Progressive Neuroscience

A publication for physicians produced by the Institute for Neurosciences at Winthrop-University Hospital

• Resecting a Large Tentorial Meningioma
• Endovascular Treatment of Spinal Dural Arteriovenous Fistula
• The Behavioral and Psychological Burdens of Alzheimer's Disease
• Complexities of Treating Adult-Onset Scoliosis
To Our Colleagues:

Every day, the neurologists, neurosurgeons and other expert neuroscience specialists at Winthrop-University Hospital’s Institute for Neurosciences utilize the most current technology to diagnose patients with exceptional accuracy and treat them with leading-edge procedures and pharmaceuticals.

But, we are not self-satisfied or complacent about the improved outcomes stemming from our progress. Each advancement compels us to seek more and even better ways to enhance therapies, hone our skills and boost our proficiency.

In this issue of Progressive Neuroscience, we look into some of the most contemporary and sophisticated technologies, treatments and research including:

- The diagnosis and treatment of spinal dural arteriovenous fistulas with endovascular embolization and microsurgical resection
- The MR CLEAN study and its impact on neuroendovascular therapy for patients with acute ischemic stroke
- The use of a combined supratentorial/infratentorial approach when treating a large tentorial meningioma
- The complexities of treating adult-onset degenerative scoliosis
- Dealing with the behavioral and psychological burdens of Alzheimer’s disease

Clearly, our mission to provide gold-standard, hi-tech care is critical. However, we never forget that we care for human beings with very serious, sometimes life-altering, illnesses that can be fearsome and render them exceptionally vulnerable.

As always, our focus is to work closely with you — our referring physicians — to provide collaborative, world-class care for your patients.

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## Contributing Clinicians
A 30s presented with 60%-70% hearing loss in her right ear. She also complained about frequent right occipital headaches. An MRI, with and without contrast, revealed a very large (6cm) supratentorial/infratentorial meningioma in the right posterior fossa. “The tumor extended above the tentorium under the occipital and temporal lobes, significantly bowing up the tentorium and, as a result, extending into both the posterior fossa and the supratentorial component,” explained Michael Brisman, MD, Winthrop-University Hospital’s Chief of Neurosurgery and Co-Director of the Hospital’s Institute for Neurosciences. “There was midline shift, but no hydrocephalus.”

When a meningioma patient is asymptomatic, and the tumor is deemed indolent, management can be limited to regular monitoring with MRI. In other instances, focused radiation can be the treatment of choice. However, given this patient’s symptoms, the lesion’s size and direction of growth, Dr. Brisman recommended surgery to remove the mass.

After the customary pre-anesthesia evaluation and assessment of preoperative status, the patient was placed in the lateral position, right side up. Dr. Brisman performed a craniotomy, entering through the right occipital/suboccipital region and exposing the occipital lobe and the cerebellum along the tentorium. He used stereotactic guidance with three-dimensional coordinates to determine the precise location of the meningioma. The transverse sinus appeared patent until about 1-2cm before the transverse sigmoid junction, where the tumor was located.

“Tentorial meningiomas are surgically challenging. They frequently involve the dural venous sinuses, deep venous structures, the brainstem and cranial nerves.”

Michael Brisman, MD
Chief, Neurosurgery
With advanced microsurgical technology and techniques, Dr. Brisman debulked the tumor gradually and meticulously, removing 99% of the mass, while protecting the cerebellum and occipital lobe. He also ligated and divided the transverse sinus, which was occluded by the tumor, and resected the section of the tentorium affected by the lesion. “There was a bit of hyperostosis and tumor near the cranial nerves going into the petrous bone, and I left that alone,” he reported. “The area was well decompressed, and bleeding was limited.”

The patient’s recovery was unremarkable. She no longer experiences recurrent headaches, has regained some of her hearing and is back at work.

