

A Dementia Diagnosis May Need a Second Look

Five to 10 percent of patients nationwide who have been diagnosed with some form of dementia actually have normal pressure hydrocephalus (NPH). Treatment for NPH has more than an 80 percent success rate and offers these patients a chance for an improved quality of life.

The Swedish Neuroscience Institute (SNI) at Issaquah has one of the few programs in the United States dedicated to diagnosing and treating adults with NPH. **Sarah Jost Fouke, M.D.**, a neurosurgeon at the SNI at Issaquah and program leader of the Swedish Adult Hydrocephalus Program, has developed a structured evaluation to carefully assess these patients and correctly identify those individuals who may benefit from treatment.

Hydrocephalus and dementias have common symptoms, which can contribute to misdiagnosis. Primary symptoms of NPH in older adults (ages 60 years or older) include problems with gait, cognition and incontinence. Some patients also complain of headaches or dizziness. When a patient with a presumptive diagnosis of dementia presents with all three primary symptoms (gait, cognition and balance), it may be appropriate to conduct a specific evaluation to determine if there is a buildup of cerebrovascular fluid (CSF) in the ventricles that might be associated with NPH.

The adult hydrocephalus team at the SNI uses a multi-phased approach to evaluate patients for NPH. During the initial consultation, a member of Fouke's
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When it Comes to Sleep – Too Many Americans are Running on Empty

Insufficient, unrefreshing or nonrestorative sleep is associated with many of America's greatest medical concerns. It can contribute to the onset of diabetes, cardiovascular disease, hypertension, stroke, obesity and depression, as well as compromise management of these disorders. And yet, in a self-reported online poll on the National Sleep Foundation's website, more than 67 percent of responders said they don't talk about sleep with their doctors during routine visits.

The Centers for Disease Control and Prevention (CDC) reports that 25 percent of Americans occasionally do not get sufficient sleep and nearly 10 percent have chronic insomnia. In the 2008 and 2009 Behavioral Risk Factor Surveillance Survey, Washington State men and women ages 25-34 years old
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Normal Pressure Hydrocephalus

(continued from A1)

team takes a medical history and conducts a thorough physical examination. He or she may order additional MRI scans that include CSF flow studies to appraise cranial CSF flow, along with hippocampal, cortical and ventricular volumes.

If this initial evaluation suggests a possible NPH diagnosis, the team of evaluators performs a series of tests to establish a baseline level of function, including gait and balance, and cognition. The patient is videotaped performing the gait and balance testing.

If the patient appears to have a

clinical history and symptoms suggestive of a diagnosis of NPH, Fouke's team performs a lumbar puncture to withdraw approximately 30-40 milliliters of CSF. If the patient has NPH, removing this volume may result in some symptom improvement.

Returning to the clinic the next day, the patient is again videotaped while completing the same gait and balance assessments. Cognitive testing is repeated. The team compares the results of the second set of tests to the baseline tests from the previous day.

"We use an objective scoring system

to measure and record the results of both sets of assessments," says Fouke. "Using videography before and after a lumbar puncture and a standard evaluation scale allows us to both qualitatively and quantitatively assess patient improvements."

If there are improvements, Fouke considers the patient for surgical shunt implantation to regulate CSF volumes. The shunt allows excess CSF to drain into the abdomen, where it is absorbed. A valve attached to the shunt controls spinal fluid flow.

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Case Study: Normal Pressure Hydrocephalus

Sarah Jost Fouke, M.D., program leader, Adult Hydrocephalus Program, Swedish Neuroscience Institute at Issaquah

