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Low Backache – Profile of Oncological Patients

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Abstract
Back pain is one of the most common complaints which brings patients to physician. Spine is one of the most common site for metastasis. The most common primary tumor in patients with metastasis are breast, lung, prostate and kidney.
This study aimed to evaluate patients profile for low backache in different types of malignancy.
Material and Methods: *Total 50 patients of histopathologically proven different malignancy were retrospectively analysed for low backache during 2014 to 2016. Cases included were both metastatic bone disease in vertebrae, pelvic bone, proximal femur and primary tumors of spine.*
Results: *46% of the patients were in age range of 50-69 years followed by 40% patients in age range of 30-49 years. Incidence of male were 18(36%) patients and female were 32(64%). 35(70%) patients were not addicted,9(18%) were addicted to tobacco alone,4(8%) patients were addicted to smoking alone, various others are addicted in combination. 47(94%) were metastatic bone disease, 3(6%) patients were primary wings sarcoma of spine. Majority of the patients were of breast cancer 20(40%), gynaecological cancer 8(16%), multiple myeloma and head and neck cancer each 6(12%) patients. Prostate cancer 4(8%), lung cancer 2(4%), renal cell cancer 1(2%) patient. Bony metastasis most common site were vertebra 16(32%), pelvis 12(24%), proximal femur 4(8%) cases. In combination group vertebra with pelvis 12(24%), vertebra with proximal femur 3(6%), proximal femur with pelvis 2(4%).*
Bony metastasis in 19(38%) patients cases was associated with spinal mas, In 11(22%) patients mass was pressing spinal nerve roots, in 8(16%) patients causing compression of spinal cord. 7(14%) patients had pathological fracture.
Conclusion: *pain caused by spinal metastasis is typically persistent and progressive not relieved by rest.Metastases may present as mechanical pain, radicular pain or weakness, or with myelopathy. Management of back pain in metastatic bone metastasis involve combination of pain based on specific patients, prognosis, neurological status, age, primary histopathology.*
Keywords: *Backache, metastatic bone disease, spine, vertebra.*

Introduction

Back pain is one of the most common complaints which brings patients to physician (Moore, 2010). Pain may originate from variety of structures (Henschke, et al,2009).

Nonspecific pain improves in 90% cases by symptomatic treatment upto 3 months.

Malignancy, ankylosing spondylitis and infection together accounts less than 5% of back pain. (Dagenais et al, 2010)

Spine is one of the most common sites of metastasis. The most common primary tumors in patients with metastasis are breast, lung, prostate, kidney cancer. (Guillevin et al,2007). In United States 20,000 cases were diagnosed each year. (Sciubba et al, 2009). In oncology 15% cases primary presenting symptoms are related to spinal metastasis. The most common underlying pathology is lung cancer followed by prostate cancer in male, breast cancer in female. (Chamberlain and Kormanik,1999).

Pain caused by spinal metastasis is typically persistent and progressive not relieved by rest Pain is worse at night, awakening the patients from sleep. Pain is localized at the level of lesion may be associated with neurological signs indicating pressure on neural spinal elements (Bach et al, 1990).

Spinal mass can cause back pain. This pain is localized to the region of spine. Here pain is due to metastasis developed in bone marrow extends to stretch the periosteum or invades soft tissues, triggering pain from the nerve roots or signaling instability (Cole &P atchell, 2008).

Second type of pain is radicular pain due to nerve root compression. This type of pain worsen at night and when the patient is recumbent, due to lengthening of the spine and distension of the spinal epidural venous plexus. This pain is often made worse by avalsalva maneuver or other stretching movement of the spine or lower limb. They are dermatome-linked and may be associated with weakness of the muscles innervated by this nerve root (Cole & Patchell, 2008).

A third type of pain appears when a pathologic fracture is present. This pain is generally focal, associated with instability, and progressive. It will worsen with movement. It can be debilitating, necessitating the use of large doses of narcotics or preventing the patient from sitting or walking (Smith, 2011). These fractures may also lead to neurological changes due to neural element compression (Shaw et al., 1989).