Usually benign and slow growing, meningiomas account for approximately 20% of all intracranial tumors. Tentorial meningiomas can be located above or below the surface of the tentorium cerebella. They represent about 5% of intracranial meningiomas, with most cases (70%-80%) seen in women.1

Because of the surrounding nervous and vascular structures, many tentorial meningiomas are associated with significant morbidity. The most common signs and symptoms are headache, vertigo, problems with gait, hearing loss, visual disturbance and cranial nerve dysfunction.

Accurate preoperative evaluation is critical to success. An MRI will pinpoint the neoplasm’s location, extension and relationship to surrounding structures, as well as the transverse sinus status.

In light of the lesion’s location and position, in this case, Dr. Brisman elected to use a combined supratentorial/infratentorial surgical approach. This technique, which provides an extensive and expansive view of the region, requires less brain retraction, offering a safer way to resect not only the mass, but also the infiltrated dura.

“Tentorial meningiomas are surgically challenging. They frequently involve the dural venous sinuses, deep venous structures, the brainstem and cranial nerves,” Dr. Brisman explained. “Therefore, the procedure is complex and lengthy, with risks including bleeding, infection, headache, dizziness, weakness or numbness of the arms and legs and other uncertainties.”

Despite advances in imaging technology, monitoring and microsurgical techniques, safe removal of tentorial meningiomas remains challenging because of location and pathological anatomy, which can affect prognosis significantly. The goal of surgical treatment is complete and safe removal of the tumor to minimize chance of recurrence and reduce the possibility of incurring neurological deficits.

For more information call the Institute for Neurosciences at 1-866-NEUR0-RX or visit www.winthrop.org.

REFERENCES
Over a period of three months, an avid bicyclist in his 60s, who could easily walk six-to-eight miles, began experiencing bladder and bowel sphincter problems, back pain, the inability to walk even a mile and gait difficulties stemming from diminished power in his left foot. A neurological examination was normal, he had no bruit, and a coagulation workup was negative. A neurological examination was normal, he had no bruit, and a coagulation workup was negative.

An MRI revealed an edematous conus with blood vessels. His age, coupled with the presenting signs, symptoms and imaging results, were consistent with arteriovenous malformation (AVM). However, to pinpoint the location and type of AVM, John Pile-Spellman, MD, a highly respected endovascular neuroradiologist at Winthrop-University Hospital, scheduled a selective spinal digital subtraction angiogram — the gold standard for visualization of the intricate vascular anatomy — with possible endovascular embolization of the lesion. Dr. Pile-Spellman performed an angiogram using the right transfemoral approach.

Through selective catheterization, he found significant vascular pathology, with a spinal dural arteriovenous fistula at L2 on the left. Embolization was performed, without complications and an excellent operative outcome.

The patient improved markedly until two months postoperative, when bladder and bowel urgency, as well as difficulty walking, recurred. A limited angiogram revealed evidence of prolonged filling and drainage of the anterior spinal cord, highly suggestive of venous hypertension and suspicious for a dural arteriovenous malformation. The repeat angiography failed to show the fistula due to the inability to selectively catheterize the pedicle. However, MRI continued to show edema in the spinal cord.

Referred to Jonathan L. Brisman, MD — Winthrop’s Director of Cerebrovascular and Endovascular Neurosurgery, with dual training in microneurosurgery and endovascular techniques — the patient, who had failed embolization, was suspected of having a recurrent residual dural type 1 fistula. He needed surgery to obliterate it and prevent neurologic deterioration.

“While MRI can indicate the presence of a fistula, its exact location is hard to pinpoint because the site of MRI abnormality can be many levels away from the actual lesion.”

John Pile-Spellman, MD
Endovascular Neuroradiologist
Dr. Brisman, together with Michael Brisman, MD, Winthrop’s Chief of Neurosurgery, performed an L2 laminectomy bilaterally and partial L1 and L3 laminectomies. Microdissection was used to move aside the cauda equina nerve roots and identify a clearly abnormal and large dilated vascular structure consistent with a spinal dural arteriovenous fistula. After placing a temporary aneurysm clip on the vessel and ensuring there was no change in neurophysiologic potentials, they placed a permanent clip at the site, completing the spinal dural arteriovenous fistula ligation.

