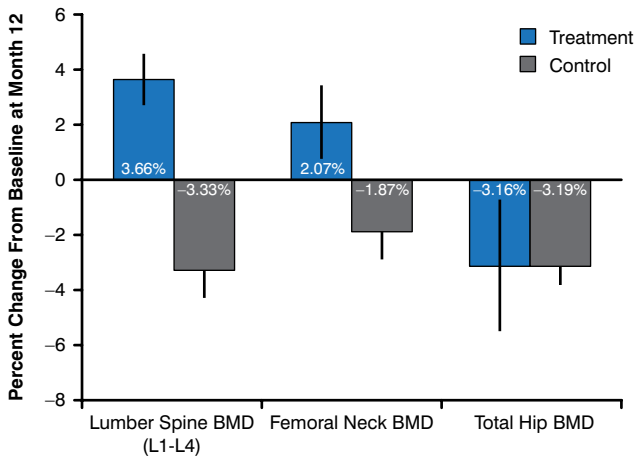
hyperthyroidism, hyperparathyroidism, liver disease, acromegaly, Cushing syndrome, rheumatoid arthritis, myeloma, Paget disease, renal osteodystrophy, osteomalacia, or polycystic ovarian disease. Other exclusion criteria included treatment during the past 6 months with androgens, calcitonin, systemic corticosteroids, fluoride, parathyroid hormone, selective estrogen receptor modulators, estrogen, oral contraceptives, bisphosphates, vitamin D > 2000 IU per day, or vitamin D metabolites. In addition, patients with esophageal abnormalities, including stricture or achalasia, were excluded from the study.

At 12 months, there was a significant increase in BMD at the lumbar spine (L1 to L4; 3.66%; $p < .01$) and a trend of increased BMD at the femoral neck (2.07%; $p = .14$) from baseline among patients who received ALN plus cholecalciferol compared with placebo (Figure 1). In addition, there was a significant decrease in bone-specific alkaline phosphatase (–37.8%; $p < .01$) and N-telopeptide in the urine (27.2%; $p = .03$) and an increase in FSH (101.13%; $p < .01$), as well as a trend of decreased N-telopeptide in the serum (–27.6%; $p = .23$), from baseline in the ALN arm compared with the placebo arm. Treatment with ALN plus cholecalciferol resulted in no significant difference from baseline compared with placebo in albumin, calcium, phosphate, magnesium, estradiol, or urine creatinine.

In conclusion, treatment of perimenopausal women with low BMD with ALN plus cholecalciferol reduced bone turnover and improved BMD in the lumbar spine over 12 months. Prof. Khan indicated that the data from this study suggest that providing early intervention with a bisphosphonate during the menopausal transition may limit BMD loss.

Figure 1. Effect of Alendronate on BMD in Perimenopausal Women



BMD=bone mineral density.

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Elevated Stress Hormones Related to Worse 1-Year Outcome Following Severe Brain Injury

Written by Brian Hoyle

Endocrine alterations that occur soon after severe brain injury are an indication of prolonged stress, rather than brain damage, and are important in predicting the 1-year functional outcome of the injury. The routine use of pituitary assessment soon after traumatic brain injury (TBI) is not recommended, and instead it should be reserved for patients suspected of hypopituitarism. Djordje Marina, MD, Rigshospitalet–Copenhagen University Hospital, Copenhagen, Denmark, presented a poster with the conclusions from a study conducted by Danish researchers to assess pituitary hormone alterations after TBI.

The study involved 163 patients aged ≥15 years who had suffered TBI (n = 111) or nontraumatic brain injury (non-TBI; n = 52) and who were receiving neurorehabilitation. Pituitary assessment at baseline and a median of 3.3 months (range, 2.1 to 4.9 months) post injury included gonadal and thyroid hormones, stress-related hormones (cortisol, prolactin, and insulin-like growth factor 1), and adrenal function. The primary outcomes at the time of referral, discharge, and the 1-year follow-up were daily functioning as assessed by the Functional Independence Measure (FIM), which covers 18 items of activities of daily living, with score-related outcomes ranging from total assistance to full independence, and ability measured by the Extended Glasgow Outcome Scale (GOS-E), a ranking of independence at and outside the home, and social and work capability. The characteristics of the TBI and non-TBI groups at the time of admission to rehabilitation are summarized in Table 1.

