These papers were presented at the annual meeting of the American Medical Directors Association in March, 2000, In San Francisco. These abstracts were published in the Journal of the American Medical Directors Association, volume 1, number 2, 2000.

Paper #10 received second place award at this meeting. There were a total of 76 papers presented.

10

CALCITONIN TREATMENT OF OSTEOPOROSIS IN PEDIATRIC LONG-TERM CARE. Audrius V. Plioplys, Irene Kasnicka, Pamela Murphy, Chicago, Illinois

Introduction Bone mineral density (BMD) determinations have shown that the degree of osteoporosis in children with quadriplegic cerebral palsy can be severe. Calcitonin is used to treat osteoporosis. The effect of calcitonin on osteoporosis in pediatric skilled nursing facilities has not been previously reported.

Methods 6 clients who had a fracture were identified. The age range was 15-27 y, median 25 y; 2 females and 4 males. All had quadriplegic cerebral palsy, were wheel chair bound, and were fed by gastrostomy tube. None had a tracheostomy tube. All were receiving adequate amounts of calcium and vitamin D. Serum calcium and vitamin D levels were normal in all cases. 3 were treated with valproic acid for epilepsy. None had received any steroid treatments. Each was treated with one calcitonin nasal spray (=200 units), 5 times per week, with 3 months of treatment alternating with a month of no treatment. All underwent BMD determinations using a Hologic QDR-1000 X-ray Bone Densitometer (DXA) before and after one year of treatment.

Results Baseline BMD determinations revealed severe osteoporosis. The T-scores were below –2.5 in all cases (range –2.98 to –4.8; median –4.14). After one year of calcitonin treatment, in one case the BMD determination decreased in the lumbar spine and hip by 5% and 6% respectively. In all the other cases BMD determinations significantly improved. The BMD increases in total hip determinations were: 9% and 16%; in femoral neck determinations: 5%, 7% and 27%; in lumbar spine determinations: 5% and 15%. For comparison, in postmenopausal osteoporosis, the yearly average improvement in BMD with calcitonin is 3.2%.

Conclusion These results indicate that calcitonin may be an effective treatment of cerebral palsy-related, disuse osteoporosis. Further clinical investigations are warranted.

11

OSTEOPOROSIS IN PEDIATRIC LONG-TERM CARE. Audrius V. Plioplys, Irene Kasnicka, Lenay Fowler, Pamela Murphy, Chicago, Illinois

Introduction Bone fractures are a common occurrence in children who have quadriplegic cerebral palsy. Even minor movements can result in a fracture. The degree of osteoporosis from disuse in this population has not been previously reported.

Methods 15 clients who had a fracture were identified. The age range was 9-49 y with a median of 19 y. There were 6 females and 9 males. All had quadriplegic cerebral palsy, were wheel chair bound, and were fed by gastrostomy tube. None had a tracheostomy tube. All were receiving adequate amounts of calcium and vitamin D. All underwent bone mineral density (BMD) determination using a Hologic QDR-1000 X-ray Bone Densitometer (DXA). The degree of osteoporosis was reported in T-scores (1T=1 standard deviation). By the World Health Organization a T-score result $\leq$ -2.5 defines osteoporosis.

Results Due to orthopedic contractures, the BMD could not be obtained in one child. BMD in the hip / femoral neck was determined in 6 cases. The T-score range was –1.99 to –4.34 with a median of –3.95. 5 of the 6 T-scores were below –2.5.

BMD in the lumbar spine was determined in 12 cases. The T-score range was –2.41 to –4.35, with a median of –4.35. 11 of the 12 T-scores were below –2.5.

Conclusion These results indicate a severe degree of disuse osteoporosis in this population. This degree of bone weakness can easily lead to fractures. Modifications in client handling techniques must be implemented. Also, osteoporosis treatment approaches need to be investigated.

12

KETOGENIC DIET AS A TREATMENT OF REFRACTORY EPILEPSY IN THE PEDIATRIC SKILLED NURSING FACILITY. Audrius V. Plioplys, Irene Kasnicka, Shelley Lewis, Chicago, Illinois.

Introduction The ketogenic diet (KD) was introduced for the treatment of epilepsy by Dr. Wilder, of the Mayo Clinic, in 1921. The majority of children in pediatric SNF's have seizures and many have refractory epilepsy. The clinical response of the KD in pediatric SNF's has not been previously reported.

Methods Over the past two years we treated five children (all girls; age range 3-29 y, median 10 y), who had refractory epilepsy, with the KD. All were fed by gastrostomy-tube and the 4:1 KD was started with no period of starvation.

Results The preparation and administration of the formula was easy for the nursing staff. Ketosis was achieved by dipstick measurements within 3 days of starting the diet in all cases. The diet was tolerated well: there were no significant side effects.

In 3 cases there was no change in seizure frequency and the diet was discontinued after 6 months. In one 10 year old the seizure frequency dropped from 60 to 5 seizures per month. This improvement lasted for 14 months after which time the seizure frequency gradually increased. The diet was discontinued after the 18th month. In a 6 year old there was a dramatic and sustained improvement with the diet. Her seizure frequency dropped from 32 to 8 seizures per month. During 22 months of treatment, in 14 of them she had 2 or less seizures per month.

Conclusion The KD is a useful adjunctive treatment of refractory epilepsy in pediatric SNF's. One child had a dramatic response that lasted 14 months, and another had a long-lasting clinical response for 22 months. The diet can be started without fasting and terminated without weaning.