Two weeks postoperative, the patient’s strength was increasing, his urinary and bowel issues returned to baseline, and his gait was normal.

A spinal dural arteriovenous fistula (SDAVF) is an abnormal connection between an artery and vein located inside the dura mater near the penetration point of the nerve root, where the arterial blood from a radiculomeningeal artery enters a radicular vein. Seen predominantly in older males, SDAVF is the most frequent spinal arteriovenous malformation, accounting for approximately 80% of all AV shunts of the spine. The condition causes high-pressure arterial blood to flow directly into a low-pressure vein, congesting the venous system and preventing normal spinal cord blood circulation.

The congestion, which prevents the spinal cord from draining blood properly, causes cord edema and dysfunction. Undetected and untreated, the veins grow increasingly diseased over time, resulting in hypoxia and irreversible, progressive spinal myelopathy, manifested by increasing back pain, lower-extremity weakness and sensory changes, with inevitable, slow progression to paraplegia, impotence and urinary and bowel incontinence.

“Diagnosis can be challenging because symptoms can be deceptive and nonspecific at first,” said Dr. Pile-Spellman. “Most patients are symptomatic for one or more years before being diagnosed. While MRI can indicate the presence of a fistula, its exact location is hard to pinpoint because the site of MRI abnormality can be many levels away from the actual lesion. Therefore, the current benchmark for confirming the diagnosis, as well as providing a treatment option, is a spinal angiogram, which involves selective catheterization, under X-ray guidance, of the vessels that can give rise to the fistula.”

Treatment Options

If SDAVF is treated early, motor and sensory function can improve, although pain, as well as bladder and bowel dysfunction are reversed only in a minority of patients. Therapy is aimed at occluding the shunting zone — the most distal part of the artery together with the most proximal part of the draining vein — in order to improve circulation and prevent further neurologic deterioration. There are two treatment options:

• **Endovascular embolization** involves passing a catheter through the groin up into the arteries, using superselective catheterization to isolate the fistula and insert a liquid, glue-like embolic agent into the feeding artery.

• **Surgery** involves microdissection to occlude the intradural vein that receives the blood from the shunt zone.

“Generally, as in this case, treatment strategy begins with endovascular embolization,” explained Dr. Jonathan Brisman. “If endovascular occlusion is incomplete, surgical intervention is required.” Success rates of endovascular embolization vary between 25% and 75%, while microsurgical shunt interruption has proven secure and reliable, with a 98% success rate.

“While endovascular embolization can obliterate a fistula and may be the therapy of choice for patients with co-morbidities,” said Dr. Michael Brisman, “surgery is the definitive treatment in recurrent spinal dural arteriovenous fistulas.”

For more information, call the Institute for Neurosciences at 1-866-WINTHROP or visit www.winthrop.org

**REFERENCES**

With its legacies of incapacitating neurologic deficits and death, ischemic stroke can shatter lives. An estimated 60%-80% of patients with a proximal vessel occlusion in the anterior circulation die within 90 days after stroke onset or fail to regain independent functioning, despite attempts to reperfuse the occluded vessel with intravenous thrombolytic therapy. However, as technology and treatment approaches continue to evolve, new therapeutic tools to reopen arteries and rescue the ischemic brain are being developed.

“The treatment of acute ischemic stroke for the past 20 years has focused on revascularization, with time to reperfusion being the key to limiting the extent of brain damage,” said John Pile-Spellman, MD, an internationally known endovascular neuroradiologist at Winthrop-University Hospital.

Specializing in the diagnosis, management and treatment of a wide range of critical cerebral conditions, including stroke, Dr. Pile-Spellman adds, “While the recognized standard of care for acute ischemic stroke patients is systemic reperfusion therapy with intravenous alteplase — tissue plasminogen activator (t-PA) — the technique has limitations. The most serious one is the narrow 4.5-hour time window, during which therapy can be administered relatively safely in carefully selected patients.