Patients become symptomatic only when there is neural compression. In this case, the patient will approach physician only when there is cord compression, with imminent risk of losing mobility and control of the bowels. This late presentation is associated with a lower probability of neurological recovery, and a high rate of morbidity and mortality (Sundaresan, et al., 1995).

In the skeleton, the third most common location for tumor spread, lesions may be found in the vertebrae, pelvis, proximal parts of the femur, ribs, proximal part of the humerus, and skull (Ratanatharathorn, et al., 1999).

Metastatic epidural cord compression usually focus on the thoracic spine. Although the spinal cord usually ends in the lumbar spine between L1 and L2 in adults, upto 20% of metastatic cord compression occurs at these levels.

Metastatic spinal cord compression (SCC) occurs in 5–10% of patients with cancer (Bach, et al., 1990). It is a true emergency, because delay in diagnosis and treatment may result in permanent neurological impairment. SCC is caused by direct compression of metastasis or primary tumors invading the vertebral bodies, breaking through the cortex, and compressing the vertebral canal and nerve roots (Bilsky, et al., 2000). Breast cancer is the most frequent primary malignancy associated with SCC, followed by lung, prostate, and renal cancers (Byrne,1992).

This study aimed to evaluate patients profile for low backache in different types of malignancy.

Material and Methods

Total 50 patients of histopathologically proven different malignancy were retrospectively analysed for low backache during 2014 to 2016 in department of radiation oncology, Mahavir cancer sansthan. Cases included were both metastatic bone disease in vertebrae or pelvic bone and

primary tumors of spine, which was approved by their ethical committee.

Examination of Thyroid, breast prostate, lung, skin were examined. Lab investigation include complete blood count, erythrocyte sedimentation rate, blood chemistry, liver function test, kidney function test and tumor marker. Painful site was examined by X ray, CT scan, Bonescan. MRI done in case of spine and pelvis. MRI is best tool for imaging spinal tumors because it show status of bone marrow and has excellent contrast resolution in soft tissues.

Patients profile in terms of age, sex, addiction, types of malignancy, site of primary or secondary in bone, associated spinal mass present or not, all were noted and analysed.

Results

Out of 50 patients, majority 23 (46%) of the patients were in age range of 50-69 years followed by 20 (40%) patients in age range of 30-49 years.

For sex distribution, male were 18(36%) patients and female were 32(64%). Female are more common than male.

Out of 50 patients 35(70%) patients were not addicted, 9 (18%) were addicted to tobacco,4 (8%) patients were addicted to smoking, in combination group tobacco and smoking 1(2%), tobacco and alcohol 1(2%). None of the patients belongs to alcohol alone or in smoking with alcohol group.

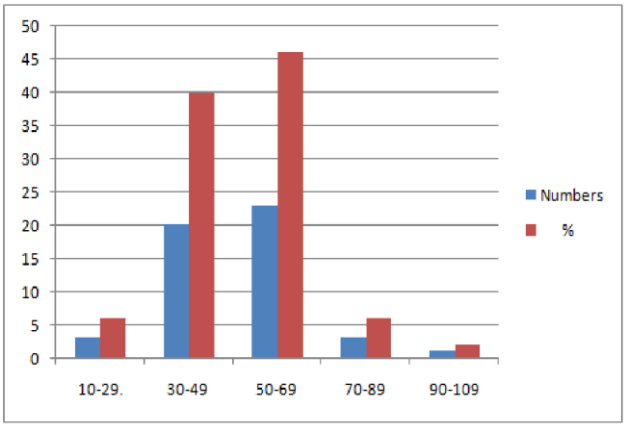
Out of 50 patients 47(94%) were metastatic bone disease, 3 (6%) patients were primary ewings sarcoma. Majority of the patients were of breast cancer 20(40%), gynaecological cancer 8(16%), multiple myeloma and head and neck cancer each 6 (12%) patients. Prostate cancer 4(8%), lung cancer 2(4%), renal cell cancer 1(2%) patient.

Bony metastasis most common site were vertebra 16 (32%), pelvis 12(24%), proximal femur 4(8%). In combination group vertebra with pelvis 12 (24%), vertebra with proximal femur 3(6%), proximal femur with pelvis 2(4%).

