

IMPACT OF HIP FRACTURES ATTRIBUTABLE TO OSTEOPOROSIS ON THE SERVICE LOAD IN A TEACHING HOSPITAL OF LAHORE - PAKISTAN

*OMER ADIL, **MODOOD ALI, ***SYED MUHAMMAD AWAIS

ABSTRACT

Trauma constitutes a major proportion of the in-patient and theatre workload of the department of Orthopaedic Surgery at Jinnah Hospital, Lahore. Out of all fractures, hip fractures presented consistently all over the year and constituted the commonest fracture to be seen and treated. Collection and review of data pertaining to the presentation and management of hip fractures in the department of orthopaedic surgery during the year 1999 revealed important patient, fracture and treatment characteristics. The total numbers of patients admitted with hip fractures (neck of femur and trochanteric) during the period of study was 318, against a total number of in patient admissions of 2,030 during the same period. Out of these, 284 fractures fulfilled the criteria for inclusion in the study and were surgically treated. These included 97 neck of femur fractures and 187 trochanteric fractures. These were treated with conventional methods using appropriate implants. Dynamic hip screw insertion was undertaken in 170 fractures and constituted the commonest procedure involving implant insertion to be performed in the department. The management of these fractures was also complicated by other factors like unfitness of patients, long lapse between admission and operation, high cancellation frequency in the operation theatre and significant cost. It is concluded that management of Osteoporotic Hip fractures constitutes a substantial percentage of trauma workload in the department of orthopedics. As the aging population is expected to rise in the future, this injury will pose a major service problem in large hospitals. The need for national guidelines and formulation of recommendations to deal with this problem is highlighted.

INTRODUCTION

Trauma constitutes a large proportion of the total workload of orthopedic departments¹. Fractures in the elderly are mainly caused by osteoporosis². In the last two decades orthopedic surgeons have started to seriously consider this metabolic disorder, which is associated with an imbalance of osteoblastic and osteoclastic activity resulting in more bone being removed than is laid down³.

Attitudes toward this disorder have been largely misfounded. Many considered osteoporosis to be a normal condition associated with aging, but it has now been realised that it can be reduced and even prevented by a combination of improved diet, life style changes, regular exercise and certain pharmacological interventions^{4,6}. The four most commonly occurring osteoporotic fractures, which require orthopedic treatment, occur at the hip, wrist, ankle and neck of the humerus⁴.

Since the 80's, a number of studies and audits from major hospitals in the UK and US showed a steadily increasing number of elderly patients admitted with hip fractures⁷. Management of elderly patients with fractured hips is fraught with a significant mortality and morbidity and incurs a considerable cost to the health services and the community⁹. The realization of the over all impact of these injuries has resulted in the introduction of

*OMER ADIL
Asst. Professor

**MODOOD ALI
Associate Professor

***SYED MUHAMMAD AWAIS
Department of Orthopaedic Surgery
Jinnah Hospital & Allama Iqbal Medical College, Lahore

cost effective public health measures to reduce the overall risk of osteoporosis¹⁰⁻¹⁴ the adoption of an opportunistic case finding strategy¹⁵⁻¹⁶, and development of screening programs to identify those who are most likely to benefit from intervention¹⁷.

In Pakistan the attitudes towards osteoporosis and associated fractures are confused and conflicting. Lack of data pertaining to the problem has led to lack of quantification and absence of realization of the immense burden this problem puts on the frugal resources of the health services and community at large.

We have collected and reviewed the overall departmental performance data for the year 1999, with quantification of all major service areas¹⁸. Out of all fractures, hip fractures were seen to present consistently all round the year and were the commonest fractures to be admitted and operated.

The study was carried out in the department of orthopedics, which comprises a 62 bedded in-patient facility at Jinnah Hospital, which is a 1200 bedded multidisciplinary teaching hospital located in the Punjab provincial capital Lahore, with a catchment area covering a wide range of communities including urban suburbs, rural and industrial areas.

The results indicate the magnitude of the problem at one department and if similar results are expected from other centres in Pakistan, then a significant body of evidence will accumulate to indicate the enormity of this problem for the country's health and social services and under privileged society. This will help in sensitizing the concerned public health quarters and allow the orthopedic surgeons to become proactive in controlling this problem.