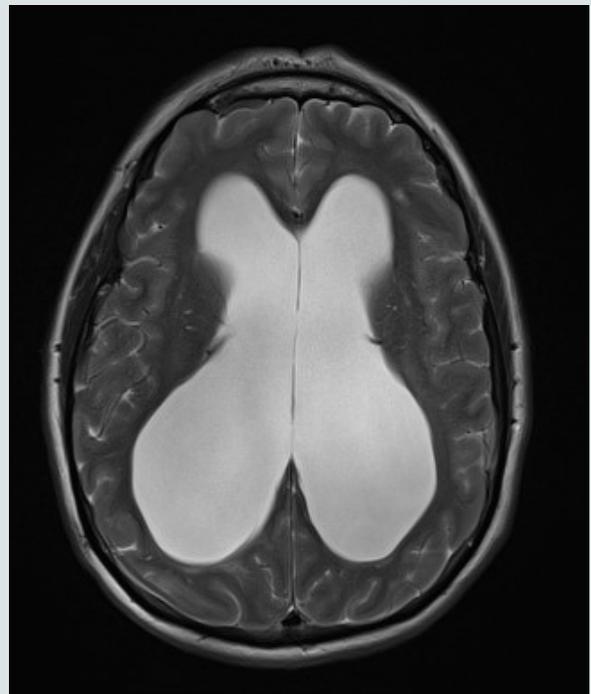
TS is a 74-year-old male who has experienced progressive gait difficulties for about three to four years. In addition to unsteadiness with ambulation, he recently fell several times. He has enjoyed traveling with his spouse since retiring, but finds that he can no longer keep up when walking in groups while on vacation. He has some memory impairment and feels "foggy" at times. He has urinary frequency, but no frank urinary incontinence. His symptoms have been progressing slowly.

Mr. S approached his primary-care physician about his memory impairment and gait disturbance. Initially he was considered to have a diagnosis of Alzheimer's or Parkinson's disease. An MRI of the brain revealed increased ventricular volumes, out of proportion to the degree of cerebral atrophy seen. Because of a radiographic reading of "possible normal pressure hydrocephalus," Mr. S's physician referred him to our neurosurgical office for evaluation.

Mr. S's wife and daughter accompanied him to his initial appointment. He noted the symptoms described above. Gait testing revealed a magnetic type gait pattern with a slow, somewhat shuffling gait. He took 19 steps to cover a 20-foot distance in 17 seconds. He scored 25/30 on a Mini Mental Status Evaluation (MMSE). MR imaging with CSF flow studies revealed ventriculomegaly with increased aqueductal stroke volumes. Given the clinical and radiographic findings, as well as the signs on examination, we recommended high-volume lumbar puncture.

Mr. S underwent high-volume lumbar puncture and returned to the office the following day for further evaluation.

His wife noted that they went out for dinner the previous evening and her husband was more spirited than usual. They walked around after dinner with much more ease than normal. In the office, Mr. S's score on MMSE improved from 25 to 28. His gait testing revealed an improved speed with increased foot pickup, covering the same 20-foot distance in 12 seconds, taking 14 steps.



T2 weighted axial image from a brain MRI showing significant ventricular dilatation in a patient with normal pressure hydrocephalus.

Given this improvement, Mr. S and his family discussed placement of a ventriculoperitoneal shunt. One month later, Mr. S underwent shunt placement without complications. At subsequent follow-up visits, he noted continuation of physical therapy with improvement in gait and mobility. His wife and family noted an improvement in quality of life with increased mobility on a family vacation approximately six months following surgical intervention. During one follow-up visit, Mr. S's wife thanked the team for "giving me my husband back." 🙏

If the test results show no improvement, but the clinical evaluation and MRI images suggest NPH, Fouke may recommend that the patient be admitted to the hospital for three to four days of additional testing. In this case, the patient undergoes placement of a lumbar drain to allow continuous draining of a larger volume of CSF. These patients go through daily gait/balance and cognitive testing. If draining more fluid produces symptomatic improvement, Fouke removes the drain and considers the patient for an implanted shunt.

Studies have shown that patients with NPH evaluated by these rigorous

methodologies show greater than 80 percent response to CSF shunting.

Typically, treatment and follow-up physical therapy and rehabilitation provide the greatest improvement in restoring gait and balance. It is more difficult to predict how much improvement there will be with memory impairment and urinary incontinence symptoms. For a large number of patients, clinical improvement results in greater independence and significant improvement in quality of life, highlighting the importance of recognizing this relatively under-diagnosed clinical condition. ☺

When to Refer to Swedish Adult Hydrocephalus Program

751 N.E. Blakely Dr.
Issaquah, WA 98029
T: 425-313-7077
F: 425-313-7180

The Adult Hydrocephalus Program offers second opinions and accepts referrals of patients who are 60 years old or older who exhibit all three primary symptoms of NPH:

- Gait and balance problems
- Cognitive decline
- Incontinence

Additionally, an initial CT scan or MRI may show enlarged ventricles.

