

OFC NEWSLETTER

Issue 3

August 2006



Much has happened in the nine months since the second Newsletter of the ISFR Osteoporotic Fracture Campaign. This third Newsletter will be sent out to over 400 people, consisting of orthopaedic surgeons, physicians and industrial partners from over 39 countries worldwide. In this Newsletter, correspondents from Japan and Mexico report important aspects of their national situations vis-à-vis osteoporosis and fragility fractures.

Our partnership with the International Osteoporosis Foundation and the Bone and Joint Decade continues to develop, with the preparation of teaching slides that can be freely used by local champions of better fragility fracture treatment. These slides will be distributed on CD and via the internet. Further workshops on osteoporotic hip fractures and the interaction between anti-resorptive drugs and the biology of fracture healing are scheduled for later this year and 2007. This Newsletter contains the final report by Amy Hoang-Kim of the two distal forearm fracture workshops held last year in Italy, which were followed up with a symposium at the AAOS in Chicago.

The 10th Conference of the ISFR held recently in Adelaide, in conjunction with the 5th Meeting of the Hip Section of the Asia Pacific Orthopaedic Association and the 4th Clare Valley Bone Symposium, had a strong osteoporosis element (see page 2) and was attended by the Hon. John Hill, MP, the Minister of Health for South Australia.

Two important regional OFC initiatives will be reported in the next Newsletter: (i) the establishment of an innovative multidisciplinary fragility fracture clinic in

Bologna and (ii) the development of a National Hip Fracture Registry in the UK.

Maggie Partridge has been appointed Political Coordinator in the London Office of the OFC.



Maggie.fractures@ucl.ac.uk

On Maggie's first foray into the political arena for the OFC (EU Summit – Page 9) she observed: 'The elevation of osteoporosis to any EU/government agenda has to be applauded. However the emphasis at this meeting was clearly primary prevention and there is still a lot to do to elevate secondary prevention to the same level. The ISFR–OFC must continue to be active in lobbying for secondary prevention to be integral to any debate on osteoporosis'.

With great sadness we must report the sudden death of Olof Johnell, Professor of Orthopaedics in Lund. Olof was the most active, committed and productive orthopaedic surgeon ever to address the issue of osteoporosis and fragility fractures and will be impossible to replace.

We continue to be generously sponsored by DePuy, Kyphon, Orthofix, Roche, Smith & Nephew, Stryker Biotech and Wyeth.

Dave Marsh, Chairman, OFC Steering Committee

**The 10th Conference of the International
Society for Fracture Repair
Adelaide, Australia, May 21 - 24th, 2006**



PRESIDENTS ADDRESS

Mathias Bostrom, MD

The ISFR remains a unique group of individuals committed to its mission of improving fracture healing through research. The organization is in a transitional phase from its founding members to the next generation of members. The goal of my presidency is to have this organization as the leading forum for the exchange of ideas within the field of fracture repair and bone healing. The group will pursue these goals through our established forums such as our workshops, symposia and biennial meetings. In addition to the society's continued commitment to the osteoporotic fracture campaign, it will be initiating traveling fellowships for post-docs and junior faculty to visit laboratories of ISFR members so as to broaden their knowledge base as well as foster the exchange of scientific ideas between members of the ISFR. There remains exciting questions within the field of fracture healing, the ISFR should play a vital part in answering these questions so as to ultimately improve the care of patients with fractures.



OSTEOPOROSIS HIGHLIGHTS

Antonio Moroni, MD ISFR Programme and Awards Secretary, OFC Research Chair
Amy Hoang-Kim, BScH, MA OFC
Coordinator

Orthopaedic surgeons have traditionally been involved in the care of fragility fractures. However, there is increasing demand for them to act beyond just fixing the fractures, to provide a more holistic management of patients with respect to future injury prevention.¹ Thirteen accepted papers in this year's ISFR Biennial conference highlighted pertinent issues dealing with osteoporosis.

