ABSTRACT

Attended by over 200 delegates from across Canada, the 5th Annual FACE Research Roundtable in Saskatoon, Saskatchewan on International FAS Day (September 9, 2004), presented the state of the art in Canadian research on Fetal Alcohol Spectrum Disorder.

This paper describes briefly the research presented at the 5th Annual FACE Research Roundtable on September 9, 2004. The Roundtable was videotaped to produce a complete webcast of the day's proceedings, including speaker presentations and powerpoint slides. Those wishing to view this on-line webcast will find it in the Journal of FAS International as of October 25, 2004.

New Canadian diagnostic guidelines for FASD—Research challenges
Albert E. Chudley, MD, FRCPC, FCCMG and Julie Conry, Ph.D.

Representing Health Canada's National Advisory Committee on FASD Population and Public Health and First Nations and Inuit Health Branches of HC

This presentation reviewed the reasons for guideline development; highlighted research areas identified in the process of guideline development relevant to diagnosis; and discussed the area of physical features and the brain (neurodevelopment).

The challenges of establishing the FAS facial phenotype for First Nations
Susan Astley, PhD and Albert E. Chudley, MD, FRCPC, FCCMG

Dr. Astley demonstrated the FAS Facial Photographic Analysis Software and discussed issues related to race/ethnicity. This software is currently used by the Washington State FAS DPN to screen, diagnose and track the prevalence of FAS. Dr. Chudley focused on the eye and palpebral fissure measurements. These two talks and discussion following reviewed the current state of assessing the face relevant to a possible diagnosis of FAS and discussed potential and real differences between Aboriginal and non-aboriginal phenotypes. The presenters also addressed the challenges that researchers may face in proposing or doing research in First Nations and Aboriginal communities in Canada.

Using fMRI to evaluate executive function of FASD
Krisztina Maliszta, PhD

In order to design possible interventions for Fetal Alcohol Spectrum Disorders (FASD), it is necessary to characterize and understand the effects of alcohol on the central nervous system (CNS). CNS damage presents itself in various forms that are difficult to diagnose. The presenter's goal is to develop techniques that can provide physicians with a more subjective means of diagnosis of FASD that can be used in conjunction with current means of diagnosis.

Dr. Maliszta described the use of functional magnetic resonance imaging (fMRI) to assess brain function in groups of adults (n=10) and children (7-12 years; n=14) diagnosed with FASD compared to non-FASD control subjects. FMRI was performed using a series of n-back memory tasks (n = 0, 1 or 2) to determine if differences exist in brain activation in these groups of subjects. Consistent activations were observed in regions of the brain associated with working memory and attention, namely dorsolateral prefrontal cortex (DLPFC, bilateral) and anterior cingulate, and in the visual cortex in healthy volunteers.
Children with FASD showed significantly reduced areas of activation compared to controls as well as increased response times, and frequently no responses were recorded. Control adults showed increased prefrontal cortex activation with increased task difficulty, as expected. Adult FASD subjects, however, showed greater functional activation in the frontal regions of the brain, than controls in all tasks except for the most difficult 2-back task. The presenter suggested that differences in activations in the DLPFC may arise due to improper functioning of the frontal lobe of the brain in individuals diagnosed with FASD. The fMRI results in conjunction with psychological tests suggested impairment in working memory, attention and executive function in those with FASD that does not improve with age.

Saccadic eye movements: A new diagnostic tool with eye-opening possibilities for FAS research
James N. Reynolds, PhD.

Fetal alcohol syndrome (FAS) is associated with injury and dysfunction in several distinct brain regions, including the prefrontal cortex, corpus callosum, basal ganglia, hippocampus, and cerebellum. Control of saccadic eye movements depends on the integrity of a network of brain areas that includes areas of the frontal and parietal lobes, basal ganglia, thalamus, superior colliculus, cerebellum, and brainstem reticular formation.

Eye movements are easy to measure and non-invasive, and tasks have been developed that probe specific aspects of brain control. Indeed, there are usually specific disturbances in the control of saccadic eye movements and visual fixation in many neurological and psychiatric disorders.

There is considerable overlap in brain areas affected in FAS and those involved in controlling eye movements. Dr. Reynolds and colleagues therefore hypothesize that individuals diagnosed with FAS will have specific abnormalities that can be measured with eye movement testing. They also suggest that analysis of eye movement parameters in FAS might help distinguish subgroups and provide an objective tool to quantify disease severity and effectiveness of any treatment protocols.

The researchers’ goal is to design a long-term research program that will test the use of saccadic eye movements as a diagnostic tool in FAS, and to evaluate therapeutic interventions to mitigate the brain injury of FAS.