PATIENTS AND METHODS

The study was completed in a year and included patients of both sexes above 55 years of age¹⁹ with low impact, closed hip fractures and convincing plain radiological evidence of osteopenia²⁰. Patients with metastatic deposits were excluded.

Patients were classified into two groups: Group I included intracapsular (subcapital or cervical)

fractures²¹ and Group II included extracapsular (trochanteric) fractures²². Both groups were managed by operative means.

The total number of patients included in the study was compared with the total admissions during the study period. Similarly the operative procedures carried out were compared with the total operation theatre output. Mean bed occupancy days, seasonal variations, mean lapse between admission, operation and operation cancellation frequency were also calculated.

RESULTS

Out of a total 2030 admissions during the study period, the number of admissions due to fractures of all types was 1572 (77.4%). The total number of patients admitted with hip fractures was 318 (15.6%), out of which 284 (13.9%) fulfilled the inclusion criteria and were admitted and operated (Figure 1-4). 106 male and 178 female patients were included giving a male to female ratio of 1:1.7.

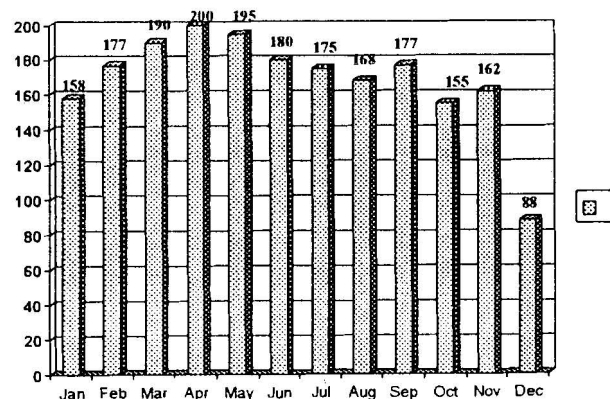


Fig. 1: Total in patient admissions year 1999

Mean age for females included in the study was 62 years (range 55-95) and for males was 71 years (range 64-100). mean bed occupancy days of these patients were 21 compared to departmental average bed occupancy of 11 days²⁴. Presentation was fairly consistent all

through the year. mean time lapse between admission and operation was 53 hours (range 6-11 hours). Operation theatre cancellation frequency may be empirically stated as high. Group I (cervical, intracapsular) included 97 fractures while Group II (extracapsular) included 187 fractures. The operative procedures carried out included dynamic hip screws: 170, dynamic condylar screws: 14, Austin More hemiarthroplasty: 57, cancellous / cannulated screws: 14, blade plate: 20 and total hip replacement: 08 (Figure V).