Microdamage

If the skeleton does not adequately repair bone microcracks, they accumulate resulting in decreased bone stiffness, strength and toughness, and may lead to an increased risk of fracture. Kuliwaba JS² (Institute of Medical and Veterinary Science and Hanson Institute, Adelaide, South Australia) assessed microdamage accumulation and repair (bone resorption) in femoral trabecular bone from patients with a fragility hip fracture compared to age- and sex-matched controls. Intertrochanteric bone cores were obtained from patients undergoing hemi-arthroplasty surgery for a non-traumatic subcapital femoral fracture (6f, 2m, aged 82±5 yrs [mean ± SD]). Samples were *en bloc*-stained in basic fuchsin, resin-embedded, and *in vivo* microdamage identified in 70µm sections. Trabecular bone volume, architecture, and indices of bone resorption were not different

between the fracture and control groups (BV/TV[%]: Fracture: 4.7 ± 2.3 , Control: 5.8 ± 2.3 , $p=NS$). Linear microcrack density and crack length were similar between groups. However, bone from fracture patients had an increased density of diffuse damage (DF.Dn [#/mm²]: Fracture:1.61 (0.18-2.81), Control:0 (0-0.58), $p < 0.05$ [median (quartiles)], which may be associated with altered bone matrix properties, such as a change in the degree of bone mineralisation. Although the ratio of microdamage (cracks and diffuse) density to resorption site density was not statistically different between groups, the increased diffuse microdamage burden, with no bone architectural change, suggests that bone from hip fracture patients may be mechanically compromised due to a defective damage repair mechanism. Future research should investigate factors that influence bone strength in order to develop improved diagnostic techniques and more effective treatments for individuals at risk of fragility fracture.

Controlled screw insertion

Hearn TC et al³ (Flinders University, Adelaide, Australia) examined the basis for adaptive surgical control of screw tightening. Ovine cancellous bone specimens (n=91) were tested to evaluate the method given the continuously variable density and interface characteristics of bone. Significant linear regression was found between plateau current and bone density ($p < 0.0001$) and plateau current was a strong predictor of peak current. The authors confirmed that bone density can be automatically detected through screw electromechanical rotational characteristics.

Vitamin D and secondary hyperparathyroidism

Secondary hyperparathyroidism (SHPT) due to vitamin D insufficiency has long been considered as a principal mechanism in the pathogenesis of hip fracture in older people.

However, not all patients with inadequate vitamin D levels develop SHPT. In 472 consecutive patients aged 60 years and older admitted with a non-pathological minimal trauma hip fracture were assessed. The prevalence of elevated PTH (>6.5 pmol/L) was 46.1%. When patients were stratified by quartiles of serum PTH, higher PTH levels were associated with older age ($p=0.010$), lower 25 (OH) D ($p < 0.001$), higher phosphate ($p=0.015$) and creatinine ($p < 0.001$). Patients in the top quartile compared with the lowest more often had 25 (OH) D deficiency (<25 nmol/L: 31.9% vs. 19.2% $p=0.009$), atrial fibrillation (33.3% vs. 11.7% $p=0.008$) and history of stroke (49.2% vs 10.2%, $p,0.001$). The correlation between PTH and 25 (OH)D was weak but significant ($r=-0.1827$; 0.001). The prevalence of 25 (OH)D insufficiency (<50 nmol/L) was 81.7%. In 47.5% the PTH level was elevated, indicating SHPT, while in the remainder the PTH response was blunted suggesting down regulation of vitamin D receptors and/or calcium sensing receptors in parathyroid cells. Fisher et al⁴ (Canberra Hospital and Australian National University Medical School, Australia) further concluded that older hip fracture patients demonstrate heterogeneity in calciotropic hormone concentrations. Serum PTH and 25 (OH)D measurements may help to identify subgroups of hip fracture patients with different pathogenesis and promote individualized therapeutic and prophylactic interventions.

