

OBSERVATIONAL STUDY OF BONES WITH REFERENCE TO OSTEOPOROSIS AND FRACTURE WITH MINIMAL TRAUMA

Varsha Dnyaneshwar Bitey

Asst. Professor, M. S. Ayurved College, Gondia, Maharashtra, India

ABSTRACT

Osteoporosis is the most common metabolic bone disease and is an important cause of morbidity in elderly. Osteoporosis indicates a deficiency of total bone substance, qualitatively normal, it is quantitatively reduced. There is reduction in trabecular bone mass. Hence bones become thin and brittle and are liable to fracture due to minimal trauma. Fractures related to osteoporosis are major health problems in all developed countries. Considering all above facts in mind, present study has been planned. For this purpose, 40 patients of fracture due to minimal trauma were selected. After taking case history and necessary investigations, observations are presented. Osteoporotic fractures were common in vertebrae. In age group 51-60 years, more patients are observed. This study concludes that osteoporosis (i.e. *Asthisaushirya*) occurs due to *asthi* and *majja dhatukshaya* according to Ayurveda.

Keywords: Osteoporosis, Fracture, Minimal Trauma

INTRODUCTION

In the present era, the medical profession is fully equipped with sophisticated tools to diagnose the disease even at early stage and several newer therapeutic strategies have been developed which definitely increase the lifespan of human beings. But at the same time, there is tremendous increase in the incidence of osteoporosis (*Asthisaushirya*) and related fractures. National osteoporosis Foundation says that in 2035 there will be maximum number of patients of osteoporosis in India and China. This is due to ignorance and lack of awareness of society. Osteoporosis is a silent and dangerous disease because patient becomes disabled and dependent due to osteoporotic fracture. Generation above 50 years get affected by Osteoporosis, especially women after menopause get affected with osteoporosis without any

symptoms and leads to major fractures of bones with minimal trauma. These fractures do not heal quickly or if heals, the patients have to suffer from pain and misery for entire life. Osteoporosis is characterized by reduced bone mass, microarchitectural deterioration of bone tissue and increased risk of fracture. Albright in 1940 gave the definition of osteoporosis as 'too little bone'. Osteoporosis means porous bone i.e. *asthisaushirya*. In Ayurveda, *asthisaushirya* is given as a symptom of *majjakshaya*.

Detailed literature study was done about *asthisaushirya* and *asthibhagna* from available sources. For this study, 40 patients of fracture with minimal trauma were examined on the basis of various parameters such as age, sex, occupation, marital status, addiction, etc. Investigations were performed

as blood, urine and x-rays; and conclusions were drawn which will help to aware the people regarding the severity of the disease.

AIMS AND OBJECTIVES

The aim of the study is

1. To study the bones in details which is given in short in *Ayurvedic* literature
2. To create awareness about osteoporosis in society and reduce the fracture risk in elderly.

METHODOLOGY

Study type: Observational Study

- 1) Collection of information regarding osteoporosis and fractures is done from the available literature.
- 2) Total 40 patients of fracture with minimal trauma have been randomly selected irrespective of sex, religion, occupation, etc from OPD and IPD of Government *Ayurvedic* College, Nagpur.

Exclusion criteria: The patients suffering from diabetes, tuberculosis, heart disease, hyperparathyroidism, steroid dependent were excluded.

Study Plan: Each patient has been studied on the basis of detailed proforma which included present complaints, previous history, diet, lifestyle, occupation, *ashtavidha parikshan*, *asthikshaya* and *majjakshaya parikshan*. Laboratory investigations like blood test, urine test and x-rays have been carried out of each patient.

Assessment criteria: The collected data was assessed on the basis of age, gender, etc. For the diagnosis of osteoporosis from x-rays, osteoporotic changes are divided in four grades.

- 1) Indeterminate – In this group, osteoporotic changes are not seen.
- 2) Grade I – Overall bone density loss, trabecular thinning.
- 3) Grade II – Further loss of density and trabecular marking, end plate deformity and biconcavity in vertebrae, thinning of cortex.
- 4) Grade III – Severe demineralization, marked wedging or collapse of vertebrae, marked thinning of cortex, increased translucency.

OBSERVATIONS AND RESULTS

In present study, the percentage of female with osteoporotic fracture was more (60%) than male (40%). Age-wise analysis shows that maximum (52.52%) patients were in group 51 to 60 years. Socioeconomic status shows that there were maximum patients in middle social class (60%). According to nature of work, there were more patients (77%) having sedentary work. According to site of fracture, there were maximum patients of vertebral fracture (40%). According to gradation of osteoporosis there were maximum cases (47.5 %) with Grade III i.e. severe osteoporosis. Maximum osteoporotic changes were seen in vertebrae (22.5 %).

In present study following observations are seen –

Asthitod - 100 %, *Parvabheda* - 100%, *Alpashukrata* - 95 %, *Asthishunyata* - 87.5 %, *Bhram* - 52.5 %, *Timirdarshan* - 75 %, *Asthishul* -100 %, *Dantpatan* -37.5%, *Keshpatan* -52.5%, *Raukshya* -85%. In age group 51 to 60 years, maximum patients (42.5 %) of osteoporosis were seen.