To consult on or refer a patient who may benefit from a structured evaluation for NPH, please call 206-313-7077.

Musculoskeletal Pain and Wellness: A Pathway of Care with a Light Touch

Musculoskeletal pain can be debilitating and an obstacle to normal daily life. Over time, patients who try to mitigate the pain by altering the way they sit, stand or move, may exacerbate the condition and shift the pain to another area. Physical medicine and rehabilitation specialists at Swedish Spine, Sports and Musculoskeletal Medicine (SSSMM) have extensive training and expertise in musculoskeletal wellness and nonsurgical approaches to spine, musculoskeletal and nerve dysfunction and pain due to degenerative conditions, and sports, work and daily-life injuries. They have a light touch – and a holistic approach – to relieve pain and restore function.

“The pathway of care we use for patients ages 12 years and older begins with the least invasive approach – trying to avoid surgery, whenever possible,” says **Andrew J. Cole, M.D.**, medical director of Swedish Medical Group – Department of Ambulatory Musculoskeletal Services, Swedish Physical Medicine & Rehabilitation, and Swedish

Spine, Sports and Musculoskeletal Medicine. “As a referral resource, we are able to help diagnose and treat patients with a goal of minimizing their pain and optimizing their function.”

Prehabilitation programs are available to help athletes, employees and other individuals obtain their personal functional goals that will help them perform specific activities. Rehabilitation services focus on thorough evaluations that lead to personalized care plans and the best possible outcomes.

The evaluation for pain or dysfunction begins with an extensive conversation about the patient’s medical history and how the injury or condition affects his or her quality of life. A directed, hands-on physical exam helps determine how the injury might be affecting other parts of the body through the kinetic chain (the relationship or connection between the nerves, muscles, bones and joints) or motion cascade. After determining a presumptive diagnosis, the discussion turns to whether additional

diagnostic tests are needed or if the patient can begin a customized rehabilitation program. The components of such a program might include self-help therapies (ice/heat, elevation, compression, rest, etc.), medications, physical therapy, integrative therapies (manipulation, acupuncture or massage), bracing, and diagnostic and therapeutic peripheral joint and spinal injections (guided by ultrasound or fluoroscopy). When further testing is needed to better define the problem, the physiatrists at SSSMM coordinate the most appropriate and efficient workup. They will order and interpret imaging, such as X-ray, MRI, CT, CT-myelogram, bone SPECT scans, and other imaging studies, and perform electrodiagnostic (electromyography and nerve conduction studies) and musculoskeletal ultrasound studies.

“We also coordinate exercise, stress reduction and nutritional counseling to ensure the patient is not inadvertently compromising his or her progress,” says Cole. “Most importantly, we believe

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Musculoskeletal Pain and Wellness

(continued from A3)

in the power of patient literacy. Well-informed and educated patients become partners in making the most appropriate and effective health-care decisions.

In fact, we have found they are more compliant and get better quicker.”

The practice has developed an

extensive network of specialists and therapists, which helps ensure the success of this type of highly personalized care plan.

In its academically-based system, these physical medicine and rehabilitation specialists and their supporting

network function as a collaborative team to develop care pathways, and improve the quality and efficiency of that care. Their goal is more than just caring for patients; it is to discover ways of caring for patients in even better ways. ☞

Case Study: Hip/Spine Syndrome

Erik S. Brand, M.D., M.Sc., and Llewellyn N. Packia Raj, M.D., Swedish Spine, Sports and Musculoskeletal Medicine, Division of Swedish Physical Medicine and Rehabilitation

Betty is a 48-year-old mother of two boys. She was active in organized sports as a younger woman, and now enjoys hiking and climbing with her family and being involved with her boys' sports teams. She is moderately over weight, but otherwise healthy. About six months ago she developed pain in her lower back and left buttock and thigh, especially while walking the hills in her neighborhood.