Inhibin

Inhibin A (InhA), a peptide hormone normally produced by the gonad, increases bone volume and strength in the intact adult murine skeleton, and protects against gonadectomy-induced bone loss via a mechanism that increases bone formation, since no changes in osteoclast numbers or systemic markers of bone resorption are observed. Perrien DS et al⁵ (University of

Arkansas for Medical Sciences, Arkansas) subjected adult mice to osteotomy and eternal fixator placement, and subsequently stimulated the mice with mifepristone (MFP) pellets to selectively induce InA overexpression. There was a 3-day lag time, the mice were then distracted at a rate of 0.15mm/day and sacrificed 21 days post-osteotomy. To quantify compartment-specific effects, the 3-dimensional μ CT data were used to define and quantify the amount of endosteal and periosteal bone formation in the distraction gap. The results demonstrated that InhA selectively increased endosteal bone formation in the distraction osteogenesis gap without affecting the amount of periosteal bone formation. In addition, proliferating cell nuclear antigen staining was significantly increased in osteoblasts within the distraction gaps of InhA overexpressing mice.

Bisphosphonates and fracture healing

Effects of antiresorptive agents on fracture healing. Mori S et al⁶ (Faculty of Medicine Kagawa University, Japan) investigated the effects of the anti-resorptive agents (bisphosphonates, estrogen, SERM) on fracture healing using a rat femoral osteotomy model. In the first study, 8-week-old female rats were injected with either vehicle or incadronate (10, 100 mg/kg) for 2 weeks. The femur was osteotomized and fixed with intramedullary wire. Incadronate treatment was continued (C) until sacrifice at 25 or 29 weeks after surgery. Cross-sectional area in C-100 was the largest. Although mechanical tests showed that stiffness and ultimate load of fractured femur in C-100 were the highest, histomorphometric evaluation revealed that callus remodeling was delayed in C-groups, especially in C-100. In the second study, the authors ovariectomized 3-month-old female rats and treated them with vehicle (OVX), estrogen (0.1 mg/kg, EE2), raloxifene (1.0 mg/kg, Rlx) or alendronate (0.01 mg/kg, Aln). Four weeks later, femoral osteotomy was

performed. Treatment was continued until sacrifice at 6 and 16 weeks post-fracture. By 16 weeks post-fracture, OVX calluses were smaller than at 6 weeks, while the dimensions for Aln had not changed. Aln had higher BMC and ultimate load than OVX, EE2 and Rlx. EE2 and Rlx had similar biomechanical properties similar to Sham. Aln strongly suppressed callus remodeling, resulting in the highest content of woven bone and the lowest content of lamellar bone, compared to other groups. The larger Aln callus appeared to be a remarkable, morphologic adaptation to secure the fracture with inferior material. In conclusion, OVX-stimulated bone turnover resulted in the fastest progression of fracture healing, that was most delayed with bisphosphonates treatment, consistent with marked suppression of bone turnover.

McDonald M et al⁷ (The Children's Hospital Westmead & University of Technology Sydney, Australia), reported that zoledronic acid (ZA) did not delay endochondral ossification in a closed rat fracture model indicating that osteoclast function is not essential to soft callus removal. Dosing began in the rats 1 week after the fracture with harvests at 2, 4, 6, 12 and 26 weeks. Groups included saline, 0.1 mg/kg ZA as bolus or 5 divided weekly doses. QCT revealed callus bone mineral content and volume were increased in both treatment groups over saline at all time points ($p < 0.01$). Further, between 4-6 weeks, callus volume decreased by 8% in bolus, group (remodeling), but increased by 24% in the weekly group (no remodeling). However, by 12 weeks callus volume in both ZA groups decreased by 23-26% suggestive of continued remodeling. In contrast, the weekly group still maintained a larger callus volume over saline (12 weeks – 67%, 26 weeks 88%) compared to bolus (12 weeks-30%, 26 weeks 47%). Thus the authors found that weekly dosing more adversely affected callus remodeling.

