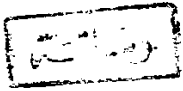


الطبيب

Pathological Fractures Of The Spine Diagnosis And Management

Essay

Submitted in Partial Fulfillment of
The Master Degree "M.Sc."
In Orthopaedic Surgery



By

Hesham Mohamed Kamal Gomaa

M.B., B.Ch.

53662

[Signature]

Under The Supervision of

Prof. Dr. Ahmed Z. El Sobky

Head of Department of Orthopaedic Surgery
Faculty of Medicine, Ain Shams University

617-375
H.M

Prof. Dr. Mohamed S. El Sokkary

Assist. Prof. of Orthopaedic Surgery
Faculty of Medicine, Ain Shams University

[Signature]

Dr. Tarek M. Samy

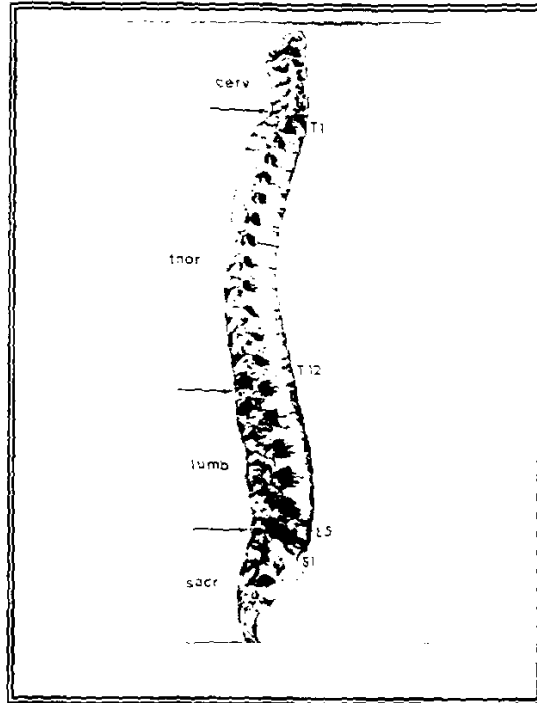
Lecturer of Orthopaedic Surgery
Faculty of Medicine, Ain Shams University

*Faculty of Medicine
Ain Shams University*

1997







وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ
إِلَّا قَلِيلًا

الأسراء/ ٨٥

ACKNOWLEDGEMENT

First of All, Thanks To GOD

I am so fortunate to carry out this work under the guidance of three of our professors ***Prof. Dr. Ahmed Z. El Sobky, Prof. Dr. Mohamed S. El Sakkary, Dr. Tarek M. Samy.*** Special thanks must be presented to Dr. Tarek M. Samy who offered me a lot of his knowledge, time, and patience.

I would like to express my great and sincere appreciation to my professors for their efforts to promote scientific and practical level of our hospitals, senior and junior staff, and residents.

Hesham M. Kamal



TO ...

My Family



TO ...

My Wife

and

My Sons ...

Mohamed

&

Islam

CONTENTS

Subjects	Page
Chatper (I): Introduction	1-10
• Introduction	1
• Applied Anatomy and Biomechanics of The Spine	1
• Kinematics of The Spine	4
• Vascular Anatomy of The Vertebral Column	7
Chatper (II): Pathology Of Diseases Involved In Fractures Of The Spine	11-57
• Benign Local Diseases	16
• Primary Malignant Bone Tumors	20
• Metastatic Tumors Of The Spine	25
• Metabolic Bone Diseases	32
• Inflammatory Disorders	48
• Miscellaneous Disorders	54
Chatper (III): Clinical Presentation	58-63
• History Taking	58
• Physical Examination	59
Chatper (IV): Investigations	64-102
• Radiological Examination	64
* <i>Plain X-Ray</i>	64
* <i>Myelogramy</i>	73
* <i>Angiogramy</i>	74
* <i>Tomogramy and computed tomogramy</i>	75

Cont. CONTENTS

Subjects	Page
* <i>MRI</i>	78
* <i>Scintigraphy</i>	81
* <i>Bone densitometry</i>	85
• Laboratory Investigations	91
• Biopsy Of The spine	96
Chatper (V): Treatment Of Pathological Fractures Of The Spine	103-145
• General Principles in The Management Of Pathological Fractures Of The Spine	103
• <i>Operative treatment of the pathological fractures of the cervical spine</i>	105
• <i>Operative treatment of the pathological fractures of the thoracolumbar spine</i> ...	106
• Spine Instrumentation	106
• Treatment Plan According To The Etiologic Condition	110
* <i>Benign local diseases</i>	110
* <i>Primary malignant bone tumors</i>	115
* <i>Metastatic fracture of the spine</i>	120
* <i>Metabolic bone diseases</i>	130
* <i>Inflammatory disorders</i>	139
* <i>Miscellaenous disorders</i>	143-145
Chatper (VI): Summary	146
Chatper (VII): References	i
Chatper (VIII): Arabic Summary.	

