country. The unemployed had lower Practice Scores than the employed (2.6 *vs* 1.9,  $p = 0.04$ ).

**Conclusion:** Beliefs may be affected by proximity and ease of access to care. Knowledge of eye disease complicating SCD needs to be improved, particularly in patients with more severe genotypes.