Implant anchorage

Animal studies have shown that alendronate (ALN) inhibits bone resorption at the bone-screw interface thereby enhancing fixation. In a clinical study, Moroni A et al⁸ (Rizzoli Orthopaedic Institute, Bologna, Italy) introduced another innovative approach to enhance implant fixation using hydroxyapatite-coated screws coupled with bisphosphonate therapy. Patients were randomized to therapy with either alendronate (Group A) or control (Group B) for a three-month post-operative period. Fixators were removed after 3 months in all patients. All the fractures healed. No pin loosening or infection occurred in either group and no differences between femoral neck-shaft angle at 6 months versus post-op were observed. There was no significant difference in pin insertion torque between the two groups. The combined mean extraction torque of the pins implanted at positions 1 and 2 (cancellous bone of the femoral head) was 2558 ± 1103 N/mm in Group A and 1171 ± 479 N/mm in Group B ($p < 0.0005$). The combined mean extraction torque of the pins implanted at positions 3 and 4 (cortical bone of the femoral diaphysis) was 4327 ± 1720 N/mm in Group A and 4075 ± 1022 N/mm in Group B (ns). This is the first clinical study to show improved fixation following post-operative ALN treatment. In the future, the success of delivering pharmacological therapy through an implant device would be an exciting prospect for an orthopaedic surgeon to consider.

In "Adapted implants increase anchorage in osteoporotic vertebrae- A biomechanical study" by Goldhahn J et al⁹ (AO Research Institute and Schulthess Clinic, Zurich, Switzerland) two newly developed implant designs in lumbar vertebral bodies under cyclic loading were evaluated. Their enlarged implant-bone interface was designed to reduce the cut-through during perpendicular, repetitive loading. A total of 65 vertebrae

were used to establish five testing groups of similar BMD distribution with eight lumbar vertebrae each. DXA scans assessed BMD and structural parameters were determined by 3D-pQCT. The specimens were loaded force-controlled sinusoidally at a frequency of 1Hz for 1000 cycles at three-load level (100, 200 and 400N). All new prototype configurations except the large cylinder survived significantly longer than the control group ($p < 0.005$). In both large prototypes, the authors reported that the cycle number until failure significantly correlated with the preoperative distance to the upper endplates ($R = -0.75$ resp. $R = -0.94$). In conclusion, although the direct relationship between bone structure or density and mechanical breakage behaviour could not yet be conclusively proven, all the prototypes adapted for poor bone structure performed better than the comparable conventional implant.

Fracture fixation

Ekholm C and Ullman M (M Sahlgrenska University Hospital, University of Gotenburg, Molndal, Sweden) presented on "The eUloq A New System for Treatment of wrist fractures".¹⁰ The system consists of specially contoured pins with eyelets for intra-size pinning and optional fixation with low profile screws designed for fixation in osteoporotic bone. The surgical procedure is minimally invasive and the pins usually do not require removal. The prerequisite is a non-comminuted volar cortex to maintain axial length. 68% of the fractures healed with a clinically and radiologically excellent or good result. Over-reduction and/or volar displacement was noted in 20 patients. Dorsal re-angulation and incongruent DRUJ was noted in eight patients. One postoperative infection was diagnosed. Five patients had one or more pins removed. Five patients had further surgery with plate-fixation. Extensor tendon problems were noted in six patients and two tendon ruptures were diagnosed and

repaired. This contoured pin principle appears to be cost effective, clinically efficient and safe with few complications when properly used in selected patient groups. Unstable volar cortex was the underlying explanation for the cases of volar displacement seen; according to the authors this complication could have been avoided with correct pre-op assessment of X-rays.

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DISTAL FOREARM WORKSHOP-A SYNOPSIS

Amy Hoang-Kim, ISFR-OFC Research
Coordinator

To raise awareness of the burden of osteoporosis and other musculoskeletal disorders, empower patients, expand research and improvements for prevention and treatment of these problems, and engender multidisciplinary cooperation, is our mission as part of the Osteoporotic Fracture Campaign—we like to define ourselves as a catalyst in the way groups collaborate internally and outside our network. One such fine example of this is the series of workshops which we have organised. The first distal forearm workshop was held in Bologna following the 9th Biennial Conference of the International Society for Fracture Repair on November 5th-7th, 2004. This represented a unique window of opportunity for coinciding the increased recognition of the special needs of osteoporotic patients with fragility fractures and the creation of a heated discussion between a highly-esteemed group of surgeons, scientists and engineers. The burning questions raised on this occasion helped in-turn to develop the set-up for phase II, held in succession a year later in Rome.

