a place of mind

# RESEARCH PROGRESS REPORT

## July 1, 2014 – December 31, 2014

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# Table of Contents:

# 1. INTRODUCTION

This report contains up to date information on the ongoing research projects that are supported by the Clinical Research Coordinator (CRC) of the University of British Columbia's (UBC's) Division of Neurosurgery at the Clinical Academic Campus of Vancouver General Hospital (VGH) for the period of July 1 – December 31, 2014. The main objective of the report is to familiarize the staff of the Division of Neurosurgery at VGH with the current research activities that are being supported by their CRC. The studies in the report are divided into two categories of ongoing studies: prospective studies, and retrospective studies. The number of studies per category is presented in the table below (Table 1).

Table 1. Number of studies per category of either prospective study or retrospective study.

| **Number of Ongoing Studies** | | |
|---|---|---|
| Prospective | Retrospective | Total |
| 3 | 2 | 5 |

Detailed description of the purpose, objective, budget and sample size of each study is presented in the next two sections of this report.

# 2. ONGOING PROSPECTIVE STUDIES

### 1. Timing of Mobilization After Burr Hole Drainage of Chronic Subdural Haematomas: a randomized study – Chronic Subdural Haematoma (CSDH) Study, PI: Dr. Ryojo Akagami

A two treatment arm, randomized, study of minimization of re-do burr-hole drainage procedures and any other associated complications in patients with chronic subdural haematomas

| Funding | Source | Amount | Study period | Anticipated enrolment | # of subjects enrolled | Approvals | Status | Abstract/ Paper/ Manuscript |
|---|---|---|---|---|---|---|---|---|
| N/A | N/A | N/A | Sep '14<br>Sep '16 | 142 | 7 | obtained | active | N/A |

The timing of when to mobilize patients after burr-hole drainage of chronic subdural haematomas remains controversial. Traditionally, patients have been subjected to delayed mobilization in order to allow for the theoretical re-expansion of the brain and to decrease recurrence. Timing of bed rest is not consistent among centres and varies from immediately after to 7 days after surgery.

The study objective is to determine the optimal timing of mobilization in CSDH patients following a burr hole drainage.

***There are 7 participants enrolled in the CSDH Study.***

### 2. AHCRN Registry: Characterizing Patient Population in the Adult Hydrocephalus Clinical Research Network (AHCRN) – AHCRN Registry

A multicenter and multinational registry that collects data on adult hydrocephalus patients to characterize the etiology, understand variability, progression, and current treatment practices for hydrocephalus patients.

The overall purpose of the Registry is to establish and maintain a hydrocephalus patient event database for the Clinical Centers of the AHCRN, a research network newly established to investigate clinical management of adult hydrocephalus.

Primary Objectives:

- To describe the natural history and treatment response for adults with previously untreated congenital hydrocephalus
- To describe the assessment and treatment of patients with Normal Pressure Hydrocephalus (NPH)
- To describe the complications associated with shunt surgery
- To determine the role for treatment with Endoscopic Third Ventriculostomy (ETV)

The Registry will provide previously unavailable epidemiological information about hydrocephalus patients seen throughout the participating Clinical Centers. This information will provide the basis for multi-institutional studies to be carried out by the AHCRN that may

ultimately improve the clinical care for adults with hydrocephalus throughout the world. The continuing collection of such information serves to provide data necessary for hypothesis generation and study design. Examples of preliminary study designs include, but are not limited to, the following: preliminary power analysis, sample size determination, and recruitment projections. Radiologic imaging data will provide a unique opportunity to assess aspects of adult hydrocephalus diagnosis, management, and outcomes.

**a. Vancouver General Hospital Clinical Academic Campus of UBC Site, PI: Dr. Thomas J. Zwimpfer**

| Funding | Source | Amount | Study period | Anticipated enrolment | # of subjects enrolled | Approvals | Status | Abstract/ Paper/ Manuscript |
|---|---|---|---|---|---|---|---|---|
| N/A | N/A | N/A | Nov '14 no end date | perpetual | 4 | obtained | active | N/A |

**b. Victoria General Hospital Clinical Academic Campus of UBC Site, PI: Dr. Daniel T. Warren**

| Funding | Source | Amount | Study period | Anticipated enrolment | # of subjects enrolled | Approvals | Status | Abstract/ Paper/ Manuscript |
|---|---|---|---|---|---|---|---|---|
| N/A | N/A | N/A | Jan '15 no end date | perpetual | 0 | pre-submission | inactive | N/A |

***There are 4 participants enrolled in the AHCRN Registry at the Vancouver General Hospital Clinical Academic Campus of the UBC site.***