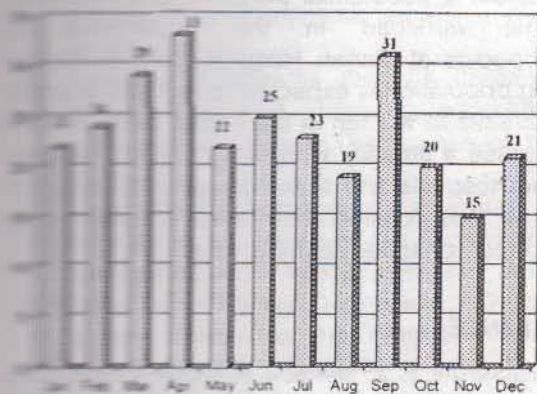


Fig. 2: Admissions due to HIP fractures attributable to osteoporosis year 1999

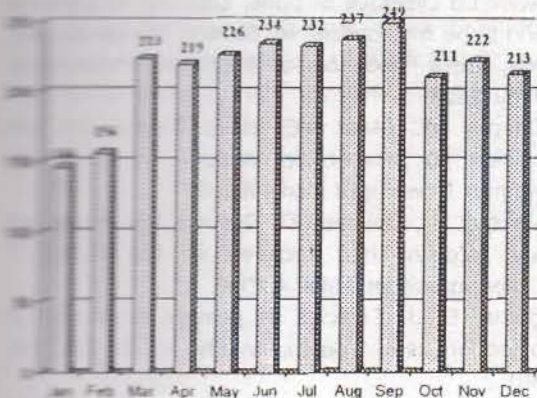


Fig. 3: Total operation theater out put year 1999

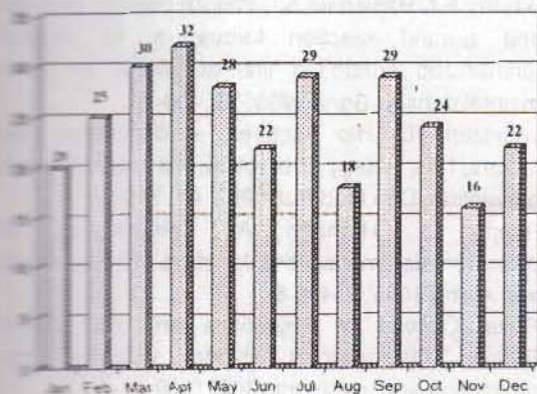


Fig. 4: Operations for HIP fractures attributable to osteoporosis year 1999

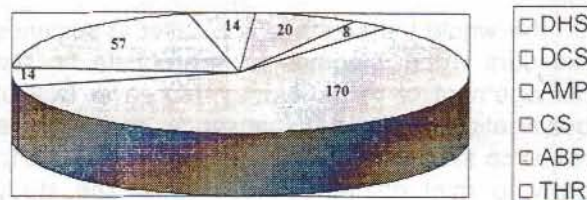


Fig. 5: Procedures for HIP fracture attributable to osteoporosis year 1999.

DISCUSSION

Osteoporosis is a wide spread disorder involving the entire skeleton and causing the bone to become thin and fragile with a high risk of fractures. Approximately 1.7 million hip fractures occurred worldwide in 1990, with osteoporosis being a major contributing factor²⁵. Osteoporosis currently affects more than 26 million Americans, of whom more than 20 million are women²⁶. The cost attributable to osteoporosis in 1995 in US was around \$13.8 billion²⁷ and is predicted to increase to \$ 162 billion by the year 2020²⁸.

In the west realization of the immense scale and scope of the problem has led to intensive research in finding treatment and prevention options for osteoporosis and associated fractures²⁹. In a developing, third world country

like Pakistan, the local complexion of the problem has yet to be precisely assessed. Current situation analysis reveals largely misfounded attitudes towards osteoporosis. Many consider it to be a problem of the affluent, western societies with little or no local relevance. The condition is usually painless until a fracture occurs. The first port of call is therefore an orthopedic department. For this reason the orthopedic surgeons are usually the first to realize the threat that osteoporotic fractures pose to a patient's well being and independence and the staggering financial and economic impact on the individual as well as on the meager resources of local health services and society. In our society, the presence of peculiar social, medical and economic factors such as malnutrition, unhealthy life styles, multiparity etc contribute to greater prevalence of osteoporosis. The high expenses involved in the surgical treatment of these fractures leads to delays in treatment, neglect, use of substandard implants etc., while the lack of social and community rehabilitative services adds to the significant postoperative morbidity and mortality.

On the whole the scenario is bleaker in societies like ours when it comes to appropriate holistic management of these injuries. Moreover lack of qualification has led to absence of adequate resource allocation for this problem, allowing it to grow to mini epidemic proportions. The study endeavors to highlight the issue and may trigger local research into the issue.

Time is now ripe to learn from published experience of the west and institute guidelines for prevention of this disorder and forward recommendations for solution of the problem it will inevitably pose.

We wish to forward the following recommendations.

1. Recognition of osteoporosis and associated fractures as a major health issues.
2. Adoption of osteoporosis prevention as a health care target.
3. Appropriate resource allocation.
4. Health education and research.

CONCLUSION

The number of patients admitted and operated for hip fractures attributable to osteoporosis

constitute a substantial percentage of the total trauma workload in the department of orthopedics at Jinnah Hospital, Lahore. As the aging population is expected to rise and financial constraints to worsen in the future, these injuries will cause a steadily worsening service problem in the hospitals and a demographic disaster for society. Due consideration needs to be given by all concerned to tackle the problem.