Telediagnosis - Use of validated questionnaires for psychological assessment of children in remote locations
Gideon Koren, MD, FRCPC and Ellen Fantus, MD

Under the direction of Dr. Joanne Rovet and Dr. Gideon Koren, the Motherisk team explored the efficacy of the caregiver screening tools and the discriminating power of their analyses. This presentation addressed the possibility of using CareGiver Screening for FASD using The Children Behavior Checklist (CBCL) and the Conner's Parent Rating Scale (CPRS), showing high predictive value as compared to normal figures. The presenters suggested that the potential use and helpfulness of such scales in remote areas where full psychological assessments are not available, should be considered.

FAS screening for young offenders
Patricia M. Blakley, MD, PhD

Dr. Blakley and colleagues described a screening tool for use in offending populations. Preliminary results from piloting of the tool at a Closed Custody Young Offender Facility and a Correctional Facility was presented, showing great promise.

Alcohol-exposed youth and the court
J. L. Nanson, M. E. Turpel Lafond and P. Blakley

This presentation reviewed the legal issues surrounding alcohol exposed youth who come before the youth court. Since 2001, approximately 80 youth who have a confirmed history of prenatal alcohol exposure have undergone an assessment for FASD, consisting of a physical examination by clinical geneticist/pediatrician and a clinical neuropsychologist. The results of these 80 assessments were presented.
The frequency of each diagnosis within the FASD spectrum, the pattern of neuropsychological deficits, and the implications of this diagnosis in the youth court were discussed. The audience was deeply impressed by the impact that a provincial judge, informed about FASD (Judge Lafond) can have on the judicial process for victims of FASD.

**Ethical framework for neonatal screening: Framing the issues for ethical decision-making**
Keith Ogle, MD, CCFP

Dr. Ogle discussed how the potential for morally justifiable screening (prenatal, neonatal), if it exists, will be located in a context of fairness. Any such intervention will not just minimally reflect but also endeavor to actively promote the commonly accepted principles of modern health care ethics.

Since conflicts amongst principles can arise, attention must be paid to fair process. Creation of screening initiatives should adhere to “rules of fair play.” Following these rules might not consistently produce outcomes judged as desirable by all, but at least the outcomes will not be seen as unfair.

This presentation reviewed common principles of ethics. It also posed questions concerning conflicts that might arise amongst principles, specific to screening for alcohol exposure. Principles of “fair play” were briefly described, as a possible framework for future screening initiatives.

**Questions of ethics: Neonatal screening for prenatal alcohol exposure**
Joey Gareri, HBSc, MSc student

The Motherisk laboratory is one of several developing a method of analyzing neonatal stool (meconium) for alcohol metabolites (FAEE) in order to objectively determine whether a neonate was exposed before birth to significant levels of alcohol. As the group continues to develop the FAEE meconium test, they seek to address ethical questions regarding its potential application as a universal screening tool.

The condition in question (FASD) and the screening tool must both meet certain criteria in order to be considered acceptable by the medical community and the public as candidates for universal screening. This presentation provided information where available and raised the questions that need answering in order to create an ethical framework for FASD screening. The speaker addressed the ethical aspects of neonatal screening, including purpose, informed consent, access to information, and cost effectiveness.

In addition, the speaker assessed the qualitative criteria that screening tools must meet, including coverage, sample quality, epidemiological considerations, and the presence of appropriate follow-up treatment. Seeking out and addressing the appropriate issues will aid in developing and establishing a support system which effectively provides diagnosis and treatment to both the child and the mother.

**Fostering FASD research capacity in under served, under-represented communities: Experiences of the health communities, mothers and children--Project and suggestions for an urban-based approach**
Paul Masotti, PhD; Christine Loock MD, FRCPC

Presently more Aboriginal people live in urban centres than in rural areas or on reserve. FASD is permanent, preventable and under diagnosed. Research suggests that binge drinking and FASD rates are higher in Aboriginal populations.

This suggests the need to develop interventions that consider the characteristics and needs of primary care physicians and Aboriginal mothers. However, there is a cultural gap between urban-based primary care physicians’ offices and clinics and Aboriginal women. Bridging this gap may improve the physician-patient relationship and facilitate effective FASD interventions.

Drs. Masotti and Loock described the development of brief alcohol interventions that consider the characteristics and needs of physicians and Aboriginal mothers. These interventions would be developed with input from all stakeholders and would have six core operational characteristics where the interventions would:

i) identify ‘at risk’ women;
ii) assess drinking behaviours;
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iii) provide information on the harmful effects of drinking above recommended limits;
iv) facilitate the decision of women to adopt healthier drinking behaviours;
v) monitor changes or progress; and
vi) be acceptable to physicians (and their office staff) and easily implemented.

Beyond diagnosis- Bridging the gap
Dorothy Schwab

This presentation focused on the ways in which follow-up is an integral part of the diagnostic process at the Clinic for Alcohol and Drug Exposed Children. The importance of building an informed network around the individual with FASD and their families was emphasized. This included an effective model for building stronger partnerships between the diagnostic clinic and the school or school division. Best practices in setting up appropriate school intervention and classroom environments for the student with FASD was discussed and demonstrated.

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