Bony metastasis in 19 (38%) patients was associated with spinal mass, In 11(22%) patients mass was pressing spinal nerve roots, in 8(16%) patients causing compression of spinal cord.

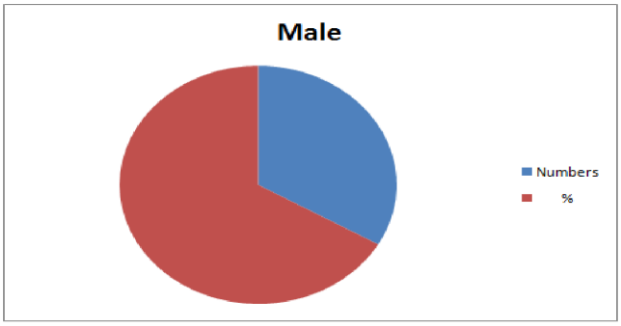
7(14%) patients were of pathological fracture.

Table and Graph-1, Age



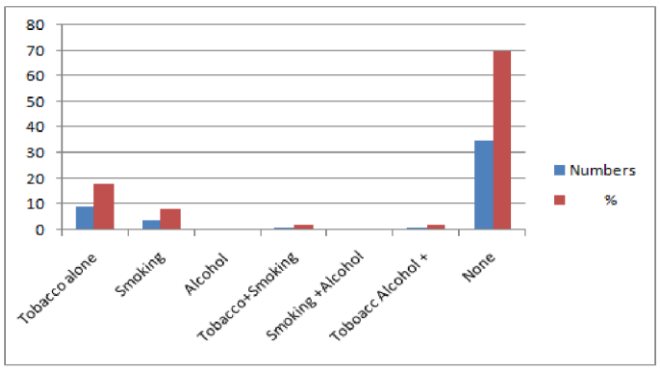
Age	Numbers	%
10-29	3	6
30-49	20	40
50-69	23	46
70-89	3	6
90-109	1	2

