SPINAL METASTATIC DISEASE; SURVIVAL ANALYSIS OF 146 PATIENTS AND EVALUATION OF FOUR DIFFERENT PREOPERATIVE SCORING SYSTEMS

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Introduction

- Prediction of the survival period before treatment for spinal metastasis is extremely important;
- Various scoring systems have been described to predict the survival periods and to select the ideal treatment modality;
- Using some parameters, such as primary tumor, general condition, visceral metastasis, other skeletal metastasis i.e, total numeric score is calculated and then prediction of mean overall survival time & selection appropriate treatment strategies can be done.

Aim

- To evaluate the predictive value of the four different scoring systems that Tomita, Bauer modified, Tokuhashi revised and Van der Linden and some parameters which also used in this scoring systems

Methods

- Retrospectively 146 patients with spinal metastasis were investigated between 2002-2011 years.
- Primary tumor, age, pathologic vertebra fracture, neurologic deficit, visceral metastasis, diagnosis of primary tumor and its spinal metastasis interval, other skeletal metastasis, involved region of vertebra and undergone spinal surgery were analyzed.
- Patients were also scored by the four different scoring systems.
- The survival period was calculated from date of diagnosis of the spinal metastasis to date of death or last follow-up (minimum 12 months).

Results

Table 1. Demographic view of the 146 patients with metastatic spinal disease

Gender	Female	49
	Male	97
Age (mean)		58
Primary tumour	Lung	54
	Breast	23
	Prostate	23
	Kidney	8
	Testis	2
	Bladder	1
	Ureter	2
	Oesophagus	1
	Stomach	3
	Colangiocellulary	1
	Hepatocellulary	2
	Colorectum	4
	Pancreas	1
	Thyroid	4
	Nasopharenx	3
	Larenx	2
	Unknown	12
Treatment	Conservative	101
	Surgery	45
Pathologic fracture	Yes	40
	No	106
Visceral metastasis	Yes	80
	No	66
Neurologic deficits	Yes	42
	No	104
Karnofsky performance scale	Good (80-100)	60
	Moderate(50-70)	55
	Poor (0-40)	31
Number of spinal metastasis	One	19
	Two	20
	Multiple	107
Diagnosis-metastasis interval	0	93
	<6 months	18
	7-12 months	8
	>12 months	27

Table 2. Primary tumor site and overall survival times

Primary	N	Median OS (month)	Minimum OS (month)	Maximum OS (month)
Lung	54	4,8	1	14
Prostate	23	18,1	1	67
Breast	23	31	2	68
Genitourinary (kidney,ureter,bladder,testis)	13	8,3	1	28
Gastrointestinal (hepatocellular,stomach esophagus,colon,rectum,pancreas colangiocellulary)	12	7,08	2	18
Head-neck (thyroid, larynx, nasopharenx)	9	25,2	2	64
Primary unknown.	12	10,25	1	36

Results

Table 3. Cox regression analysis

	B	SE	Wald	df	P value	Odds ratio	95.0% CI for Exp(B)	
							Lower	Upper
Visceral metastasis	,630	,261	5,847	1	,017	1,880	1,115	3,169
Neurologic deficits	-,059	,299	,039	1	,844	,943	,524	1,695
Other bone metastasis	-,066	,308	,049	1	,825	,936	,520	1,685
Primary unknown (ref.)			38,527	6	,000			
Lung cancer	1,381	,566	5,965	1	,015	3,980	1,314	12,057
GIS cancer	-1,431	1,171	1,493	1	,222	,239	,024	2,374
Breast cancer	-1,167	,697	2,807	1	,094	,311	,079	1,219
Urothelial	-13,315	296,117	,002	1	,964	,000	,000	1,87181E246
Prostate cancer	,011	,657	,000	1	,987	1,011	,279	3,662
Gynecological	,851	,638	1,777	1	,183	2,342	,670	8,187
Age	,006	,011	,307	1	,580	1,006	,985	1,028
Spinal surgery	,678	,342	3,981	1	,047	1,971	1,008	3,854
Vertebral fracture	,775	,298	6,789	1	,009	2,171	1,210	3,894
Region of vertebra (cervical, thoracic, lumbar)	,499	,328	2,314	1	,128	1,646	,866	3,129
Diagnosis-metastasis interval	-,001	,005	,069	1	,793	,999	,989	1,008

Table 4. Cronbach's Alpha value of the scoring systems

	Tokuhashi revised	Van der Linden	Tomita
Bauer modified	0,758	0,776	0,838
Tokuhashi revised		0,729	0,793
Van der Linden			0,744

