

Study of Lactate Dehydrogenase in Patients with Acute Stroke

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Short Communication

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Article History

Received: 10.12.2017

Accepted: 16.12.2017

Published: 30.12.2017

DOI:

10.21276/sasjm.2017.3.12.4



Abstract: Lactate Dehydrogenase (LDH), an enzyme found in living cells, is released during the tissue damage. The study was planned to study the level of serum lactate dehydrogenase and consciousness level in patients of stroke. Level of serum lactate dehydrogenase and consciousness level of 20 stroke patients were estimated and correlated with the disease and its severity. Serum lactate dehydrogenase was significantly elevated in 17(85%) of the patients. The Spearman correlation between serum lactate dehydrogenase and stroke was significant (Spearman correlation=0.546, $p=0.019$). However, the change in the serum lactate dehydrogenase was not related to the severity of the disease as assessed by Glasgow coma scale. Lactate Dehydrogenase is significantly increased in patients with stroke which may have beneficial role in diagnosis and management of acute stroke.

Keywords: Lactate dehydrogenase, Stroke, Glasgow coma scale

INTRODUCTION

Lactate dehydrogenase is an enzyme found in nearly all living cells (animals, plants and prokaryotes). The fact that the lactate dehydrogenase is present in human blood serum was demonstrated by Hill and Levi in 1954[1]. Wroblewski and La Due observed an increase in activity similar to that of GO-T in cases of cardiac infarction [2]. LDH exists in four distinct enzyme classes. LDH is expressed extensively in body tissues, such as blood cells and heart muscle. Because it is released during tissue damage, it is a marker of common injuries and diseases such as heart failure.

There are several conditions when serum LDH raises including cancerous conditions to noncancerous diseases like hypothyroidism, anemia, pre-eclampsia, meningitis, encephalitis, acute pancreatitis, HIV and lung or liver disease. LDH level is also high in patients with sickle cell disease [5]. LDH has been extensively studied in the patients of myocardial infarction. There are a lot of studies of SGOT, and cerebrospinal fluid LDH in patients with stroke. However, there are only few studies of serum LDH in acute stroke. The present study is, therefore aimed at determining the changes, if any, present in LDH Of patients with acute stroke. LDH increases with the tissue damage in many conditions. This is the study focused to know the significance of LDH in acute stroke and the consciousness level.

SUBJECTS AND METHODS

This study was conducted at Department of Medicine, Nepalgunj Medical College and Teaching Hospital, Kohalpur from January 2015 to December 2016. The patients were diagnosed as acute stroke after taking history, clinical examination and CT/MRI studies. The patients with Transient Ischemic Attack

and Subarachnoid Hemorrhage were not enrolled in this study. Total of 20 patients were enrolled in this study. Level of consciousness was assessed using Glasgow coma Scale at the same time when the blood was drawn for Lactate Dehydrogenase examination. Serum Lactate Dehydrogenase was examined in the Department of Biochemistry using kinetic assay method. Data were analysed using IBM SPSS Statistics 20. The Spearman correlation was used to determine the correlation between Lactate dehydrogenase and acute stroke.

RESULTS

The total of 20 patients was enrolled in the study. The age range was 35-76 with 13 patients of intracerebral hemorrhage and 7 patients of cerebral infarction. 9 out of 20 patients were female and remaining 11 were male. The mean age was 55.70 ± 12.770 . The serum lactate dehydrogenase was increased above the upper limit of normal in 17(85%) of the patients. The Glasgow Coma Scale was 8 or below in 5(25%) of the patients. Using Spearman correlation, the correlation between acute stroke and LDH was found to be significant. (Spearman correlation

Table-1: Sex distribution of stroke patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	11	55.0	55.0	55.0
	female	9	45.0	45.0	100.0
	Total	20	100.0	100.0	

Table-2: Diagnosis of stroke patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ischemic Stroke	7	35.0	35.0	35.0
	Hemorrhagic Stroke	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

DISCUSSIONS

LDH is inexpensive, less time consuming and commonly available test in the hospital. Evaluation of enzyme levels such as serum LDH in cases of stroke was of keen interest to determine its changes and significance in prognosis. Serum LDH can be raised in several conditions. Many of the studies have concentrated on LDH of cerebrospinal fluid in patients with acute stroke. The study done by Yair Lampl *et al.* showed the increase in cerebrospinal fluid LDH and did not show the change in the level of serum LDH in patients with acute stroke [3]. The study done by Parakh N *et al.* also did not show any increase in the serum LDH. The study also mentioned that LDH level were not related to the severity of disease as assessed by the Glasgow Coma Scale [4]. Our study does not totally agree with the previous studies. We found the significant correlation between the acute stroke and serum Lactate Dehydrogenase. However, the lactate dehydrogenase was not related to the severity of disease as assessed by Glasgow Coma Scale in our study which equates with the study done by Parakh N *et al.* [4]. Our study showed the increase of LDH enzyme in acute stroke. However, increased LDH activity failed to show the correlation with prognosis. Considering the result, we suggest the examination of serum LDH in acute stroke may have significance in diagnosis of the patients especially where imaging studies fail to show the evidence of stroke.

CONCLUSION

On the basis of this study, it can be concluded that serum lactate dehydrogenase has got significance in acute stroke. The study of serum lactate dehydrogenase may be beneficial in some cases for the diagnosis of stroke.

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