The International Society for Fracture Repair in conjunction with the International Osteoporosis Foundation held the second workshop consisting of 33 experts: 18 Orthopaedic Surgeons, 1 radiologist, 1

rheumatologist, 2 scientists, 2 engineers, and 9 industrial partners (Orthofix, Smith & Nephew, Depuy Johnson & Johnson, Synthes, Wyeth, Orthologic, Stryker). The workshop focused on three areas of concern 1) Fracture Assessment 2) Surgical Treatment and 3) Organization of Multi-centric Clinical Trials.

“Age is not a good indicator of functional needs or activity level. Activity level can be objectively rated for decision making and outcome assessment” Jesse Jupiter, MD

A variety of approved and investigational agents have been evaluated for their effect on accelerating fracture healing. Exogenous and endogenous growth factors, such as low intensity pulsed ultrasound and bone morphogenic protein allow for manipulation of the fracture site to achieve successful union of the bone ends without additional surgery. While conventional radiography remains the mainstay of routine fracture assessment, it may not be sensitive enough. CT with volumetric reconstruction appears to offer the best balance between convenience, cost, availability and ability to quantify soft and calcified tissue changes, according to H. Genant (University of California).

“As new agents are introduced, it is desirable to develop simple yet sensitive non-invasive methods for detecting early changes in the fracture repair process”

Harry Genant, MD

C Day (Boston, US) tested whether age-based discrepancies exist in both treatments employed and accepted radiographic results. Patients included in the study were divided into four groups: young, middle, retired, and elderly. He found that radiographic parameters measured were comparable in all four age groups ($p > 0.05$). Similarly, initial treatment modality and operative intervention rates were not significantly different between

age groups. Patients who received cast only treatment in the ER had 42.6% radiographic failures after first treatment. Closed reduction had a failure rate of 76.8%; when this rate was analyzed by age group, the young had a 50.0% failure rate compared to 92.9% failure in the elderly ($p < 0.05$). When healed, 13.5% of young patients had radiographic failures as compared to 42.3% for the elderly patients ($p < 0.05$). He concluded a significantly higher percentage of distal radius radiographic failures were accepted in the elderly group. However, he found no statistically significant discrepancy in the treatment of distal radius fractures with respect to age. Closed reduction treatment led to high rates of radiographic failure, especially in the elderly group. This study suggests considering changes in the present treatment algorithm for the elderly, either in the radiographic failure criteria used or in the treatment rendered.

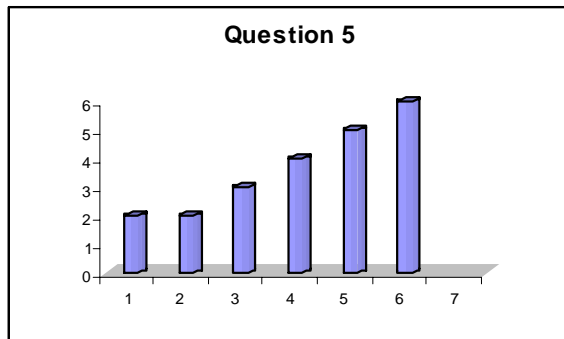
Many burning issues were discussed amongst which A. Goodship (Royal Veterinary College and University College London, UK) asked whether assessment of bone quality deficiencies in strength could be improved, whether site-specific changes were related to fracture risk and whether bone matrix deficiencies were evident in elderly adults and could be identified in the developing skeleton. He further discussed a novel method to assess the molecular architecture of collagen through RAMAN spectroscopy. Transcutaneous assessment of bone may be feasible at specific sites, this may allow both prediction and monitoring of risk for fragility fractures in the clinic.

V. Kuhn (Germany) believed that biomechanical testing might determine the structural strength of bone which in turn could be correlated with various densitometric parameters. Biomechanical testing conditions may vary considerably from study to study with 3-point bending (shaft), axial

compression (metaphysical), and fall simulations being some of the techniques used. Geometry-based parameters of cortical bone are also good predictors but have not been shown to offer significant advantages over measurement of bone mass. Microstructural finite element modelling appears to give the most accurate prediction of distal radius fractures, despite appearing to be patient-specific.

From our Survey: What Research Question would interest you the most?