A promising option for patients, who do not qualify for t-PA treatment or fail to improve after being given the IV thrombolytic agent, is neuroendovascular intra-arterial treatment, which can be used alone or in combination with systemic thrombolysis at the site of the clot.

**Neuroendovascular Therapy for Acute Ischemic Stroke**

**The Impact of the MR CLEAN Study**

With its legacies of incapacitating neurologic deficits and death, ischemic stroke can shatter lives. An estimated 60%-80% of patients with a proximal vessel occlusion in the anterior circulation die within 90 days after stroke onset or fail to regain independent functioning, despite attempts to reperfuse the occluded vessel with intravenous thrombolytic therapy. However, as technology and treatment approaches continue to evolve, new therapeutic tools to reopen arteries and rescue the ischemic brain are being developed.

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A promising option for patients, who do not qualify for t-PA treatment or fail to improve after being given the IV thrombolytic agent, is neuroendovascular intra-arterial treatment, which can be used alone or in combination with systemic thrombolysis at the site of the clot.
Endovascular therapy can be administered within six hours after stroke onset. The treatment time window is a function of the stroke location, e.g., patients with strokes in the posterior circulation have a longer therapeutic window than those with other stroke subtypes.

Specifically, intra-arterial treatment consists of arterial catheterization involving a microcatheter guided to the occlusion site. The process and technology can deliver a thrombolytic agent to dissolve the clot, enable thrombectomy to remove the obstruction using mechanical devices, or disrupt the thrombus employing a retrievable stent. “While such interventions for acute ischemic stroke are not new, their use has been limited by the scarcity of randomized clinical trials and the shortage of qualified neurointerventionists,” said Dr. Pile-Spellman.

Several investigations have produced variable results, which have been inconclusive regarding the superiority of endovascular therapy over IV t-PA alone. However, a recent comprehensive investigation — the MR CLEAN (Multicenter Randomized Clinical Trial of Endo-vascular Treatment for Acute Ischemic Stroke in the Netherlands) study — which examined the efficacy of using interventional therapy plus IV t-PA vs. administration of IV t-PA alone, has confirmed the value of administering intra-arterial therapy within six hours of symptom onset in patients with acute ischemic stroke.

“MR CLEAN involved approximately 500 patients with acute ischemic stroke due to a large artery anterior circulation occlusion,” Dr. Pile-Spellman explained. “All participants were given IV t-PA within 4.5 hours of symptom onset. Then, about half of the subjects received arterial catheterization with a microcatheter to the site of the occlusion. The mechanical treatment, administered within six hours of the start of the stroke, consisted mostly of using a retrievable stent to remove the clot.

Both groups matched in age, time to treatment and baseline risk factors.”

Results of this groundbreaking trial revealed that t-PA plus neurovascular intervention produced a significant difference of 13.5 percentage points in functional independence at 90 days, when compared to the group that received only t-PA. What’s more, during the three-month follow-up period, neither group showed a significant difference in the occurrence of serious adverse events. Mortality and the occurrence of symptomatic intracerebral hemorrhage were the same for both groups.

“Although the need to refine and improve therapy for patients with acute ischemic stroke continues,” Dr. Pile-Spellman concluded, “the MR CLEAN trial has shown that endovascular treatment for acute ischemic stroke can be effective and safe.”

For more information, call the Institute for Neurosciences at 1-866-WINTHROP or visit www.winthrop.org

REFERENCES
A 70-year-old woman with a history of laminectomy using instrumentation and fusion, was experiencing uncontrollable back and leg pain that was worsening steadily and preventing her from walking or standing for more than 30 seconds.

A thorough physical examination, X-rays, CT scans and MRIs found disc desiccation at every level in the thoracic spine, stenosis at T11-T12, significant kyphotic deformity and thoracolumbar scoliosis with a lateral bend to the left side; the curvature measured 35°.

Otherwise healthy, she was diagnosed with degenerative adult-onset scoliosis — a condition estimated to affect as much as 68% of adults over age 65. When she presented to Artem Vaynman, MD, a Board Certified Winthrop-University Hospital neurosurgeon, who specializes in complex and minimally invasive spine surgery, she was refractory to medication, with immobilizing pain and weakness laying waste to the quality of her life.