FIM scores were similar in the TBI and non-TBI groups at admission, discharge, and follow-up concerning complete dependency (TBI: 90%, 40%, and 25% of patients, respectively; non-TBI: 90%, 50%, and 25% of patients, respectively), moderate dependency (TBI: 3%, 5%, and 4% of patients, respectively; non-TBI: not applicable, 4%, and 5% of patients, respectively), and low-to-absent dependency (TBI: 3%, 50%, and 70% of patients, respectively; non-TBI: 10%, 50%, and 70% of patients, respectively). The data indicated improvements in activities of daily living during follow-up. At

Table 1. Patient Characteristics at Admission

	TBI (n = 111)	Non-TBI (n = 52)
Men, n (%)	83 (75)	28 (54)
Age at admission, y	42.7 ± 18.5	47.9 ± 16.0
Glasgow Coma Scale score at admission	10.2 ± 3.1	11.3 ± 2.3
Time from trauma to rehabilitation, d	20.7 ± 13.0	28.6 ± 18.6
Length of rehabilitation, d	113.1 ± 67.2	93.7 ± 40.5
CT and MRI findings (TBI)		
Shearing lesions	30 (27)	—
Traumatic subarachnoid hemorrhage	64 (57)	—
Cerebral edema	26 (23)	—
Cranial fracture	42 (38)	—
Cause of Injury (non-TBI)		
Subarachnoid hemorrhage	—	16 (31)
Intracerebral hemorrhage	—	12 (23)
Anoxic brain injury	—	9 (17)
Other	—	15 (29)
FIM score at admission	18 (18 to 44)	18 (18 to 25)
Posttraumatic amnesia, d	80 (26 to 365)	—
> 28 d	98 (88)	—
< 28 d	13 (12)	—

Data expressed as n (%), mean ± standard deviation, or median (range, 10% to 90%).

CT=computed tomography; TBI=traumatic brain injury; FIM=Functional Independence Measure; MRI=magnetic resonance imaging.

Table 2. GOS-E Scores Distribution[a]

	TBI		Non-TBI	
	Discharge	Follow-up	Discharge	Follow-up
Lower capability of independent activity	75%	53%	85%	64%
Higher capability of independent activity	30%	50%	15%	38%

[a]Percentage of patients in the scoring group.

TBI=traumatic brain injury; GOS-E=Extended Glasgow Outcome Scale.

discharge, low GOS-E scores indicated a low degree of independent activities. The improvements in the capability of independent activity at the 1-year follow-up were not as marked in these patients, compared with patients who were more capable of independent activities at discharge (Table 2).

Thirty-two percent of all patients had suppressed gonadal or thyroidal function. The majority (68%) of all patients had elevated stress hormones. One-quarter of all patients displayed both features.

Secondary hypogonadism and elevated stress-related hormones were related to worse 1-year FIM scores in univariate analyses (p = .001 and p = .01, respectively). These associations remained following multivariate analysis (p = .01). Reduced gonadal or thyroid hormones and elevated stress-related hormones were related to a worse 1-year GOS-E score in univariate analyses (p = .04 and p = .006, respectively). Elevated stress-related hormones remained independently associated with a worse 1-year GOS-E score in multivariate analysis (p = .01).

The results indicate that endocrine changes occurring in brain injury may not necessarily be a consequence of brain damage. Rather, the endocrine alterations may represent physiological stress adaptations to the acute illness, and a subsequent prolonged stress response. The data do not support the routine use of pituitary assessment soon after TBI. This assessment should be reserved for patients with clinical features indicative of hypopituitarism.

Greater HbA_{1c} Reduction in Uncontrolled Type 2 Diabetes With Once-Weekly Exenatide Autoinjection

Written by Brian Hoyle

Patients with uncontrolled type 2 diabetes display greater reductions in HbA_{1c} using a regimen of a once-weekly autoinjection of exenatide as compared with twice-daily injections of exenatide. The results of the randomized, double-blind Efficacy and Safety of Exenatide Once Weekly Suspension in Subjects With Type 2 Diabetes study [DURATION-NEO-1; NCT01652716] were presented by Carol H. Wysham, MD, Rockwood Clinic, Spokane, Washington, USA.

A once-weekly administration of the glucagon-like peptide-1 receptor agonist exenatide provides glycemic control and helps with weight loss in individuals with type 2 diabetes [Russell-Jones D et al. *Diabetes Care* 2012; Blevins T et al. *J Clin Endocrinol Metab* 2011; Bergenstal RM et al. *Lancet* 2010; Diamant M et al. *Lancet* 2010; Drucker DJ et al. *Lancet* 2008]. However, the current