- 1) Ex-fix vs. Locking plates
- 2) Fracture Classification based on BMD measurements
- 3) Bone substitutes vs. no bone substitutes
- 4) Fracture Severity Assessment
- 5) Local BMD measurements
- 6) Outcome prediction
- 7) Enhancement of implant fixation



In the aftermath, some of the compelling issues that arose in the surgical treatment of osteoporotic wrist fractures were published in *Orthopaedics Today (US)* and *Orthopaedics International* in March 2006. In this year’s American Academy of Orthopaedic Surgeon, the OFC boasts its first symposium “Management of Osteoporotic Wrist Fractures” organized with DFW faculty members. Hot topics included: Conservative Treatment, When I use it (T Axelrod, Toronto, Canada); Internal Fixation: Is this the new gold standard (A Ladd, Stanford,

US); Contemporary Perspectives on the role of stable internal fixation (J Jupiter, Boston, US); Minimally-Invasive Open Treatment (C Melone, New York, US) and Fixation Augmentation Techniques: When and How (A Moroni, Bologna, Italy).

“These workshops are distinctive to ISFR. The opportunity to meet with a small group of world leaders in their field to explore new and novel perspectives to fracture treatment and repair is unique.”

Nick Fazzalari, PhD

Workshops for the OFC represent a highly-focused group who tackle burning questions and address future directions. Here are some of your questions:

- 1) Is there a need to include osteoporosis in the classification of distal radius fractures?
- 2) Post operative management can you avoid casts?
- 3) When will a density test be developed which accurately reflects upper limb osteoporosis, as compared to osteoporosis of the hip and spine?
- 4) Can newly developed bone substitutes replace the need for bone grafts in distal radius fractures?

The first two parts of the workshop aimed to generate new insights that may lead to improved methods of treating patients with osteoporotic wrist fractures. The final part of the workshop dealt instead with defining how such new methods could have their superiority demonstrated in reliable clinical studies.

“There are many perceived difficulties of performing randomized, controlled studies in surgery and the coordination between centres needs to achieve adequate power”

David Marsh, MD, FRCS

Finally, we would like to thank all the participants and industrial sponsors who have helped us gather such scientific insight. And we have most definitely realized that there are many roads that lead to Rome but not many taxis to take us out! We are looking forward to carrying out our next venture in Monte Carlo December 1-3, 2006 to resolve issues on patients with osteoporotic hips.

**EU Summit Conference on the Prevention and Therapy of Osteoporosis
10-11th June 2006, Vienna**

Maggie Partridge
Political Coordinator – OFC London

Osteoporosis was chosen as a priority issue for the Austrian Federal Ministry of Health and Women during the Austrian presidency of the European Union in the first half of 2006. The International Osteoporosis Foundation (IOF) EU Consultation Panel has been working to name osteoporosis a major health care target for several years. The Austrian Society for Bone and Mineral Research (AuSMBR) and the Austrian Initiative for Bone Health have provided support to increase awareness of osteoporosis and its prevention on a European level as it is one of the most complex and cost-intensive chronic diseases in Europe. The number of osteoporotic fractures in Europe amounts to 3.8 million, 890,000 of which are hip fractures.

The meeting was opened by the Austrian Minister of Health, Maria Rauch-Kallat and chaired by Prim.Univ.Prof. Dr. med. Hans Broll (President OGEKM) and Prim.Univ.Prof.Dr. med Heinrich Resch (Initiative Lebensbasis Knochen, OGEKM). coordinated by Pof. Dr. Schlogel (Federal

Ministry of Health). Thirteen EU States were represented.

The objective of the summit was to improve the management of osteoporosis and the formulation of a common note for the European Parliament regarding four key topics:

- 1) Early prevention and primary prevention
- 2) Reimbursement of diagnostic measures
- 3) Specific Strategies of therapy, compliance and rehabilitation
- 4) Gender aspects of osteoporosis

After two days of presentations and debate, during which the delegates were divided into two workshops from which a set of recommendations and prioritisation (16 in total) on each of the above topics was produced.