Table and Graph-2,Sex



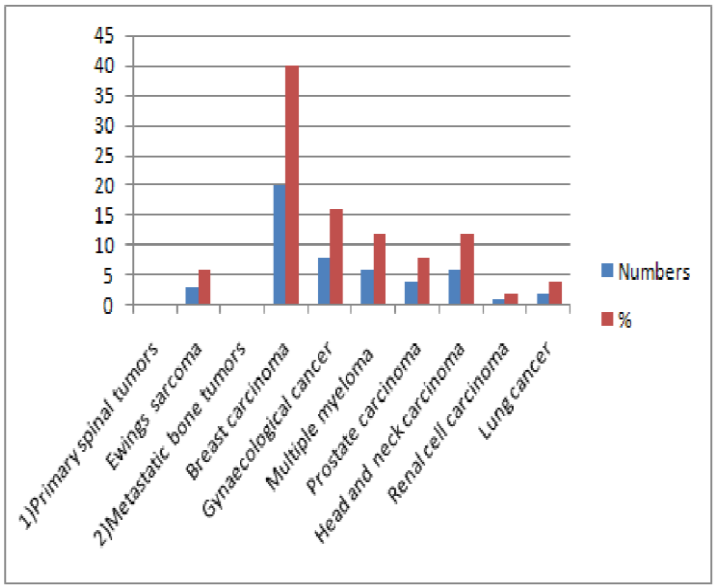
	Numbers	%
Male	18	36
Female	32	64

Table and Graph-3, Addiction



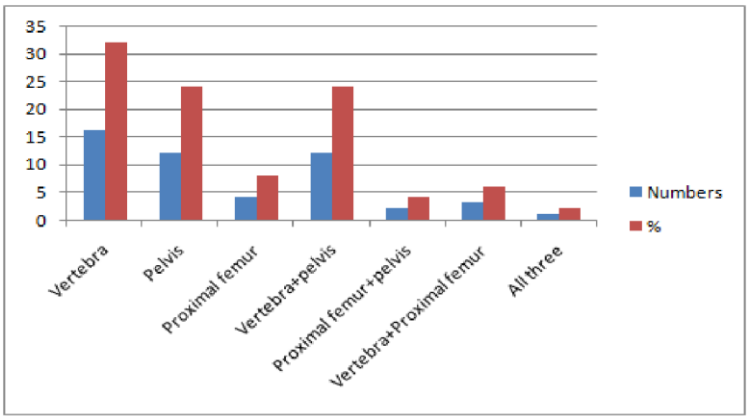
	Numbers	%
Tobacco alone	9	18
Smoking	4	8
Alcohol	0	0
Tobacco+Smoking	1	2
Smoking +Alcohol	0	0
Toboacco+ Alcohol	1	2
None	35	70

Table and Graph-4, Types of malignancy



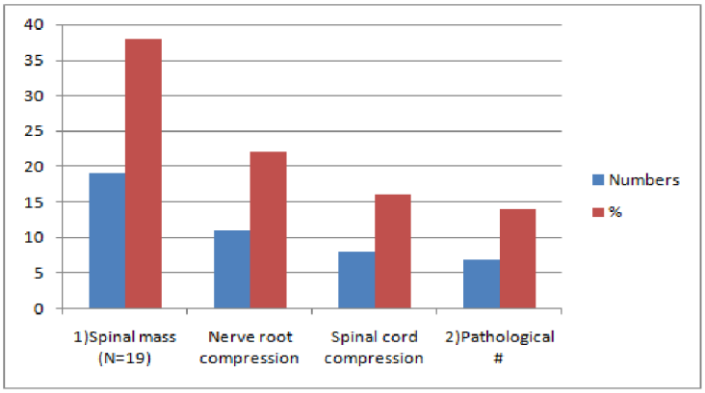
Types	Numbers	%
1)Primary spinal tumors		
Ewings sarcoma	3	6
2)Metastatic bone tumors		
a-Breast carcinoma	20	40
b-Gynaecological cancer	8	16
c-Multiple myeloma	6	12
d-Prostate carcinoma	4	8
e-Head and neck carcinoma	6	12
f-Renal cell carcinoma	1	2
g-Lung cancer	2	4

Table and Graph-5, Site of bony disease

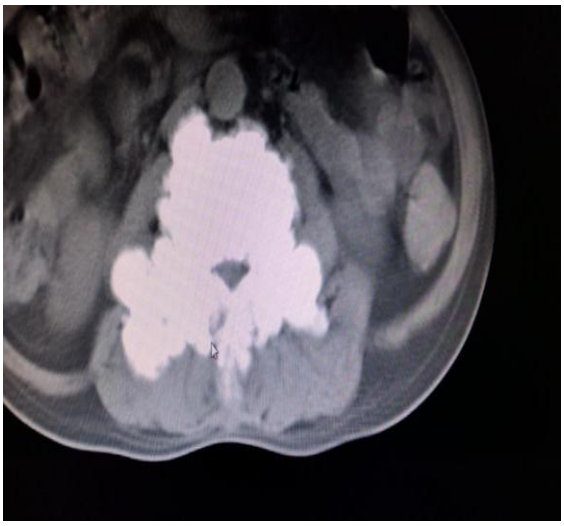


	Numbers	%
Vertebra	16	32
Pelvis	12	24
Proximal femur	4	8
Vertebra+pelvis	12	24
Proximal femur+pelvis	2	4
Vertebra+Proximal femur	3	6
All three	1	2

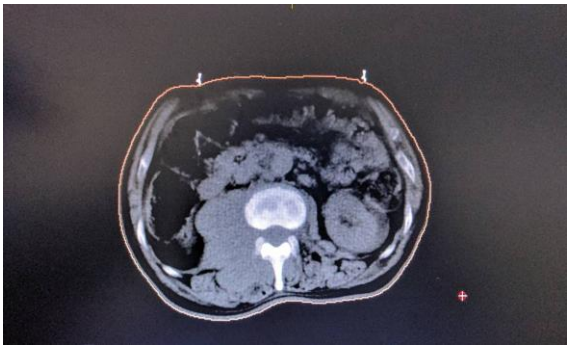
Table and Graph-6, Bony metastasis association