LIST OF FIGURES

No.	Title	Page
1	Trabecular pattern of the vertebral body	3'
2	The functional spinal unit	4'
3	The vascularity of the lumbar vertebra	7'
4	Spinal epidural venous plexus	8'
5	Intra-osseous venous drainage	10'
6	CT scan of normal vertebrae	10'
7	Site distribution of primary bone tumors	15
8	Heamangioma of the spine	17'
9	Aneurysmal bone cyst of the spine	17'
10	Osteoblastoma of the spine	18'
11	Solitary myeloma of the spine	24'
12	Osteosarcoma of the spine	24'
13	Routs of tumor spread to the spine, lymphatic spread	28'
14	Routs of tumor spread to the spine, blood borne spread	28'
15	Spinal infection, sequential stages	50'
16	Tuberculous spondylitis	53'
17	Spinal infection, post-operative contamination	53'
18	Paget's disease	66'
19	Eosinophilic granuloma	66'
20	Chondrosarcoma of the spine	68'
21	Metastatic spine, X-ray and CT scan	69'
22	Metasatic spine, X-ray	69'
23	Osteoporotic vertebra on X-ray, diagram	70'
24	Metabolic bone diseases	70"
25	Metastatic spine, MRI	78'
26	Spinal infection, MRI	78"
27	Spinal infection, MRI	78"
28	Spine fixation	138'
29	Spine fixation	138"
30	Orthosis of the spine	138"
31	Effects of radiation therapy, MRI	144'
TABLES		
A	Laboratory work-up of osteopenia	95'
B	Vertebral wedging, differential diagnosis	95'

ERRATA

Page	Incorrect	Correct	page	Incorrect	Correct
1	. Is	, is	79	cauld	could
10	shifing	shifting	79	ound	found
11	5. Inflamatory	5. Inflammatory	81	generate	generated
15	(&B)	(7A&B)	82	treat-ment	treatment
20	nucleus	nuclei	85	indectection	in detection
23	diskrete	discrete	85	deterction	detection
25	diskovered	discovered	85	diskovered	discovered
29	24 hr.	24 hrs.	89	isability	is ability
30	by.	by Weinstein.	90	nknown	known
33	every 100	every 1000	95	hypercalcemia	hypercalcaemia
42	diskovered	discovered	98	It cases	In cases
43	diskomfort	discomfort	98	systeme	system
46	hyper calcemia	hyper calcaemia	100	labeling	labelling
47	hyper phosphatemia	hyperphosphataemia	101	diskcontinuous	discontinuous
47	aconstant	a constant	103	diskussion	discussion
48	Spondylit is	Spondylitis	104	therapist	therapeutist
49	hematogenous	heamatogenous	109	(L3), to	(L3, to
49	: anterior	: Anterior	117	agreat	a great
52	E. Coli	E. coli	118	clements	elements
52	salmonella	Salmonella	119	diskussed	discussed
52	Staphylo-coccus	Staphylo-coccus	121	more that	more than
52	themetaphysis	the metaphysis	133	nonnarcotic	non narcotic
55	he	the	134	1.5 or SD	1.5 or 2 SD
55	paget's	Paget's	134	it's	its
59	: lymphadenopathy	: Lymphadenopathy	135	an	and
60	localize	localized	135	long-tyerm	long-term
62	nonifistations	manifestations	135	shedules	schedules
68	Osleosarcoma	Osteosarcoma	137	fraft	graft
69	are level	one level	138	Steffe	Steffee
72	Mid-dorsal	mid-dorsal	142	repeatdly	repeatedly
72	Mid-lumbar	mid-lumbar	146	Miscellaenous	Miscellaneous
76	wich	which	147	Simaltiniously	Simultaneously
78	6. CT	6. QCT	147	othermedical	other medical
79	base d	based	148	radiotherapay	radiotherapy