“The combination of the compression of the spinal nerves and the significant spinal curvature was causing back pain and lower-extremity weakness,” explained Dr. Vaynman. “Recent studies have found that the disability of patients with severe progressive spinal deformity can be compared to that experienced by patients with bilateral leg amputations.”

Risk Factors & Symptoms

Different from curvature of the spine seen in children and adolescents, the risk factors for scoliosis that arises in adulthood include advanced age, genetic predisposition, ligament laxity, collagen disorders, lifestyle (smoking, obesity, long-term heavy manual labor) and connective tissue disorders (lupus, scleroderma). Adult scoliosis is also frequently related to osteoporosis and can develop after surgery that results in a spinal imbalance. Additionally, some adults treated for childhood scoliosis may need revision surgery.

Degenerative adult scoliosis is caused by the gradual deterioration of the facet joints, which makes the straight spine shift and curve to one side. Symptoms include the slow progression of increasingly severe low back pain, forward leaning, significant non-alignment of the spine and loss of height, as well as weakness, numbness and pain in the lower extremities, bladder and bowel dysfunction, dyspnea and fatigue.
When possible, degenerative adult-onset scoliosis is first treated medically with anti-inflammatories, pain medications, physical therapy and exercise. Surgery is usually recommended for patients with uncontrollable pain, spinal stenosis, extensive and progressive thoracolumbar curvature and decreased cardiopulmonary function, as well as significant impairment of daily function.

“This patient was definitely a candidate for surgery,” Dr. Vaynman said. “Her spine was considerably unbalanced; she was leaning both forward and to the side. We recommended operating in two stages. While I knew the surgeries would be complex and not without risk, I felt they were basically safe and would help relieve her pain, which was compromising virtually every aspect of her life.”

Scoliosis surgery for adults can be more challenging than that used with children and adolescents because of several factors, including the patient’s age and increased chance of medical comorbidities; the existence of osteoporosis, which can make fusion difficult; failure of the spine to fuse; and the potential for neurological injury.

Treatment

The first stage consisted of an L2-L3 anterolateral decompression diskectomy with interbody fusion in order to free the nerves from compressing material and alleviate the pain. It involved the use of a lateral cage system to achieve anterior decompression of the spinal cord and neural tissues.

The second surgery, a posterior thoracolumbar instrumented fusion from T10 to the pelvis, was designed to align the spine, stop the curve’s progression and provide spinal stability. In this case, Dr. Vaynman essentially welded the vertebrae together using bone autograft and allograft. He then supported the area with bilateral posterior metallic rods and fixation screws extending from the thoracic region to S1.

During both procedures, intraoperative fluoroscopy, as well as somato-sensory-evoked and motor-evoked potentials were employed to monitor and detect any changes in spinal cord integrity during manipulation and curve correction. The complex procedures were performed on the same day over a total of 10 hours.

“Six weeks postoperatively, X-rays showed excellent spinal alignment,” reported Dr. Vaynman. “And several months later, with her walking and ability to stand dramatically improved, the patient reported she was pain-free.”

For more information, call the Institute for Neurosciences at 1-866-WINTHROP or visit www.winthrop.org

REFERENCES

Alzheimer's disease (AD), is a chronic, slowly progressive disorder that involves impairment of cognitive functions, speech, personality and executive function.1 While it is estimated that over 5 million of Americans are affected by AD, it also places a profound burden on the lives of approximately 15-20 million caregivers.2 They must deal with the impact of this devastating disease on the patient, as well as the stress their responsibilities place on their own health. Much of a caregiver's burden stems from having to deal with the AD patient’s difficult-to-manage and heartbreaking behaviors.

