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NEWSLETTER

Summer 2016-17

AUCKLAND Bonedensity
Managing Bone Health

We are pleased to announce the appointment of two new Associates of the Company

Dr. Zaven Panossian FRACP is a Specialist Physician & Endocrinologist at Middlemore Hospital & in private practice at Mercy Specialist Centre. After completing his basic training in Iraq, he moved to New Zealand to call it home and completed his advanced training at the main Auckland centres. He has a special interest in Clinical Endocrinology including metabolic bone diseases & Diabetes.

Dr. Carl Peters is an Endocrinologist & Physician at North Shore Hospital. He trained in Endocrinology in Auckland and the UK, and is an honorary senior lecturer in clinical medicine at the University of Auckland. He is an educational supervisor for the Royal Australasian College of Physicians, and is actively involved in clinical research.

With regret we report the retirement of **Professor Ian Reid** from the Board of Directors of Auckland Bone Densitometry. Ian has provided high quality input into our service for a number of years.

ROLE OF REPEAT BONE DENSITY MEASUREMENTS

Prof. Ian Holdaway 2017

Bone density measurements have a central role in the diagnosis and management of osteoporosis. However, one of the less studied aspects of bone mineral density (BMD) measurements is the role of follow up assessments during observation or treatment. It may be important to obtain information on response to treatment or rate of fall in BMD relatively promptly (within 1-2 years) in those starting treatment for severe osteoporosis or in patients treated with steroids. However, in other situations it is less clear how often BMD measurements should be repeated. Various guidelines have suggested follow-up measurements in those who have started treatment for osteoporosis at around 2-3 years. There is now a study providing firm evidence on the significance of BMD response to treatment. William D Leslie and co-workers from Winnipeg, Canada, recorded the change in BMD in 6629 women in the Manitoba Bone Density programme who had two BMD measurements at a mean interval of four years, and who had commenced treatment after the initial scan. Over a mean follow up period of 9.2 years 13.7% of women experienced a fracture, 22% of which were hip fractures. Women who experienced a fall in BMD on treatment had a 5.5% increase in fracture events compared to those with stable BMD, whereas those with a detectable increase in BMD had a 2.6% lower fracture rate than those with stable readings over a 10-year follow-up period. Thus, BMD measurement following initiation of osteoporosis therapy has an important role in identifying a group of poorly responding women who will have an increased risk of fracture despite treatment. A change in treatment strategy e.g. swap from oral to IV bisphosphonate treatment, or increase in frequency of IV therapy, may be appropriate in this group. The mean interval between scans in the Leslie Study was 4.2 years, but given the results an earlier assessment at two years could be considered after starting treatment

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for osteoporosis. It is likely that the same advice applies to men as well.

Reference
Leslie et al. "Change is Bone Mineral Density is an indicator of treatment-related antifracture effect in routine clinical practice". Ann Int Medicine October 2016; 165(7): 465-72.

BONE DISEASE IN DIABETES

Dr. Steven Miller 2017

Diabetes Mellitus is a complex metabolic disorder with complications manifest in multiple systems. It is therefore no surprise that the skeleton may be involved. A growing literature attests to an increased risk of fracture observed amongst individuals with either type 1 or type 2 diabetes (up to 6 fold higher incidence of hip fracture compared to controls). That this risk is quite distinct from the risk of falling due to impaired peripheral nerve function, visual impairment or hypoglycaemia etc. informs us that bone strength is directly influenced by the presence of diabetes.

There are important differences in bone density measurements generally observed between individuals with the two major types of diabetes: femoral neck bone density tends to be reduced in type 1, whereas in type 2 diabetes it is often increased independently of BMI. The precise mechanisms behind such differences are yet to be elucidated, but may reflect age of diabetes onset (failure to achieve young adult peak bone mass), insulinopenia or hyperinsulinaemia and reduced bone turnover. Moreover, the risk of fracture is higher with longer diabetes duration, and also when other microvascular diabetes complications coexist. These observations suggest that as in diabetic vasculopathy, the accumulation of advanced glycaemic endproducts (AGE) or increased glycosylation of the collagen component of bone may contribute to increased bone fragility.

The diagnosis of diabetes is not included as a risk factor in either of the commonly used fracture risk assessment tools. Concerningly however, for any given FRAX or Garvan risk score the true risk of fracture may be up to two-fold higher than the stated value. Fortunately no difference has been reported in the efficacy of antiresorptive therapies when used by individuals with diabetes. This implies that a lower threshold for the use of bone protective therapy should be considered in patients with diabetes, especially if diabetes duration is greater than 10 years.

Thus, alongside the usual annual diabetes complication screening, consider bones, and whether your patient may benefit from DEXA bone density scan.

Reference
Majumdar *et al.* "Longer Duration of Diabetes Strongly Impacts Fracture Risk Assessment: The Manitoba BMD Cohort" J Clin Endocrinol Metab November 2016;101(11):4489-4496