Table 1: Sex distribution of patients studied

Sex	No of Patients	Percentage
Male	16	40 %

Female	24	60 %
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Table 2 – Age distribution of patients studied

Age (years)	Male		Female	
	No of patients	Percentage	No of patients	Percentage
51 - 60	7	17.5 %	14	35 %
61 - 70	6	15 %	8	20 %
70 +	3	7.5 %	2	5 %

Table 3 – Socioeconomic statistics

Social Class	No of patients	Percentage
High	4	10 %
Middle	24	60 %
Low	12	30 %

Table 4 – Nature of work

Nature of work	No of patients	Percentage
Sedentary	31	77 %
Non Sedentary	9	23 %

*Table 4 Included

Table 5 – Fracture sites

Sex	Forearm fracture		Flip fracture		Vertebral fracture	
	Patients	Percentage	Patients	Percentage	Patients	Percentage
Male	5	12.5 %	6	15 %	5	12.5 %
Female	7	17.5 %	6	15 %	11	27.5 %

Table 6 – Radiological finding of osteoporosis

Sex	Indeterminate		Mild		Moderate		Severe	
	Patients	Percentage	Patients	Percentage	Patients	Percentage	Patients	%
Male	4	10 %	1	2.5 %	2	5 %	9	22.5 %
Female	1	2.5 %	3	7.5 %	10	25 %	10	25 %

Table 7 – Radiological findings according to age

Age (years)	Indeterminate		Mild		Moderate		Severe	
	Patients	Percentage	Patients	Percentage	Patients	Percentage	Patients	%
51 – 60	4	10 %	4	10 %	8	20 %	5	12.5 %
61 – 70	1	2.5 %	-	0	4	10 %	9	22.5 %
70 +	-	0	-	0	-	0	5	12.5 %

Table 8 – Degree of osteoporosis and fracture site

Fracture Sites	Mild		Moderate		Severe	
	Patients	Percentage	Patients	Percentage	Patients	Percentage
Vertebrae	-	0	6	15 %	9	22.5 %
Forearm	4	10 %	2	5 %	5	12.5 %
Hip	-	0	4	10 %	5	12.5 %

Table 9 – Showing symptoms of Asthikshaya

Symptoms	Male		Female	
	No of patients	Percentage	No of patients	Percentage
Asthishula	16	40 %	24	60 %
Dantpatan	6	15 %	9	22.5 %
Keshpatan	5	12.5 %	16	40 %
Nakhpatan	-	0	-	0
Raukshya	14	35 %	20	50 %

Table 10 – Showing symptoms of Majjakshaya

Symptoms	Male		Female	
	No of patients	Percentage	No of patients	Percentage
Asthitod	16	40 %	24	60 %
Parvabhed	16	40 %	24	60 %
Alpashukrata	14	35 %	24	60 %
Asthishunyata	12	30 %	23	57.5 %
Bhram	12	30 %	21	52.5 %
Timirdarshan	11	27.5 %	19	47.5 %

DISCUSSION

The study was carried out in two parts. First, the literature study was done in *ayurvedic* and modern aspects. According to *Ayurveda*, *Asthidhatu* is the most *sthir*, *kathin*, *drudh* (strong) *dhatu* and *saushirya* means *sacchidratwa* (having holes). In old age there is *prakop* of *vatdosh*a which creates *dhatukshaya* i.e. *asthi* and *majadh*atukshay. Due to *asthi majjakhshay*, bones become porous and brittle causing osteoporosis i.e. *asthis*aushirya. Due to osteoporosis bones become weak and fragile; hence fracture occurs due to minimal trauma.

CONCLUSION

This study concludes that osteoporosis gets developed after the age of 50 years and is type of *vatvikar* because severe osteoporosis creates kyphosis which is *kubjatva* which is included in 80 *vatvikar*. Though it is generalized disease, it gets developed prominently in vertebrae, neck of Femure and lower end of radius. Bones can easily get fractured due to minimal trauma i.e. slipping over floor, in bathroom, or even after sneezing. Risk factors for osteoporosis are age above 50 years, sedentary lifestyle, both genders (especially female).

Prevention is always better than cure so to avoid this disease, one should change his lifestyle. Apart from taking medicine, one should follow proper *Ahara* and *Vihara*.

Ahara: Diet including high quality nutrients, calcium found in dairy products, nuts, and sesame oil, green and leafy vegetables.

Vihara: Outdoor exercise, exposure to sunlight, weight bearing exercise, daily *snehan* with sesame oil enhances bone formation.

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CORRESPONDING AUTHOR

Dr. Varsha Dnyaneshwar Bitey

Asst. Professor, Sharir Rachana.

M S Ayurved College, Gondia, Maharashtra, India

Email: adhulke@gmail.com

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