The non-cognitive behavioral and psychiatric disturbances resulting from AD were described under the umbrella of Behavioral and Psychological Symptoms of Dementia (BPSD) by The International Psychogeriatric Association in 1996. BPSD typically presents in the later stages of AD and is seen in up to 90% of patients during the course of this shattering illness.3 BPSD frequency increases as dementia intensifies. It is more prevalent in long-term care facilities and associated with elderly abuse risk, caregiver stress, increased duration of hospitalization, greater likelihood of nursing home placement and substantial financial burden. Symptoms may include verbal and physical aggression, psychomotor agitation, motor and verbal perseveration, anxiety, depression, disinhibition, delusions, hallucinations, sleep disturbances, wandering and hoarding.3

Biological & Pathological Correlates

Neurodegenerative changes in AD derange multiple brain neurotransmitters, including serotonin, somatostatin, norepinephrine and glutamate. However, the acetylcholinergic deficit hypothesis is central to the theory of AD pathophysiology, and its deficiency may eventually shift neurotransmitter imbalance toward dopamine over activity, thus explaining the development of psychosis in more advanced AD.6

Attempts to correlate BPSD with underlying pathophysiology using SPECT has shown hypoperfusion of the left anterior temporal cortex and dorsolateral frontal cortex in demented patients with aggression and agitation. Psychotic symptoms were associated with hyperperfusion in frontal and posterior temporal regions, and hypometabolism in frontal, parietal and temporal brain regions, as well as in the left medial occipital and inferior temporal gyrus. Similarly, SPECT studies in apathetic AD patients have revealed frontal and cingulated hypoperfusion.7

Psychotic AD patients have shown increased neurofibrillary tangle density in the middle frontal cortex and decreased levels of N-acetyl-L-aspartate in the temporal, frontal and parietal cortices. This has been corrobo-
First Rule Out Delirium

It is important to distinguish BPSD from delirium. AD patients are especially at risk for delirium due to acute medical problems and/or medications. While BPSD and delirium symptoms overlap considerably, acute presentation and resolution of symptoms with elimination of the underlying medical cause is indicative of delirium.

Depression in AD

The incidence of depression in AD patients runs as high as 43%, often occurring concomitantly with agitation, anxiety and irritability. However, due to expressive difficulties, AD patients rarely report typical depression symptoms. Instead, they may get preoccupied with somatic symptoms, pessimistic thoughts, worries, apathy and loss of self-esteem. Considering the side effect profile, selective serotonin reuptake inhibitors (SSRI) — but not tricyclic antidepressants (TCA) or monoamine oxidase inhibitors (MAOI) — should be employed. Recent studies have revealed a limited role of conventional antidepressants in approaches. Due to the associated risk and limited efficacy of psychotropic medications in BPSD patients, it is important to try a non-pharmacological approach before prescribing medications. While the FDA has not approved medication for the management of BPSD, treatment is largely based upon symptoms, and may include the use of cholinesterase inhibitors, anti-psychotics, antidepressants and mood stabilizers. Since cholinergic deficiency appears to underlie the development of BPSD, cholinesterase inhibitors are used in an attempt to delay onset and to ameliorate AD-related behavioral disturbances. Memantine, alone or in combination with acetylcholinesterase inhibitors, has also been shown to have some anti-agitation effects.

Recent reviews of the use of pharmacological interventions for BPSD highlight the potential risks of medications, particularly antipsychotics. Due to increased incidence of strokes, pneumonia, cardiovascular events and overall mortality in elderly demented patients treated with antipsychotics, it is crucial to assess, discuss and document risks and benefits of antipsychotics. In my clinical experience, when a non-pharmacological approach fails — and in absence of contraindications — low-dose quetiapine (12.5mg-75mg/day) is useful in treating agitation, and low-dose risperdal or haloperidol (0.25mg-1mg/day) is generally effective in reducing delusions and hallucinations.

The American Geriatric Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults discourage use of medications with strong anti-cholinergic side effects, such as antihistamines, TCAs and antispasmodics, as well as benzodiazepine and non-benzodiazepine hypnotics in this population. Even though some suggest the use of low-dose valproic acid (VPA) in AD agitation, VPA has not been shown to delay onset of agitation or psychosis in AD patients. Rather, it has been associated with somnolence, gait disturbance and overall functional decline.