Betty's primary-care physician ruled out pelvic and uterine issues, ordered a four-view spine X-ray series, prescribed anti-inflammatory medication and referred her for a course of physical therapy. When the pain and physical limitations continued after four weeks of physical therapy, Betty's physician referred her to our clinic.

During her first appointment we took a detailed medical history, including any family history of back, hip, rheumatologic or neurologic issues, allowing us to rule out genetic spine or hip conditions. The patient described her pain, explaining that she couldn't sit, walk or stand in one place without left-sided, low-back and hip pain. She was clearly frustrated because the pain prevented restorative sleep and completion of her daily activities.

Reviewing Betty's previous spine X-rays and performing a thorough musculoskeletal and neurological exam, which included an evaluation of skeletal symmetry, balance, flexibility, strength, posture and manual examination to try to reproduce the pain, led to a presumptive diagnosis of chronic trochanteric bursitis or gluteus medius tendinopathy and associated musculoskeletal restrictions.

After discussing various diagnostic options, including additional X-rays, MRI, diagnostic injections under ultrasound and electrodiag-

nostic studies, we concluded an office-based, ultrasound-guided diagnostic and therapeutic injection of local anesthetic and steroid into her greater trochanteric bursa would help clarify our diagnosis so we could advance her care.

(see figures 1 and 2)

Betty returned to our clinic two weeks after the injection, reporting that the anesthetic phase of her injection relieved all of her lateral hip pain, and the steroid phase reduced the pain enough that she was able to get a full night's sleep, as well as stand and sit. She still had some pain, however, in her back and anterior thigh radiating to the lateral aspect of her left knee. Repeat examination now demonstrated a negative straight-leg-raise test, equivocal resisted straight-leg-raise test, positive "femoral stretch" test and negative knee examination. Manual examination of her back demonstrated abnormal "end feel" at L3 and L4.

An MRI was ordered and confirmed foraminal stenosis with mild compression of the left L3 nerve root. Betty agreed to a left L3

fluoroscopically-guided, contrast-enhanced transforaminal epidural injection. Betty's pain diary indicated that the injection relieved 90 percent of her remaining back and anterior thigh pain during the anesthetic and steroid phases.

Two weeks later, Betty remained pain free except for some pain deep in the left hip/buttock region, specifically when walking downhill. Hip X-ray series demonstrated mild joint space narrowing on the left. We referred her for 6 to 12 appointments with a physical therapist specializing in manual therapy, kinesiology and aqua therapy to stabilize the hip joint and lumbar region and optimize strength and flexibility. We also provided personalized nutrition, weight-loss, pain-management and ergonomic counseling to help her understand the relationship between lifestyle changes, exercise and her ability to mitigate pain associated with hip/spine syndrome, the name associated with this type of concurrent disease of the hip and spine, which is not uncommon in middle-aged and older adults. ☞

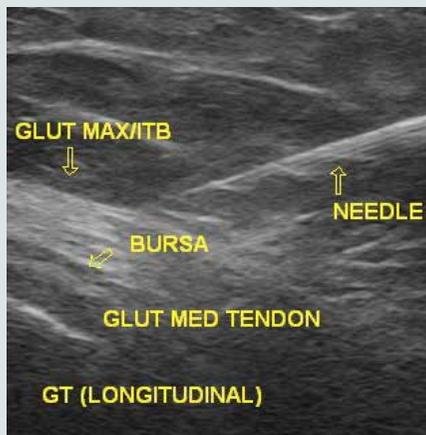


Figure 1. This ultrasound image shows the approach for a greater trochanteric (subgluteus maximus) bursa injection in the anatomic transverse plane over the lateral facet of the greater trochanter, approached from posterior to anterior.

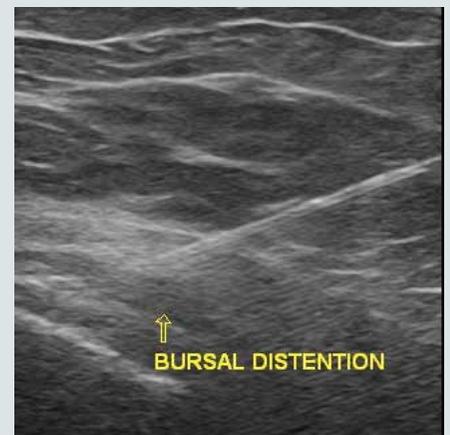


Figure 2. This ultrasound image shows distention of the greater trochanteric (subgluteus maximus) bursa after injection of local anesthetic and steroid.

