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Method

The patients sample consisted of patients with malignancy spine disease consecutively admitted from September 2015 until November 2018 in Soeharso Orthopaedic Hospital. The baseline data were taken and processed from the medical record data we obtained from the Soeharso Orthopaedic Hospital Surakarta Medical Records Department through prior written permission. We conducted interviews at the same time (December 2019) with 44 patients that we had recapitulated. 33 patients were still alive, 5 patients have died while the remaining 7 patients cannot be contacted, and furthermore the patients who cannot be contacted are excluded. A structured questionnaire including details of the symptoms as well as back pain, paresthesia, weakness, and bladder dysfunction were asked to the remaining 38 patients. The other data, including gender, age, diagnose, treatments received, neurological deficit, level of LDH and ALP serum were recorded by supplemented from cross-checking all patient records.

Neurological status was documented and graded as follows: Motor function (0-no contraction; 1-flicker or trace of contraction; 2-active movement possible only with gravity eliminated; 3-active movement against gravity but not resistance; 4-active movement against resistance and gravity; and 5-normal power). Sensory symptoms and signs along with bladder and bowel function were also recorded. We classified these neurological deficits based on the Frankel Classification. Pulmonary metastases was defined as both parenchymal and pleural metastatic lesions. The factors of interest potentially related to the results of the correlation analysis of various pre-treatment factors both clinical and laboratories to the outcome of these patients.

Statistical Analysis

Frequencies by demographic and clinical characteristics for all patients were calculated. Descriptive analytical statistic summary

	None	Incomplete	Complete		
Age					
<20 years old	0(0.0)	0(0.0)	0(0.0)		
20-40 years old	0(0.0)	2(25.0)	6(75.0)		
41-60 years old	5(29.4)	4(23.5)	8(47.1)		
>60 years old	1(7.7)	1(7.7)	11(84.6)	0.150	2.06
Gender					
Female	2(8.7)	6(26.1)	15(65.2)		
Male	4(26.7)	1(6.7)	10(66.7)	0.156	0.26
LDH					
<140	4(30.8)	3(23.1)	6(46.2)		
140-280	0(0.0)	1(11.1)	8(88.9)		
>280	2(12.5)	3(18.8)	11(68.8)	0.08	2.38
ALP					
<53	2(50.0)	1(25.0)	1(25.0)		
53-128	2(12.5)	3(18.8)	11(68.8)	0.331	1.49

Affected segment			
Cervical	2(66.7)	1(33.3)	0.738
Thoracal	19(90.5)	2(9.5)	
Lumbal	8(88.9)	1(11.1)	
Thoracal and Lumbal	3(75.0)	1(25.0)	
Cervical and Thoracal	1(100)	0(0.0)	
ALP: Alkaline Phospatase; LDH: Lactate Dehydrogenase			

Table 3 Correlation between Age, Gender, LDH, ALP, and Affected segment to outcomes (Bivariate).

There are no independent variables that have a significant correlation to the Outcome variable. But it can be seen that the highest risk of patients to experience death is in patients with LDH levels >280 with OR of 0.78 times (Table 4).

Independent Variable	Pulmonal Metastase		p-value	Odds Ratio
	No	Yes		
Age				
<20 years old	0(0.0)	0(0.0)	0.307	0.74
20-40 years old	8(100)	0(0.0)		
41-60 years old	15(88.2)	2(11.8)		
>60 years old	10(76.9)	3(23.1)		
Gender				
Female	21(91.3)	2(8.7)	0.365	2.62
Male	12(80.0)	3(20.0)		
LDH				
<140	12(92.3)	1(7.7)	0.667	1.13
140-280	8(88.9)	1(11.1)		
>280	13(81.3)	3(18.8)		
ALP				
<53	3(75.0)	1(25.0)	0.508	1.15
53-128	15(93.8)	1(6.2)		
>128	15(83.3)	3(16.7)		
Affected Segment				
Cervical	3(100)	0(0.0)	0.757	0.93
Thoracal	18(85.7)	3(14.3)		
Lumbal	7(77.8)	2(22.2)		
Thoracal and Lumbal	4(100)	0(0.0)		
Cervical and Thoracal	1(100)	0(0.0)		

Independent Variable	p-value	B	AOR	95% CI	
				Lower	Upper
LDH	0.243	1.22	3.38	0.43	26.18
ALP	0.637	0.51	1.67	0.19	14.02
Age	0.798	0.19	1.22	0.27	5.55
Affected segment	0.575	-0.29	0.75	0.27	2.09

ALP: Alkaline Phosphatase;
LDH: Lactate Dehydrogenase

Table 6 Multivariate analysis results of loss of sensibility.

Based on the final model above, shows that the LDH variable have the highest adjusted OR (AOR) with 3.38 times after being controlled with ALP variables, age, and affected segments (Table 7).

Final Model:

Dependent Var: Neurologic deficit

Independent Var: ALP, LDH, age, gender and affected segment

Variable Independent	p-value	B	AOR	95% CI	
				Lower	Upper
LDH	0.069	1.77	5.89	0.87	39.87
ALP	0.258	-1.61	0.19	0.01	3.27

ALP: Alkaline Phosphatase;
LDH: Lactate Dehydrogenase

Table 7 Multivariate analysis results of neurologic deficit.

Based on the final model above, shows that the LDH variable have the highest adjusted OR (AOR) with 5.89 times (Table 8).

Final Model:

Dependent Var: Patients Outcomes

Independent Var: ALP, LDH, age, gender and affected segments

Variable Independent	Nilai P	B	AOR	95% CI	
				Lower	Upper
ALP	0.124	1.76	5.81	0.62	ef

assessed improvement in neurological conditions after surgery. Our hope for further study is to be more stringent in the follow up of each patient so that can not only present the improvement in the patient's