Non-Pharmacological Approach to Managing BPSD

Growing evidence suggests that comprehensive non-pharmacological approaches, grounded in maintaining the physical and emotional comfort of the individual, may be more appropriate.

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Educating caregivers to address possible triggers of BPSD, such as discomfort, hunger, thirst, over/under stimulation and fear of abandonment, will ensure implementation of the “unmet needs” model. Unfortunately, inadequate resources, secondary to the cost and/or lack of skill sets, often lead to use of off-label psychotropic medications.21

In order to prevent and reduce caregiver burnout, specialized training in the person-centered approach is required to improve empathy and resiliency toward the disease-related behaviors of people with AD.22

For more information, call the Institute for Neurosciences at 1-866NEURO-RX or visit www.winthrop.org.

References

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Dr. Jonathan Brisman specializes in cerebrovascular and endovascular surgery for diseases of the central nervous system. As one of fewer than 100 neurosurgeons nationwide with dual training in microneurosurgery and endovascular techniques (and the first on Long Island), he is skilled in aneurysm clipping and endovascular coiling for brain aneurysms, as well as in advanced procedures to treat brain arteriovenous malformations (AVM), carotid stenosis and acute stroke. His postgraduate training includes an Interventional Neuroradiology Fellowship at Roosevelt Hospital in New York and a Microvascular Neurosurgical Fellowship at Swedish Hospital in Seattle. He completed a neurosurgical residency and surgical internship at Massachusetts General Hospital, where he was Chief Neurosurgery Resident. Dr. Brisman received his medical degree from Columbia University’s College of Physicians and Surgeons. He has published over 40 articles in peer-reviewed neurosurgery journals, including “Medical Progress: Cerebral Aneurysms” in the New England Journal of Medicine and one on stroke management in Lancet Neurology.

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Dr. Aaron Pinkhasov has extensive expertise treating cognitive disorders in the geriatric population. Over the course of his career, he has developed notable insight into the intricate mind-body paradigm and demonstrated proficiency in areas overlapping medical and psychiatric health. Dr. Pinkhasov is one of only a handful of clinicians triple Board Certified in Psychiatry and Neurology, Psychosomatic Medicine and Internal Medicine. Prior to joining Winthrop, he was Chairman of Department of Psychiatry and Neurology at Kingsbrook Jewish Medical Center in Brooklyn, New York, where he also served as the SUNY Downstate College of Medicine Director and Coordinator for Geriatric Psychiatry Training. Additionally, he was Director of Electroconvulsive Therapy training for SUNY Downstate. His postgraduate training includes a highly competitive combined internal medicine and psychiatry residency program at SUNY Downstate and chief residency in internal medicine. Dr. Pinkhasov is a Fellow of American Psychiatric Association. An author of multiple publications, he has presented on a range of behavioral health and psychopharmacology topics. He was also a Primary Investigator of the New York State Office of Mental Health Grant (Phase III), awarded for the Integration of Behavioral Care in Medical Care Settings.

John Pile-Spellman, MD
Endovascular Neuroradiologist
516.255.9031

Dr. John Pile-Spellman is an internationally known endovascular neuroradiologist, specializing in the diagnosis, management and treatment of cerebral aneurysms, strokes, tumors and vascular malformations. Dr. Pile-Spellman has many years of experience in developing high impact, clinically relevant imaging and treatment paradigms. His postgraduate training includes Fellowships in Neuroradiology at Massachusetts General Hospital and in Interventional Neuroradiology at New York University Medical Center; he was also a visiting Fellow in Endovascular Neurosurgery at the Kiev Neurosurgical Institute, Kiev, Ukraine. Dr. Pile-Spellman completed a residency in diagnostic radiology at Massachusetts General Hospital in Boston, and earned his medical degree from Tufts University School of Medicine in Boston. Prior to joining Winthrop, he was an attending radiologist and Director of Academic Interventional Neuroradiology at New York Presbyterian Hospital. He was also Vice Chair of Research and Director of Interventional MRI at Columbia University Medical Center. He has published numerous articles in peer-reviewed journals.