They included:

- Emphasis must be on early identification and prevention
- The urgent need for more information and education
- The standardisation of DXA protocols and procedures
- The use of evidence based medicine principles to evaluate diagnostic measures
- Drugs with proven anti-fracture efficacy should be available and reimbursed in all countries
- Individual fracture risk should be the basis of therapeutic decisions
- Create awareness of male osteoporosis and osteoporosis in the young
- Encourage the setting up of accurate fragility fracture registers

The recommendations are to form part of a report to be produced at the end of Summer 2006.

With the enormous burden that osteoporosis and associated fractures impose on individuals and health care systems, it is to be hoped that both primary and secondary prevention remains a priority issue within the European Union.

THE MEXICAN PERSPECTIVE

The Burden of Osteoporosis in Mexico

Jorge Morales-Torres, MD

Osteoporosis and the associated fractures, cause considerable morbidity, mortality and resource utilization all over the world. Studies addressing the need to know their burden have been appearing recently in Mexico and other Latin American countries.

In year 2000, the population of Mexico was roughly 100 million persons. Thirteen percent were 50 years or older and 5% were 65 years and older. However, with life expectancy higher than 72 years now, a significant growth of elderly population is anticipated. As an example, it can be mentioned that the growth of total population in Mexico for year 2010 is expected to be 12.8%, while the expected growth for that same year, for population aged 50 years and older will be of 45%.

Studies using World Health Organization's criteria and considering vertebrae and proximal femur report 50% and 20% of Mexican women 50 years and older with osteopenia and osteoporosis, respectively in either one or both regions. Only a minority of them are currently having an effective therapy against osteoporosis.

Hospital based studies reported 148 to 155 hip fractures per 100,000 persons aged 50 and older (188 to 203 in women). Two percent of hip fracture sufferers die in hospitalization and 6.8 % die in the month following it. Prevalence of vertebral fractures in community-dwelling women aged 50 and more in Mexico is 19.35%. In men, the prevalence is 9.7%. As age advances, prevalence increases in both genders. Data on other fragility fractures is scarce.

Direct costs of a hip fracture ranged from 5,500 to 6,500 US Dollars. National gross income Per Capita in Mexico lies close to 5,000 US Dollars. Although in Mexico there are not any community based studies to know the actual incidence of hip fractures, projections from the information obtained from public hospitals have produced a figure of 19,369 hip fractures among people aged 50 years and over in 1995. Those fractures would have a direct cost of US\$ 106,529,500 in year 2000. That figure represents 6.7% of the yearly national health expenditure of Mexico.

A few studies have addressed the importance of certain risk factors for osteoporosis and fractures. Most consistently found include: older age; neurological disorders (particularly stroke); previous fractures; use of psychotherapeutic drugs; alcohol consumption; cardiovascular disease; poor intake of dairy products; lower body mass index; less physical activity; higher number of pregnancies and lactation; living alone and having limitations for activities of daily living.

Access to diagnosis and treatment of osteoporosis is limited in Mexico. National social security systems – covering roughly 50% of the population – have very few diagnostic centers including DXA machines. Two or three of those machines for a population of more than 50 million persons are very far from the ideal needs.

Osteodensitometry centers are mostly in private centers and accessible only to roughly a third of the population (who can afford it), since reimbursement policies are practically nonexistent. Anti-osteoporotic drugs are also relatively expensive and should be continued for years, limiting access to the population strata with lower income. Awareness on osteoporosis and its consequences is still limited among doctors and other health professionals.

We still have limited information on Epidemiology of Osteoporosis and related resource utilization. Epidemiological and health economic research in the Osteoporosis disease area needs to be carried to address this knowledge gap. Programs to increase awareness among health professionals and the general population are still needed as a strong base for the prevention and control of osteoporosis.

The serious nature of socio-economic burden of this condition and limited economic resources available in this region call for a vigilant yet efficient approach for diagnosing Osteoporosis patients and effectively treating them with proven therapies to avoid the catastrophic economic and clinical consequences of this disease.

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THE JAPANESE PERSPECTIVE

Takashi Matsushita MD, DMSc

**Department of Orthopaedic Surgery,
Teikyo University School of Medicine**

**Disability and mortality of hip fractures 1
year after initial visit in Japan**

A prognostic survey of 10,992 patients

It is a big problem that the populations who need long-term care after osteoporotic fractures have been increasing in the advanced countries. As is well known, vertebral fractures have been the most common fractures in the elderly patient with osteoporosis. However, hip fractures provide a more critical problem for elderly patients, because the loss of mobility they cause can result in the decreasing of activity of daily living (ADL) of the patient.

