

Increased bone fragility over time in women with chronic hypoparathyroidism: Real-world data from the HypoparaNet Italian Cohort

FRANCESCA GIUSTI¹, FRANCESCA MARINI², BLANDINE WEISS³, MICHEL OVIZE³, SALVATORE BENVENGA⁴, FILOMENA CETANI⁵, ANNAMARIA COLAO⁶, SABRINA CORBETTA^{7,8}, ETTORE DEGLI UBERTI⁹, MAURIZIO IACOBONE¹⁰, ANDREA LENZI¹¹, GIOVANNA MANTOVANI¹², ROSARIA MADDALENA RUGGERI¹³, MARIA LUISA BRANDI^{1,2} on the behalf of the HypoparaNet team

¹Donatello Bone Clinic, Villa Donatello Hospital, Sesto Fiorentino, Italy; ²Fondazione FIRMO Onlus, Firenze, Italy; ³Amolyt Pharma, Ecully, France; ⁴Department of Clinical and Experimental Medicine, University of Messina, Messina, Italy; ⁵Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy; ⁶Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy; ⁷Fondazione IRCCS Cà Granada Ospedale Maggiore Policlinico, Endocrinology Unit, Milan, Italy; ⁸Department of Clinical Medicine and Surgery, Federico II di Naples University, Naples, Italy; ⁹Center for Metabolic Bone Diseases and Diabetology, IRCCS Istituto Auxologico Italiano, Milan, Italy; ¹⁰Department of Biomedical, Surgical and Dental Sciences, University of Milan, Milan, Italy; ¹¹Section of Endocrinology & Internal Medicine, Department of Medical Sciences, University of Ferrara, Ferrara, Italy; ¹²Endocrine Surgery Unit, Department of Surgery, Oncology and Gastroenterology, University of Padua, Padua, Italy; ¹³Department Experimental Medicine, Section Medical Pathophysiology, Endocrinology and Nutrition, University "Sapienza" of Rome, Rome, Italy; ¹²Endocrinology Unit, Fondazione IRCCS Cà Granada Ospedale Maggiore Policlinico, Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy; ¹³Department of Human Pathology Patologia DETEV, University of Messina, Messina, Italy.