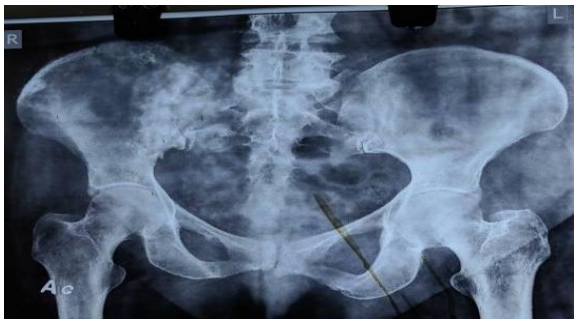
	Numbers	%
1) Spinal mass (N=19)	19	38
1.a) Nerve root compression	11	22
1.b)Spinal cord compression	8	16
2)Pathological fracture	7	14



CT scan axial view of vertebra Bone scan showing uptake



CT scan axial view of vertebra with spinal mass



X-ray AP view of pelvis

MRI sagittal view of spine

Discussion

Back pain is presenting symptom in 90% cases of spinal tumors (Gilberts RW, 1978).20,000 cases arises each year (BlackP,1979)

Most metastatic bone lesions occur in adults older than 50 years, while most sarcomas occur in adolescents or young adults (<30 years).

In our study 23(46%) patients belongs to age range of 50-69 years. Incidence of bone metastasis in female 32(64%) was more common than male 18(36%).35 (70%) patients were not addicted, this may be due to female dominating in numbers and not addicted.

In females, the breast and lungs are the most common primary cancer sites; approximately 80% of cancers that spread to bone arise in these locations

(AlarmoELet al 2010,Doot RK et al, 2010,Hung JJ et al, 2010)

In males, cancers of the prostate and lungs make up 80% of the carcinomas that metastasize to bone [Edwards J et al 2010) The remaining 20% of primary disease sites in patients of both sexes are the kidney, gut, and thyroid as well as sites of unknown origin.

Brihaye et al reviewed 1,477 cases of spinal metastases with epidural involvement and found that 16.5% arose from primary tumors in the breast, 15.6% from the lung, 9.2% from the prostate, and 6.5% from the kidney.

In our study also female with breast cancer had maximum 20 (40%) incidence of vertebral metastasis. In male multiple myeloma and head &neck cancer had maximum 6 (12%) incidence of vertebral metastasis.

Metastasis is more prevalent in the axial skeleton compared to the appendicular skeleton, as the former has a higher percentage of red bone marrow. The areas commonly involved are the pelvis, spine. This is due to Batson's vertebral venous plexus, which bypasses the lung circulation. A cadaver study by Sundaresan et al has demonstrated that 30%–90% of patients with terminal cancer had spinal metastasis

In our study vertebral metastasis was associated with spinal mass in 19(38%) patients, In 11(22%) patients mass was pressing spinal nerve roots, in 8(16%) patients causing compression of spinal cord. 7(14%) patients had pathological fracture.

Conclusion

Back pain is one of the most prevalent medical problems, and is usually benign. However, in patients with a history of cancer metastasis to vertebra, spine is very common.

Metastases may present as mechanical pain, radicular pain or weakness, or with myelopathy.

Management of back pain in metastatic bone metastasis involve combination of pain based on specific patients, prognosis, neurological status, age, primary histopathology.