When to Refer to Swedish Swedish Spine, Sports and Musculoskeletal Medicine

Phone: 425-498-2272
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- Peripheral joint, bursa and tendon sheath injections
- Trigger-point injections

Sleep Medicine

(continued from A1)

reported insufficient sleep more frequently than any other age group.

Sleep disorders can affect health, work, relationships and overall quality of life, and they can be deadly. The National Department of Transportation reports drowsy driving causes 1550 fatalities annually, as well as 40,000 non-fatal accidents¹. The CDC, the Institute of Medicine and the National Center on Sleep Disorders Research support the development and expansion of surveillance of sleep patterns and associated outcomes because of the important role sleep plays in the health and well-being of Americans.

Swedish Sleep Medicine promotes a greater partnership in addressing this growing epidemic. While subspecialty expertise exists with the Swedish's sleep medicine physicians, there are interventions – beyond sleep aides – that can be

initiated at the primary-care practice.

“Primary-care providers can order home screening sleep studies to detect evidence of suspected sleep apnea,” says **Sarah Stolz, M.D.**, medical director of Swedish Sleep Medicine. “These initial screening sleep studies can help determine if more specialized treatment is needed. They also can be very useful when a patient is reluctant to pursue a work up for sleep apnea or when insufficient information is available to the primary-care provider regarding symptoms, such as when a patient does not have a bed partner.”

With seven locations in the Greater Puget Sound area, the sleep medicine team at Swedish is the largest sleep specialty practice in Washington and a regional referral resource. The team includes sleep physicians who are also specialists in neurology, psychiatry,

internal medicine, obstetrics/gynecology, pediatrics, pulmonology or otolaryngology – allowing expert advice for almost any sleep condition. The program also includes research protocols and clinical trials to improve treatments and identify new approaches. These sleep medicine experts offer both pediatric and adult sleep services, and also care for bariatric patients with sleep disorders. They are able to accept patients up to 1000 pounds.

For more information about primary-care interventions or services available through Swedish Sleep Medicine, or to refer a patient, please call **206-223-8515** (physician line) or **206-386-4744** (appointment line). ☎

¹ US Department of Transportation, National Highway Traffic Safety Administration, National Center on Sleep Disorders Research, National Heart Lung and Blood Institute. Drowsy driving and automobile crashes [National Highway Traffic Safety Administration Web Site]. Available at www.nhtsa.gov/people/injury/drowsy_driving1/Drowsy.html#NCSDR/NHTSA Accessed February 10, 2011.

(see case study on A6)

Case Study: Obstructive Sleep Apnea (OSA)

Anand A. Gersappe, M.D., Ph.D., Swedish Sleep Medicine

A 49-year-old female with a history of depression, mild obesity and hypertension presented with symptoms of insomnia for three to four years. She had difficulty sleeping (frequent awakenings) and occasionally had difficulty getting back to sleep because of racing thoughts. She said she often woke up feeling as tired as when she went to bed. She was tired during the day and had problems focusing at work. She snored loudly, but there was no history of apneas.

She described her lifestyle as normally quite active. She hikes and camps frequently; however, in the past several months her daytime symptoms had limited those activities. She does not smoke or drink, and consumes very little caffeine. She is married with two children, one living at home. On weekdays, she goes to bed at 11 p.m., and gets out of bed at 5:30 a.m. On weekends, when she gets eight hours of sleep, she wakes up feeling even more tired.

Her medications include:

- Lexapro (an antidepressant), which she feels controls her depression. Zung A and CES-D scales (self-reported depression questionnaires) show very mild elevations.
- HCTZ for hypertension, which she takes at night
- Flonase (fluticasone) for allergic rhinitis

Further assessment showed:

- An Epworth Sleepiness Scale (ESS) score of 12/24 (a self-administered questionnaire to measure a person's daily sleepiness)
- BMI 31
- Neck circumference of 14 inches
- STOP-BANG score of 3/8, indicating high risk for obstructive sleep apnea (OSA)

During the appointment we discussed sleep hygiene tips and stimulus control. Additionally, I recommended taking HCTZ in the morning and a home sleep test.