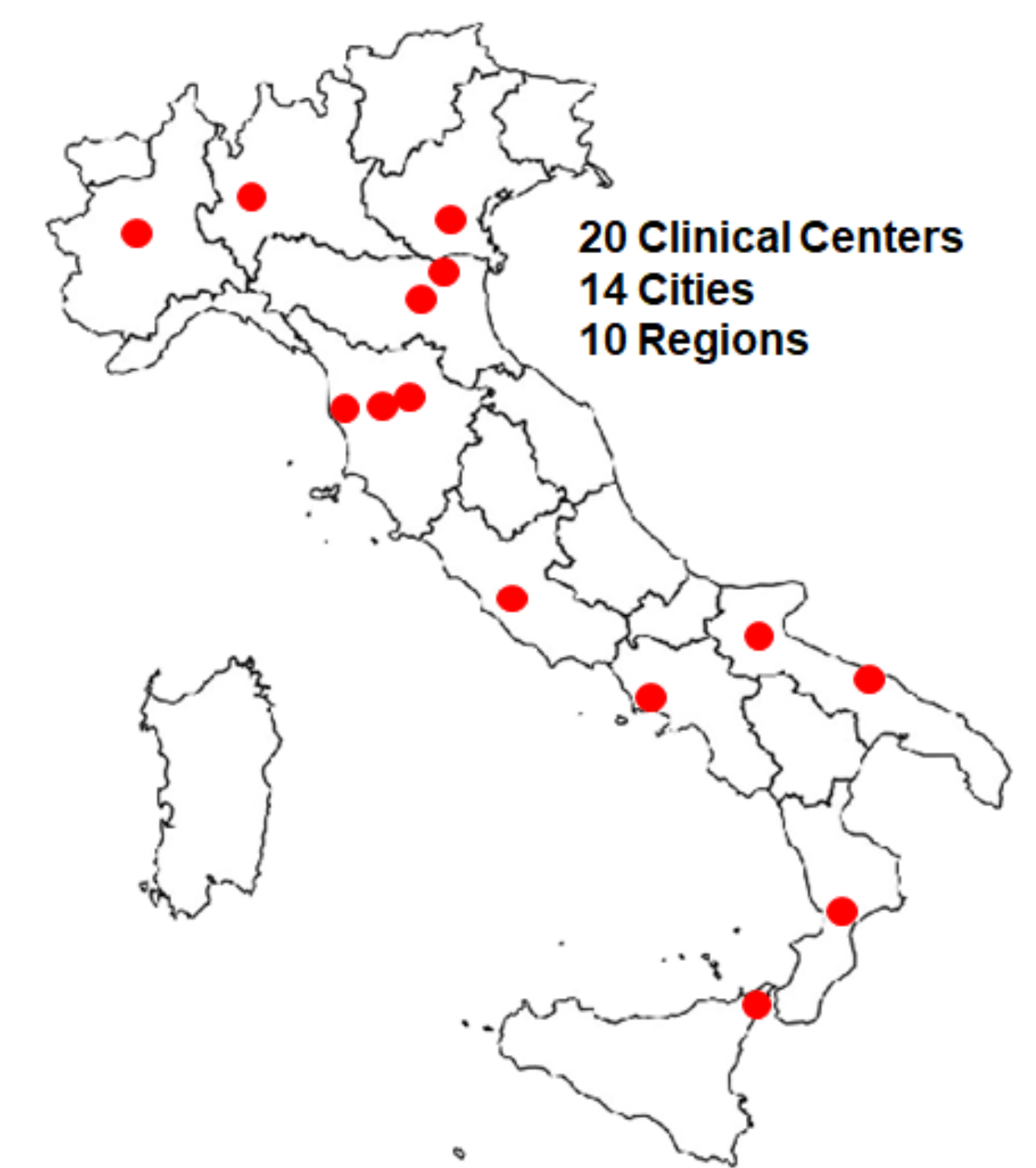
Introduction

Hypoparathyroidism is a rare clinical condition characterized by abnormally low levels of parathyroid hormone (PTH) due to reduced or absent activity of the parathyroid glands, and leading to abnormally low calcium levels and increased phosphorus values in the blood. Etiology of hypoparathyroidism is variable, and it includes neck surgery and/or neck irradiation causing removal or damage of parathyroid glands, autoimmune diseases attacking the parathyroids, chronic low blood level of magnesium (hypomagnesemia), and inherited forms of non-syndromic or syndromic defects of parathyroid activity.

Bone health is an important clinical aspect to be considered in patients with chronic hypoparathyroidism (cHP), whose skeleton is exposed both to the cHP-induced alteration of bone mass and microarchitecture, and to the natural occurrence and progression of bone mass loss due to ageing, specifically in post-menopausal women.

HypoparaNet

- Italian multicenter database retrospectively collecting data on patients with cHP
- Started in March 2014
- 20 Clinical Centers in Italy (16 Centers for Endocrinology and 4 Centers for Endocrine Surgery)
- 509 cHP patients (110 men and 399 women)
- cHP etiology included 363 post-surgical cases (71.3%), 78 idiopathic cases (15.3%), and 64 patients with a genetic background (12.6%).



Patients and methods

In the HypoparaNet cohort, a dual x-ray osteodensitometry (DXA) was available in only n=173 cHP patients (34.0%), 142 women (142/399; 35.6%) and 31 men (31/110; 28.2%).

