

ABSTRACT EXAMPLES – BIOMEDICAL

Title: Development of an Animal Model of Age Related Nuclear Cataract

Background

Age-related Nuclear Cataract (ANRC) is a progressive disorder leading to clouding of the ocular lens resulting in an inability to focus light onto the retina. With increasing age, levels of antioxidants in the lens nucleus decreases resulting in oxidative damage to proteins and nuclear cataract. Evidence indicates that exposure of animal lenses to hyperbaric oxygen (HBO) may be an appropriate model for mimicking the cataractogenic process in humans.

Objectives

To determine whether bovine lenses treated with HBO reflect biochemical changes seen in human ARNC.

Methods

Bovine lenses were exposed to either hyperbaric nitrogen (control) or hyperbaric oxygen for 5 hours. Lenses were dissected into 3 regions (outer cortex, inner cortex and nuclear regions) and biochemical assays performed to measure the antioxidant glutathione (GSH), a marker of oxidative stress, malondaldehyde (MDA), changes in protein solubility and protein aggregation.

Results

In all regions, GSH levels decreased in HBO lenses compared to controls with the most significant decrease observed in the nuclear region. Increased MDA levels and increased protein insolubility were detected in the inner cortex and nuclear regions of HBO lenses relative to control. Increased protein aggregation was evident in HBO lenses compared to control.

Discussion

These results show that HBO treatment causes a decrease in GSH levels in the lens nucleus, an increase in oxidative damage, increased protein insolubility, and increased protein aggregation. This is consistent with the biochemical changes seen in human ARNC indicating that this animal model may be useful for safely testing potential therapeutic agents in the future.

ABSTRACT EXAMPLES – CLINICAL

Title: Fetal Anaemia Impairs Heart Growth and Increases Indices of Cardiovascular Risk in Adult Survivors of Intrauterine Transfusion

Background

Fetal anaemia alters coronary conductance, flow and architecture in adult sheep, but effects in humans are unknown.

Objectives

To compare cardiovascular and metabolic function of adults who received intrauterine transfusion for treatment of fetal anaemia with that of their unaffected siblings.

Method

Participants were individuals who received intrauterine transfusion at National Women's Hospital from 1963-1992, and their unaffected sibling(s). Assessments included anthropometry, blood pressure, lipids, glucose tolerance test, heart rate variability analysis and cardiac MRI. Data were analysed using multiple regression adjusted for age, sex, BMI and birth weight z-score.

Results

Affected participants (n=95) were younger than unaffected (n=92, mean±SEM: 33.7±1.0 vs. 40.1±1.1years, p<0.001), born at lower gestation (34.3±0.2 vs. 39.5±0.2weeks, p<0.001) and of lower birth weight (2.5±0.1 vs. 3.3±0.1kg, p<0.001). Affected participants had lower end diastolic volume (153.2±2.5 vs. 165.8±2.6ml, p=0.001), end systolic volume (57.5±1.4 vs. 63.6±1.5, p=0.006), stroke volume (95.5±1.5 vs. 102.2±1.6ml, p=0.005) and left ventricular mass (125.8±2.1 vs. 133.1±2.1g, p=0.02), reduced high density lipoprotein concentration (1.44±0.04 vs. 1.56±0.04mmol/L, p=0.04) and augmented sympathovagal tone (low frequency to high frequency ratio 2.3±0.3 vs. 1.5±0.3, p=0.04).

Discussion

These findings suggest that heart growth is impaired by fetal anaemia, leading to reduced cardiac mass and smaller cardiac chambers in adulthood. A smaller heart implies lower myocyte number and greater work per unit of myocardium. Furthermore, reduced high density lipoprotein and augmented sympathovagal tone suggest increased cardiovascular risk. These findings provide the first evidence in humans that fetal anaemia has potentially deleterious cardiovascular consequences in adulthood.

ABSTRACT EXAMPLES – PUBLIC HEALTH

Title: Using discourse to inform policy: Increasing the alcohol purchase age in New Zealand

Background

The legal alcohol purchase age is part of the Law Commission's Alcohol Reform currently debated in New Zealand. Despite the purchase age policy, many underage youth access and consume alcohol. To address alcohol-related harm it is necessary to understand and attend to social norms and beliefs governing alcohol consumption behaviour. Attitudes towards the access to and consumption of alcohol by young people influence effectiveness of legislation.

Objectives

To understand the complex and differing perspectives on the purchase age held by various social groups in New Zealand.

Methods

This research used a sociological approach, performing discourse analysis on a variety of text including: submissions to the Law Commission, media releases, blogs, and transcriptions from interviews and focus groups held with tertiary students.

Results

Three competing sets of discourse were found. Disagreement occurred over the social construction of youth, what the focus of alcohol law and intervention should be, and the expected level of impact of legislation increasing the purchase age.

Discussion

Discourse arguing against increasing the purchase age raises valid concerns to address. Reform to increase the alcohol purchase age may be more effective and accepted if concerns from various social groups are met, such as encouraging and respecting development of adult responsibility within youth, not neglecting problems from excessive drinking by older adults, and addressing needs for cultural and contextual change. An ideal alcohol policy will weave multiple strands into a mutually respectful, responsive and supportive package.