**3. Subdural Evacuation Port System (SEPS) versus Burr Hole Crainiotomy: which do you prefer? – Questionnaire for Neurosurgeons, PI: Pending**

Contemporary neurosurgery offers novel surgical procedures to treat diagnoses that have been known about for many years, such as the Subdural Evacuation Port System (SEPS). This is a novel surgical technique that can be used under local aneshtetic at a patient's bedside to treat subdural haematomas (SDHs) - both acute and chronic. SEPS is an alternative procedure to twist drill crainiotomies, burr hole crainiotomies, and full craniotomies.

| Funding | Source | Amount | Study period | Anticipated enrolment | # of subjects enrolled | Approvals | Status | Abstract/ Paper/ Manuscript |
|---|---|---|---|---|---|---|---|---|
| N/A | N/A | N/A | pending internal review | 7 | 0 | pre-submission | inactive | N/A |

Primary Objectives:

- Identify neurosurgeons' preferred surgical approach to treat SDHs
- Determine if there are variables that influence neurosurgeons' preferences for a given surgical approach
- Identify what are the variables that influence neurosurgeons' preference for a given surgical approach

There is a majority (80%) of the English-language global literature that concludes SEPS is an effective and safe treatment for chronic SDH (CSDH) patients; in particular, it is considered a first tier treatment for the initial presentation of CSDH patients. However, taking into consideration the unique morbidity, and mortality profiles associated with each surgical procedure - SEPS and burr hole craniotomy - each patient has to be evaluated on a case-by-case basis. However, what do neurosurgeons' prefer, and why?

# 3. ONGOING RETROSPECTIVE STUDIES

### 1. The Incidence of Vertebrobasilar Compression of the Brain Stem – PI: Dr. Chris Honey

Incidence of neurovascular compression at the level of midbrain by the vertebrobasilar artery in the adult general population has not been studied in the English-language global literature.

| Study period | Approvals UBC CREB/VCHRI | Sample size | Status | Abstract/Paper/ Manuscript | Funding |
|---|---|---|---|---|---|
| Jan '15-Mar '15 | pre-submission | 100 | not started yet | N/A | N/A |

Objective:

- Determine the incidence of midbrain neurovascular compression by the vertebrobasilar artery in the adult general population

The results from this study will lay the groundwork for a subsequent retrospective study of the incidence of neurovascular midbrain compression by the vertebrobasilar artery (VA) in patients with chronic cough. Should the incidence of neurovascular compression of the midbrain by the VA be significantly associated with a positive diagnosis for chronic cough patients when compared to the incidence of neurovascular compression of the midbrain by the VA in the general public, then there will be evidence to support performing microvascular decompression of the VA as a treatment of chronic cough in chronic cough patients that present with midbrain neurovascular compression by the VA.

### 2. Review of Perisellar Meningioma Surgical Resection at Vancouver General Hospital – Meningioma Study, PI: Dr. Ryojo Akagami

This is a retrospective review of the perisellar meningiomas that were operated on by Dr. R. Akagami in Vancouver General Hospital between January 1, 2001 – December 31, 2013, with an open craniotomy approach, but may have been candidates for endoscopic treatment.

| Study period | Approvals UBC CREB/VCHRI | Charts reviewed /sample size | Status | Abstract/Paper/ Manuscript | Funding |
|---|---|---|---|---|---|
| Sep '14-Mar '15 | obtained | 50 | active | WB & MH Chung Research Day '14 | none |

The treatment of perisellar meningioma intracranial tumours has remained a challenge over the past several decades, mainly attributed to the high risk of visual pathway involvement and vascular encasement. Surgical approaches have remained the mainstay of definitive treatment, with subfrontal, pterional, frontolateral, and orbitofrontal variants most commonly used. Extended endoscopic transsphenoidal surgery is emerging as an alternative option for treatment of these lesions. Endoscopic transsphenoidal surgery provides wider access to the anterior skull base when compared to the classical microscopic transsphenoidal approach, with recent

technological advances such as angled endoscopes and image guidance have extended the success rates of this novel approach.

Objectives:

- Characterize patients' suprasellar and meningioma anatomy
- Investigate their outcomes following transcranial resection of the meningioma tumour by Dr. R. Akagami

The aim is to have those patients who may have been candidates for endoscopic surgery identified based on radiographic tumour characteristics, and then compared against those patients who had perisellar meningiomas with anatomy not suitable for endoscopic treatment. A review of the cases that were operated on transcranially will then be established in an effort to compare the outcomes in lesions that have anatomy appropriate for endoscopic surgery. It is hypothesized that those patients that had perisellar meningiomas with anatomy suitable for endoscopic surgery will have more favourable post-operative outcomes from transcranial surgery.