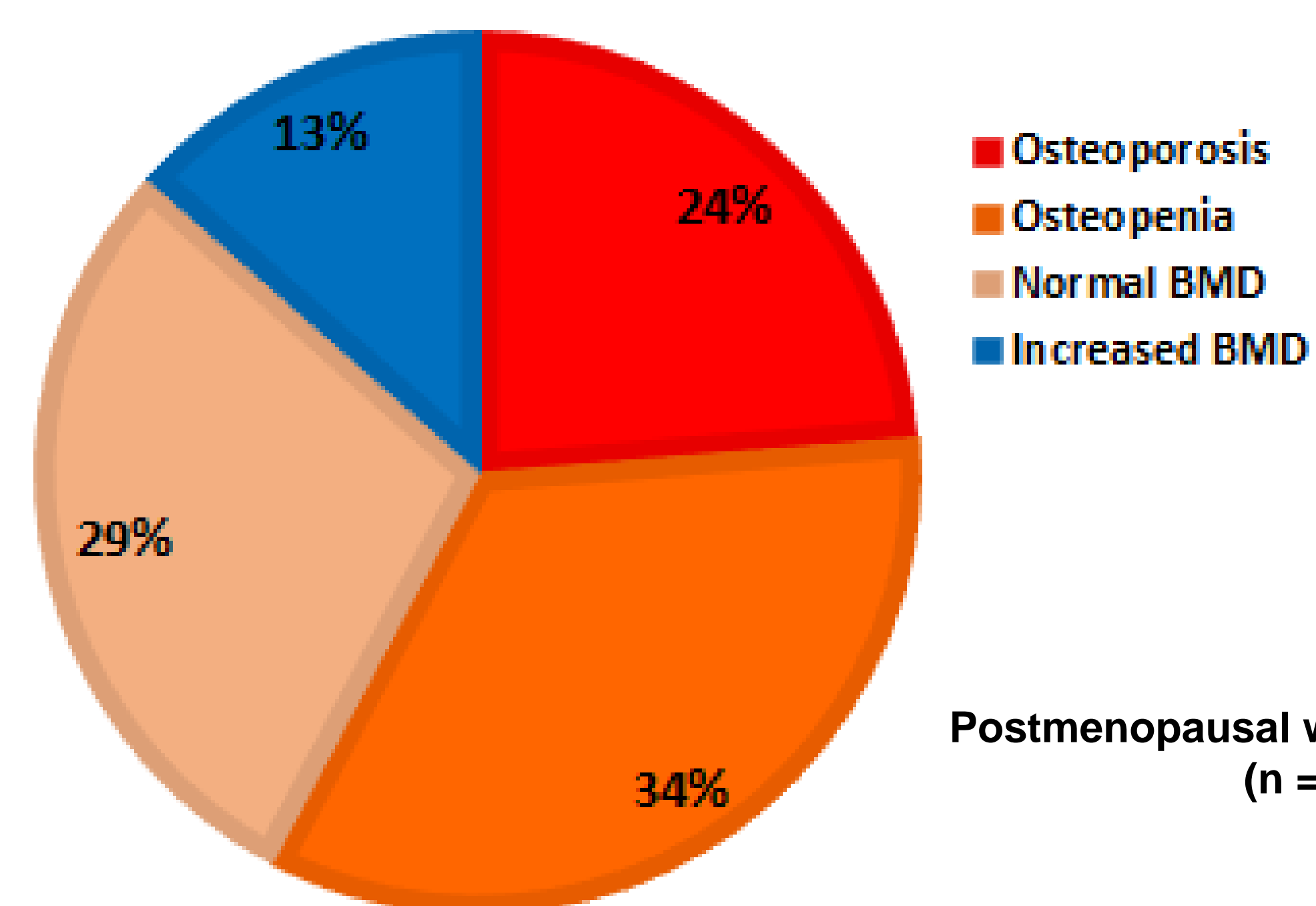
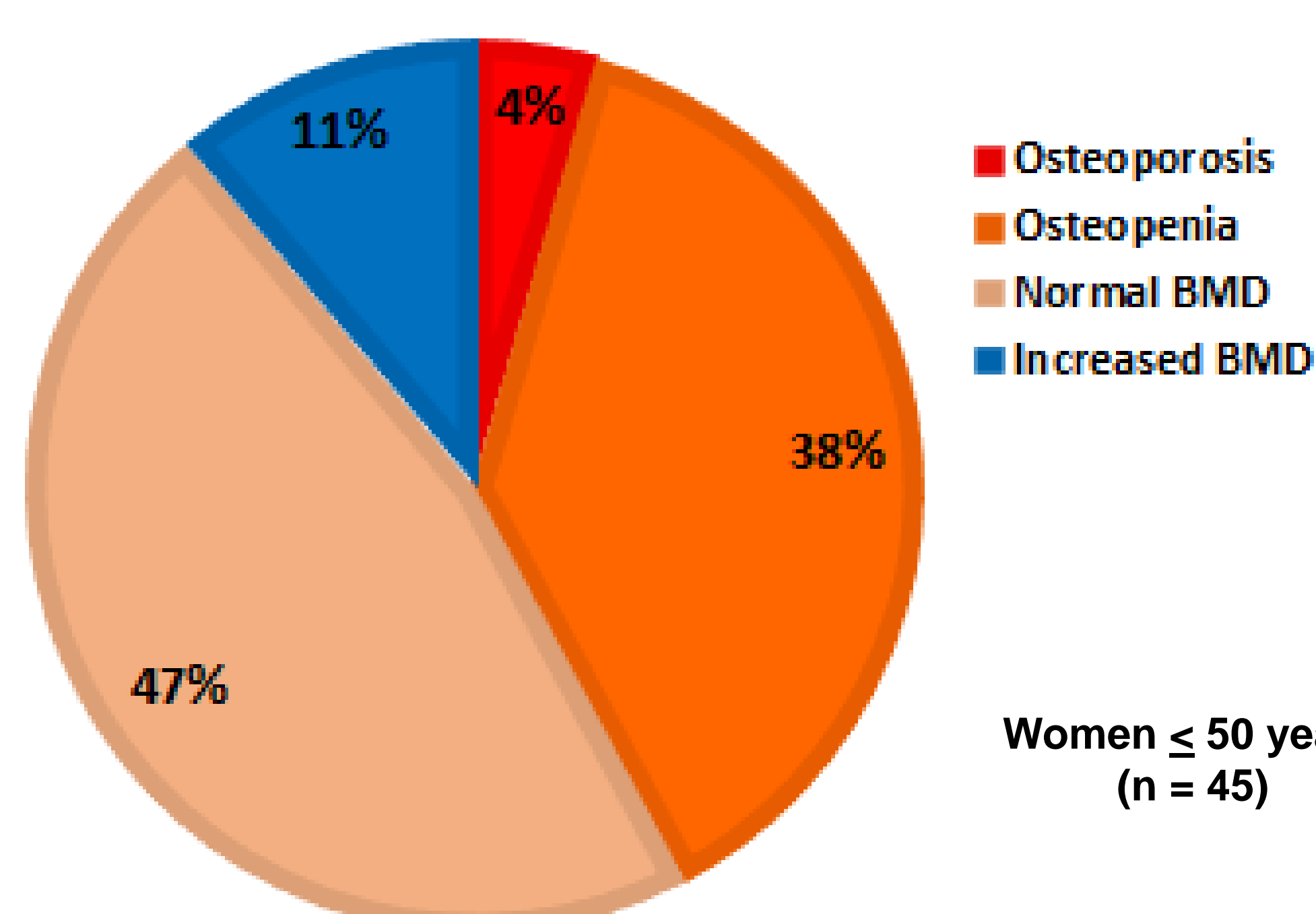
In this retrospective study, we specifically assessed the prevalence of bone mass reduction (osteopenia or osteoporosis) in relation to menopause (or age below or above 50 years) in female cHP patients from the HypoparaNet database. The study included n = 45 female patients at or below 50 years (F≤50) and n = 97 postmenopausal female patients above 50 years (F>50).