Results

Figure 1. Analysis of prognostic value of the primary tumor

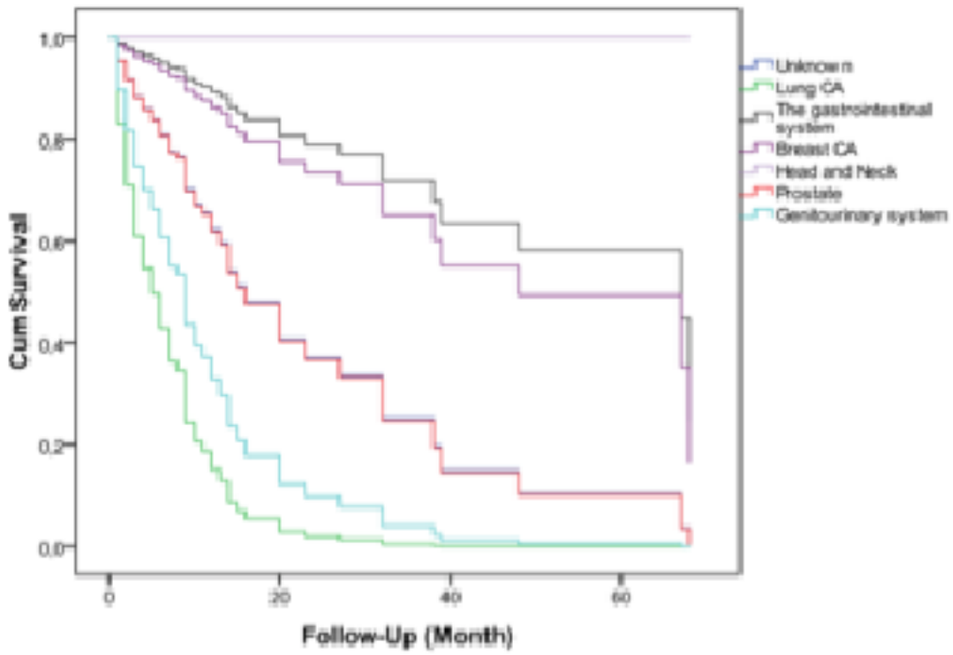
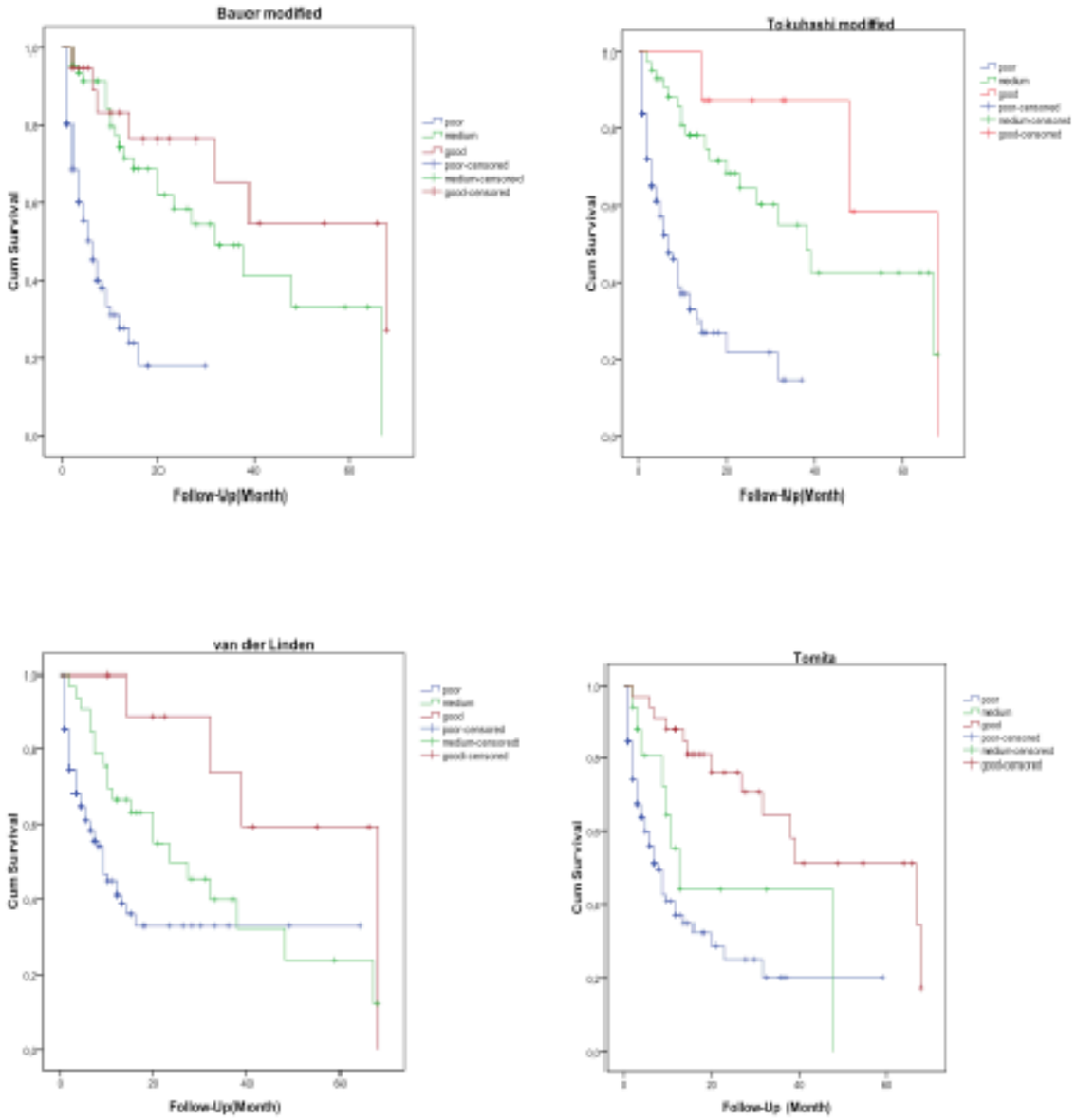


Figure 1.Analysis of four different scoring systems according to Kaplan-Meier survival test



Conclusion

- According to this analysis, lung cancer, spinal surgery, visceral metastasis and pathologic vertebra fracture have shown a negative effect on survival.
- All four scoring systems were reliable for predicting survival of patients with spinal metastatic disease.
- Modified Bauer scoring system seems to be more predictive after two years.

- The authors declare that they have no conflict of interest