A prognostic survey of activity of daily living (ADL) was performed 1 year after the initial visit at a total of 158 core orthopaedic hospitals between January 1999 and December 2001 in Japan. Currently, the results of this survey have been published in the journal (Sakamoto K. et al.: Report on the Japanese Orthopaedic Association's 3-year project observing hip fractures at fixed-point hospitals, J Orthop Sci, 2006, 11: 127-134). A total of 10,992 hip fractures were assessed in this study. The report revealed that 85.6% of

femoral neck fractures and 88.2% of the trochanteric fractures were surgically treated, the mean duration from fracture to surgery was 3.1 days, the rate of patients who were able to walk without assistance was reduced from 50.9 % to 26.8%, the duration of hospital stay was 49.8 days, and the 1-year mortality rate for the entire patient population over the 3-year period was 10.1%. It was concluded that hip fracture patients show a decrease in the ADL score 1 year after the initial visit and the duration of hospitalization is longer in Japan compared to other countries, but the mortality rate is lower. I think it is still a challenging issue to overcome a decrease of ADL score after hip fractures in the elderly patient, but this critical issue should be resolved in the second half of the Bone and Joint Decade.

MEETINGS OF INTEREST

4th SICOT/SIROT Annual International Conference
23-26 August 2006
Hotel Hilton, Buenos Aires, Argentina
Website: www.sicot.org

52nd Congress of the South African Orthopaedic Association
Durban, South Africa
6-10 September 2006
Website: www.saoa.org.za

Combined 3rd IOF Asia-Pacific Regional Conference on Osteoporosis & 16th ASM of the Australian & New Zealand Bone & Mineral Society.
23-26th October 2006
Sheraton Mirage, Port Douglas, QLD, Australia.
Website: www.anzbums.org.au

BOA Annual Conference
Scottish Exhibition and Conference Centre
Glasgow, Scotland
27 – 29th October 2006
Website: www.boa.ac.uk

Network Conference of the Bone and Joint Decade
Durban, South Africa
2- 4 November 2006
Website: www.boneandjointdecade.org

ISFR Osteoporotic Hip Workshop
Monte Carlo
December 1 – 3rd 2006
Website: <http://fractures.com>

International Symposium on Vibration Therapy
Cho Yiu Hall, Central Campus, The Chinese University of Hong Kong, Shantin, N.T
9-10th December 2006
Website:
<http://new.ort.cuhk.edu.hk/isvt2006/eng>

The 57th Annual Orthopaedic Research Society Meeting
11th – 14th February 2007
San Diego Conference Centre,
San Diego, California, USA
Website: www.ors.org

7th European Congress on Clinical and Economic Aspects of Osteoporosis and Osteoarthritis
28th – 31st March 2007
Europarque, Porto, Portugal
Website :
<http://porto.piettecommunication.com>

34th European Symposium on Calcified Tissues
Copenhagen, Denmark
5-9th May 2007
Website: www.ectsoc.org

Advances in the Molecular Pharmacology and
Therapeutics of Bone Disease
Oxford, UK.
10-11 July 2007
Website: www.paget.org.uk

World Congress on External Fixation
Cairo, Egypt
17-19th October 2007
Website: www.externalfixation2007.com

National Osteoporosis Society Conference
Edinburgh International Conference Centre
Scotland, UK
25-28 November 2007
Website: www.nos.org/conference

IOF World Congress on Osteoporosis
Bangkok, Thailand
Queen Sirikit National Convention Centre
3 – 7th December, 2008
Website: www.osteofound.org

**If you have any ideas or items for the newsletter or any relevant event you would like to disseminate through us, please contact Maggie Partridge, ISFR Office, Institute of Orthopaedics & Musculoskeletal Science, RNOH Brockley Hill, Stanmore, HA7 4LP, UK
Telephone: +44 (0) 20 8909 5303 Email: Maggie.fractures@ucl.ac.uk**