Treatment

The home sleep test showed an apnea-hypopnea index (AHI) of 6.2 with a saturation nadir of 90 percent, indicating mild OSA syndrome. During her follow-up appointment, we discussed several treatment options. The patient chose a CPAP device because of its lower cost. Initially she was treated with an autoPAP machine set at a pressure of 5-18 cm. The patient's insur-

ance only covered home autoPAP titration, which precluded in-lab titration at this time.

Four-week follow up post CPAP initiation

The patient reported having significant difficulty tolerating CPAP. She was using it an average of three hours per night. Her smart-card data indicated significant leak and an elevated AHI of 9.2. Her 95th percentile pressure was at 11 cm. She wanted to give up using CPAP and try something else. I explained that her pressure may not be adjusted correctly and encouraged her to continue CPAP a little longer.

Subsequent CPAP titration study

Given her poor response to autoPAP, I obtained prior authorization from her insurance for an in-lab titration. During the titration study, I determined she required a CPAP pressure of 6 cm. At this setting her AHI was 0.8 with a saturation nadir of 94 percent. At higher pressures of 7-10 cm, I observed increased mouth leak, sleep fragmentation and central apneas. We reset her CPAP machine to 6 cm.

Sleep and the Heart – Chicken and the Egg

The relationship between sleep disorders and heart health is a bit like a discussion of which came first – the chicken or the egg. People with heart disease often have problems sleeping. They may wake up frequently with problems breathing because of fluid in their lungs or palpitations. Research also shows, however, that people with healthy hearts who have sleep disorders also put their heart health at risk.

There is increasing evidence that there is a direct relationship between heart health and refreshing, restorative and sufficient sleep. Poor quality of sleep or chronic sleep deprivation has been linked to high blood pressure, atherosclerosis, heart failure, heart attack, stroke, diabetes and obesity.

The American Heart Association and the American College of Cardiology encourage physicians to routinely assess patients' sleep patterns as part of their overall care.

Six-week follow up post CPAP adjustment

The patient reported sleeping much better and using the CPAP machine an average of six hours each night. Smart-card data indicated very little leak and a normal AHI of 3.4. She also indicated that she was much less tired during the day. Her ESS score had improved to 4/24. She said she was much more motivated during the day and was planning a camping trip.

Six-month follow up

During her six-month follow-up appointment, the patient reported that she continued to do very well with CPAP; however, she wanted to consider an alternative treatment option that she could use when she was camping. She mentioned that she had not taken the CPAP with her during a recent camping trip and had

(continued on next page)

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- Children's sleep disorders
- Women's sleep disorders

To consult on a patient or request a referral, please call 206-223-8515 (physician line) or 206-386-4744 (appointment line).



taking Flonase.

We discussed a mandibular advancement oral appliance as an alternative. Initially she was hesitant to try this because of concerns about changes in her bite/jaw alignment. I assured her that this was much less likely to occur with occasional use of the appliance.

A dentist fitted the patient with a Thornton Adjustable Positioner (TAP[®]) appliance. She used the TAP appliance at home for two weeks and was able to tolerate it fairly well. She felt that her sleep quality and fatigue improved, although she self-reported an improvement of about 70 percent compared to 90-percent improvement with CPAP. I recommended a home sleep test with the appliance to confirm efficacy. The test results showed a residual AHI of 5.2 with a saturation nadir of 90 percent. As a result, I recommended the dentist advance the oral appliance a few millimeters.

After an additional six months, the patient returned to the Sleep Center. She uses the CPAP machine at home and continues to do well. She also took the oral appliance on a recent camping trip and had done well with it.

not slept well. We discussed a battery charger for CPAP, but determined that was not a viable alternative because she often camped in locations where she did not have access to a power supply. We also discussed Provent[®] nasal strips or an oral appliance. (see above)

Initially she settled on the nasal strips; however, after seven to eight days, she reported having difficulty tolerating them. This intolerance may have been partially related to allergic rhinitis, although she was

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For times and locations, go to www.swedish.org/cme or call 206-386-2755.

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