References

1. Moore, J.E. (2010). Chronic low back pain and psychosocial issues. *Phys Med RehabilClin NAm,* Vol. 21, pp.801-15.
2. Henschke, N., Maher, C.G., Refshauge, K.M., Herbert, R.D., Cumming, R.G., Bleasel, J.,York, J., Das, A. &McAuley, J.H. (2009). Prevalence of and screening for seriousspinal pathology in patients presenting to primary care settings with acute low back pain. *Arthritis Rheum,* Vol. 60, pp.3072-80
3. Dagenais, S., Tricco, A.C. & Haldeman, S. (2010). Synthesis of recommendations for the assessment and management of low back pain from recent clinical practice guidelines. *Spine J,* Vol. 10, pp.514-29.
4. Guillevin, R., Vallee, J.N., Lafitte, F., Menuel, C., Duverneuil, N.M. &Chiras, J. (2007). Spine metastasis imaging: review of the literature. *J Neuroradiol,* Vol. 34, pp.311-21
5. Sciubba, D.M., Nguyen, T. & Gokaslan, Z.L. (2009). Solitary vertebral metastasis. *Orthop Clin North Am,* Vol. 40, pp.145-54, viii.
6. Chamberlain, M.C. &Kormanik, P.A. (1999). Epidural spinal cord compression: a single institution's retrospective experience. *Neuro Oncol,* Vol. 1, pp.120-3.
7. Bach, F., Larsen, B.H., Rohde, K., Borgesen, S.E., Gjerris, F., Boge-Rasmussen, T., Agerlin, N.,Rasmusson, B., Stjernholm, P. & Sorensen, P.S. (1990). Metastatic spinal cordcompression. Occurrence, symptoms, clinical presentations and prognosis in98 patients with spinal cord compression. *Acta Neurochir (Wien),* Vol. 107, pp.37-43
8. Cole, J.S. &Patchell, R.A. (2008). Metastatic epidural spinal cord compression. *Lancet Neurol,*Vol. 7, pp.459-66
9. Smith, H.S. (2011). Painful osseous metastases. Pain Physician, Vol. 14, pp.E373-403.
10. Shaw, B., Mansfield, F.L. & Borges, L. (1989). One-stage posterolateral decompression andstabilization for primary and metastatic vertebral tumors in the thoracic andlumbar spine. *J Neurosurg,* Vol. 70, pp.405-10
11. Sundaresan, N., Sachdev, V.P., Holland, J.F., Moore, F., Sung, M., Paciucci, P.A., Wu, L.T.,Kelligher, K. & Hough, L. (1995). Surgical treatment of spinal cord compressionfrom epidural metastasis. *J ClinOncol,* Vol. 13, pp.2330-5.
12. Ratanatharathorn, V., Powers, W.E., Moss, W.T. & Perez, C.A. (1999). Bone metastasis: review and critical analysis of random allocation trials of local field treatment. *Int J Radiat Oncol Biol Phys,* Vol. 44, pp.1-18.
13. Bilsky, M.H., Boland, P., Lis, E., Raizer, J.J. & Healey, J.H. (2000). Single-stage posterolateral transpedicle approach for spondylectomy, epidural decompression, and circumferential fusion of spinal metastases. *Spine (Phila Pa 1976),* Vol. 25, pp.2240-9,discussion 250
14. Byrne, T.N. (1992). Spinal cord compression from epidural metastases. *N Engl J Med,* Vol.327, pp.614-9
15. Gilbert RW, Kim JH, Posner JB. Epidural spinal cord compression from metastatic tumor: diagnosis and treatment. Ann Neurol 1978;3:40–51

16. Black P. Spinal metastasis: current status and recommended guidelines for management. Neurosurgery 1979; 5:726–746.
17. Alarmo EL, Kallioniemi A. Bone morphogenetic proteins in breast cancer - dual role in tumourigenesis? *Endocr Relat Cancer*. 2010 Mar 24.
18. Doot RK, Muzi M, Peterson LM, Schubert EK, Gralow JR, Specht JM, et al. Kinetic analysis of 18F-fluoride PET images of breast cancer bone metastases. *J Nucl Med*. 2010 Apr. 51(4):521-7.
19. Hung JJ, Jeng WJ, Hsu WH, Wu KJ, Chou TY, Hsieh CC, et al. Prognostic factors of postrecurrence survival in completely resected stage I non-small cell lung cancer with distant metastasis. *Thorax*. 2010 Mar. 65(3):241-5.
20. Edwards J. Src kinase inhibitors: an emerging therapeutic treatment option for prostate cancer. *Expert OpinInvestig Drugs*. 2010 Apr 5.
21. Brihaye J, Ectors P, Lemort M, Van Houtte P. The management of spinal epidural metastases. Adv Tech Stand Neuro surg 1988; 16:121–176.