Osteoporosis was defined as the presence of one or more of the measured bone sites presenting a T-score (or a Z-score for individuals < 50 years) ≤ -2.5. Osteopenia was defined as the presence of one or more of the measured bone sites presenting a T-score (or a Z-score for individuals < 50 years) between -1.0 and -2.5 at all the measured bone sites. Normal bone mineral density (BMD) was defined in presence of all the measured bone sites presenting a T-score (or a Z-score for individuals < 50 years) ≥ -1.0

Results

Female patients (n=45) at or below 50 years (F≤50) and female patients (n=97) above 50 years (F>50) showed comparable mean values of serum and urinary parameters of parathyroid function and mineral metabolism.

The overall prevalence of osteopenia was high, and it resulted to be comparable in the F≤50 and F>50 subgroups, averaging about 38% and 34%, respectively. The prevalence of osteoporosis was clearly higher in the F>50 group with respect to the F≤50 group, averaging about 4% and 24%, respectively.



Conclusions

These real-world data indicate that nearly half of cHP women, who represent the majority of the hypoparathyroid population, had osteopenia or osteoporosis, and that prevalence of osteoporosis notably increases after 50 years.

In this context, new treatment modalities (including PTH replacement therapy) for this patient population should aim at restoring a balanced bone turnover, preventing further bone loss and granting a better bone health at any age.