Artem Vaynman, MD
Neurosurgeon
516.255.9031

Dr. Artem Vaynman specializes in complex spinal surgery, minimally invasive spinal surgery and 3D spinal navigation. He treats a variety of spine problems, including degenerative scoliosis, spinal stenosis, compression fractures, back pain, herniated disc and sciatica. His postgraduate training includes a Fellowship in Complex Spine Surgery at the Cleveland Clinic Foundation and residencies in general surgery and neurosurgery at the New Jersey Medical School, University Hospital in Newark, where he served as Chief Resident in Neurosurgery. He obtained his medical degree at SUNY Downstate College of Medicine in Brooklyn. Dr. Vaynman has authored “Spinal Cord Injury and Paralysis” a chapter in Essentials of Orthopedic Surgery: Spine.
Winthrop-University Hospital’s Institute for Neurosciences

Winthrop-University Hospital is a 591-bed teaching hospital located on Long Island in Mineola, NY. A major regional healthcare resource, the Hospital has been a leading healthcare provider for more than a century, dedicated to the integrity, dignity and well-being of every individual. Winthrop offers a full complement of advanced inpatient and outpatient services with a deep commitment to medical education and research.

Physicians and surgeons in Winthrop’s Institute for Neurosciences are pioneering the use of technologically advanced approaches for the diagnosis and treatment of diseases of the brain and spine, including computerized imaging systems, state-of-the-art surgical interventions and the latest generation of medication therapies.

The Institute’s interdisciplinary team includes neurologists; neurosurgeons; neurointensivists; pediatric neurologists and neurosurgeons; neuroradiologists; vascular surgeons; orthopaedic spine surgeons; neuro-oncologists; neuro-pathologists; neurophysiologists; and specially trained nurse practitioners, physician assistants and nurses. Specialized physical and occupational therapy, social work and other supportive services are also key components of the Institute. The Institute’s experts are up to date on the latest developments in neuroscience and help pave the way for new discoveries through participation in clinical research trials, which enable them to provide patients with access to tomorrow’s most promising therapies.

Programs & Services Offered by the Institute for Neurosciences

Neuroscience Intensive Care Unit

The 14-bed acute care NeuroICU is reserved for patients with serious, complex neurological issues. The focus is on providing continuous monitoring and instantaneous results of critical values, allowing the expert staff, experienced in using advanced technology and providing neurocritical care, to employ aggressive interventions that treat neurological deterioration.

Neurology

Comprehensive Level 4 Epilepsy Center
Movement Disorders Program
Multiple Sclerosis Care Center
Neurodiagnostic Laboratory

Neurosurgery

Aneurysm Coiling & Clipping
Disc Replacement
Brain Aneurysm Program
Brain Tumor Program
Brain & Skull Base Surgery
Carotid Stenting & Endarterectomy
Cerebrovascular & Endovascular Surgery
Chiari Decompression Surgery
Complex & Minimally Invasive Spinal Surgeries
Complex Cranial Surgery
Computer-Assisted Resection of Brain Tumors
CyberKnife® Radiosurgery
Endoscopic Pituitary Surgery
Epilepsy Surgery Program
Facial Pain/Trigeminal Neuralgia Program
Image-Guided Spine Surgery
Kyphoplasty

Neuroradiology

Aneurysm Treatment
CT Perfusion Scanning
Interventional Neuroradiology
Neuroangiography

Neuroradiology

CT Perfusion Scanning
Interventional Neuroradiology
Neuroangiography

Pediatric Neurology & Neurosurgery

Attention Disorders & Learning Disabilities Treatment
Craniostenosis Surgery
Brain Tumor Treatment
Evaluation & Treatment of Children with Headaches
Evaluation & Treatment of Neurological Disorders Myelomeningocele Surgery

For more information, call the Institute for Neurosciences at 1-866-NEURO-RX.