REFERENCE

1. Mackenzie, E. J., Morris, J. A : Acute hospital costs of trauma in the United States: Implications for regionalised system of care.
2. Wallace WA. The increasing incidence of fractures of the proximal femur: an Orthopaedic epidemic *Lancet* 1983; 1: 1413.
3. Avioli LB Diseases of bone: Calcium, Phosphorus and bone metabolism. In: Beeson PB, Mc Dermott, eds. Cecil Textbook of Medicine. Philadelphia, 1989: 2225.
4. Chapuy MC, Arlot ME, et al. Vitamin D3 and calcium to prevent hip fractures in the elderly women. *New Engl J Med* 1992; 327.
5. Meunier PJ, Delmas PD. Can we stop bone loss and prevent hip fractures in the elderly ? *Osteoporosis Int.* 1994; 4: 71-6.
6. Barry E. J. Exercise in primary prevention of osteoporosis in women. *An Rheum dis* 1995; 54: 861-2.
7. Elliot CA, Wallace WA. Increasing incidence of fractures of the proximal femur. *Lancet* 1983.
8. Wallace WA, Prince HG. Orthopaedic Management of the elderly. In *pathy: Principles and practice*.
9. Hollingworth W, Jodd. CJ. The cost of treating Hip fractures in the twenty first century. *Osteoporosis In.* 1996; 6 13-5.
10. Bassey EJ, Ramsdale SJ. Weight bearing exercise and ground reaction forces: a 12 months randomized controlled trial of effects on bone mineral density. *Bone* 1995; 16: 469-76.
11. Lauritzen JB. Hip fractures: epidemiology, risk factors, falls, energy absorption, hip protectors and prevention. *Dan Med Bull* 1997; 44: 155-68.
12. Runjby J, Humann A. Epidemiology of osteoporosis: implications for drug therapy. *Drugs and Aging* 1995; 6: 470-8.
13. Royal College of Physicians and Prof. David Barlow. Osteoporosis clinical guidelines for prevention and treatment. RCP 1999.
14. SIGN. Management of elderly people with hip fractures: a national clinical guideline for Scotland. Scottish inter collegiate guidelines network, 1997.

16. **Emslow SA, Hosking DJ.** Clinical usefulness of risk factors for osteoporosis. *An Rheum Dis* 1996; 95: 308-9.
17. **Emslow SA, Cawte SA, Worley A.** Colles fracture as an indicator of underlying osteoporosis in postmenopausal women. *Osteoporosis int.* 1998; 8: 53-60.
18. **Group WHO.** Assessment of fracture risk and its application to screening for postmenopausal osteoporosis. World Health Organization, 1994.
19. **Departmental Manual, Department of Orthopaedic Surgery.** Jinnah Hospital, Lahore, Pakistan, Ed. **Awais SM, Adil O,** 1999; 38-39.
20. **Ahrees K, Muin P,** Age at menopause in Pakistani women. *JCPSP* 1988.
21. **Singh M, Nagrath AR.:** Changes in the trabecular pattern of the upper end of the femur as an index of osteoporosis. *J. Bone Joint Surg.* 52-A : 457-67, 1970.
22. **Pater MJ.** Parallel Garden screws for intracapsular femoral fractures. *Injury* 1994, 25: 383-5.
23. **Classification of proximal femur fractures,** Rockwood CA, Buckloz RW, David. G, Lippincot-Raven, 1996 Vol. 2, 1669-71.
24. **Departmental Manual, Department of Orthopaedic surgery,** Jinnah hospital, Lahore, Pakistan, Ed. **Awais SM, Adil O,** 1999; 41-42.
25. **Departmental Manual, Department of Orthopaedic surgery,** Jinnah Hospital, Lahore, Pakistan, Ed. **Awais SM, Adil O,** 1999; 58-59.
26. **Cooper C, Campion G, Melton G.** Hip fractures in the elderly: a worldwide projection. *Osteoporosis Int* 1992, 2: 285-289.
27. **Melton LJ III, Thamer M, Ray NF, et al.** Fractures attributable to osteoporosis: report from the national osteoporosis foundation. *J. Bone Miner Res.* 1997; 12: 16-23.
28. **Ray NF, Cian JK, et al** Medical expenditure for the treatment of osteoporotic fractures in the U.S in 1995. *J. Bone Miner Res* 1997; 12: 24-35.
29. **Rigge BL.** Prevention and treatment of osteoporosis. *N Engl J Med.* 1992 327: 620-627.
30. **Recker RR, Davies KM, et al.** Bone gain in young adult women. *JAMA.* 1992; 268: 2403-2408.