



Pediatric Section of Neurological Surgery  
of the American Association of Neurological Surgeons  
22 S. Washington Street, Park Ridge, IL 60068

# SHORT CUTS

Arthur E. Marlin, MD, Editor

April 1991

## BUSINESS MEETING

*by Arthur E. Marlin, MD*

The Business meeting was called to order at 12:40 pm at the Marriott Hotel in San Diego, California, December 5, 1990. Thirty-seven members of the section were in attendance.

The past minutes were reviewed and approved. The Treasurer's report was given. The year-to-date balance was \$109,569 compared to a year-to-date balance in 1989 of \$118,360. The major loss of the past years was found to be the annual section meeting. This year there will be a profit from the annual section meeting.

Committee reports were given.

The Program Chairman revealed that registration was quite high, 190 MD registrants, 17 non-MD registrants, and 30 residents.

The Nominating Committee nominated for Chairman, Doctor Michael Scott; for Secretary-Treasurer, Dr. Harold Rekate; for Members at Large, Dr. William Chaddock and Dr. Tae Sung Park. These were unanimously elected.

The Membership Committee put up nominations for Doctor Willman and Dr. Erasmus, and these were unanimously approved.

There was no report from the Rules and Regulations Committee.

Future meeting sites will be Boston in 1991, Vancouver in 1992, and San Antonio in 1993.

No old business was discussed.

There was an announcement for the members to encourage support in the pursuit of the resident awards, the Hydrocephalus Award, and the Shulman Prize.

It was announced that in the annual meeting in New Orleans, Dr. Robert McLaurin will be the Matson Lecturer. Cocktails will occur afterwards if possible. The details will be worked out as the meeting plans are established.

There being no further business, the meeting was adjourned at 12:55 pm.

## NEW EXECUTIVE COUNCIL

The new Executive Council will take office in April:

**Chairman:**

*Dr. Michael Scott*

**Secretary-Treasurer:**

*Dr. Harold Rekate*

**Member at Large:**

*Dr. William Chaddock*

**Member at Large:**

*Dr. Tae Sung Park*

DONOR:

MISC KEY: 12/17

AANS ARCHIVES

## HYDROCEPHALUS FOUNDATION AWARD

The Hydrocephalus Foundation Award was given at the 19th Winter Meeting of the Pediatric Section at San Diego in December, 1990. The award was received by Dr. S.D. Michowiz for his paper on Regional Distribution of CBF in Neonatal Hydrocephalus. Dr. Michowiz is from Toronto. His abstract is published below. Residents are encouraged to submit papers on hydrocephalus to the Section meeting to compete for this award.

### ***Regional Distribution of Cerebral Blood Flow In Neonatal Hydrocephalus***

*S.D. Michowiz, MD, A. Mock, MD, U.I. Tuor, MD, J.M. Drake, MD (Toronto, Ontario)*

Ventricular enlargement and an increase in intracranial pressure are considered to be some of the factors that cause brain damage in hydrocephalus. A reduction in cerebral blood flow (CBF) may also be important, yet little is known of the changes in CBF in the developing brain affected by hydrocephalus.

Injection of 25% kaolin into the cisterna magna in one-week-old kittens produced neonatal hydrocephalus. An increased intracranial pressure with rapid ventricular enlargement occurred in all the animals associated with splitting of

the sutures, sunsetting eyes, progressive spastic paraparesis, loss of appetite and lethargy.

Using this model, control and hydrocephalic kittens were evaluated by ultrasound and magnetic resonance imaging at 1 week post kaolin injection (2 weeks of age). Local CBF was measured by <sup>14</sup>C iodoantipyrine autoradiographic technique. The animals were ventilated and the physiological parameters, temperature, mean arterial blood pressure and blood gases were stabilized. In the hydrocephalic animals statistically significant reductions of cerebral blood flow were distributed regionally; frontal cortex 65.3% periaqueductal area 57.2%,  $p < 0.05$ , lateral thalamus 51.5%,  $p < 0.005$  (expressed as percentage of control). The maximal decrease was found in the periventricular white matter (37.5% of control,  $p < 0.005$ ). Hypoperfusion also occurred in areas remote from the ventricles such as the cerebellar cortex (60.4% of control,  $p < 0.005$ ). Loss of body weight in hydrocephalic animals did not correlate with changes in CBF. These regional CBF changes in hydrocephalus may partially explain the pathogenesis of this disorder.

## FUTURE MEETING SITES

Future meeting sites for the Section meeting in December are:

- Boston, 1991
- Vancouver, 1992
- San Antonio, 1993

## THE MATSON LECTURE

Dr. Robert McLaurin will be the Matson Lecturer at the Section meeting in April. A reception will be held in his honor after the business meeting on Tuesday, April 22, 1991. The Section is honored to have Dr. McLaurin as the Matson Lecturer.

## NEW MEMBERSHIP

The following people have completed applications for the Pediatric Section and their applications have been sent to the membership committee for review. They will be voted on in the April meeting if all details are complete

- Roger Hudgins, MD*
- Jose Montes, MD*
- Joseph Piatt, MD*
- Allen Rothman, MD*
- Michael Heafner, MD*
- Kim Manwaring, MD*
- Correy Raffel, MD*

## SHULMAN AWARD

The Shulman Award for the best resident paper was hotly competed for in the December Section meeting in San Diego. Residents are strongly encouraged to compete for this award. The award was given to Dr. C.D. Heffner for his paper, "Basilar pons attracts its cortical innervation by chemotropic induction of collateral branch formation." The abstract is printed below.

### ***Basilar Pons Attracts Its Cortical Innervation by Chemotropic Induction of Collateral Branch Formation***

*Christopher D. Heffner, MD, Dennis D.M. O'Leary, PhD, (Sponsored by T.S. Park, MD) (St. Louis, MO)*

The mammalian corticopontine projection, which arises from layer 5 of neocortex, develops by delayed interstitial budding of collaterals from corticospinal axons, rather than by direct ingrowth of primary axons or by bifurcation of the axon growth cone. Branches form in the axon tract, directly overlying the basilar pons. Here we present in vitro evidence that basilar pons stimulates cortical axon branch formation and directed growth of cortical axons and collaterals from layer 5 neurons.

First, explants of rat neocortex were co-cultured with appropriately aged explants of basilar pons in 3-D collagen matrices. Cortical axons were shown to grow preferentially toward basilar pontine tissue as compared with control tissues. Axons contacting the basilar pontine explant were shown, by fluorescent dil labeling, to be both primary axons and collateral branches.

Next, explants of cortex were grown alone, allowing axons to extend into the collagen gel. 24 hours later, explants of basilar pons were explanted into the gel along side of the cortical axons. Branches were seen to form on cortical axons after placement of pons, but not after placement of control tissue. 86% of axons contacting the basilar pontine explants were seen by dil labeling to arise from layer 5 cortical neurons.

We conclude that basilar pons releases a diffusible tropic signal that acts preferentially on layer 5 cortical neurons to direct axon growth, and also induces the formation of axon collateral branches, within both a neural and collagenous substrate.

