

To Study of Serum Lactate Dehydrogenase in Chronic Obstructive Pulmonary Disease Patients at Tertiary Care Hospital, Rajasthan.

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Abstract

Background- The characteristic feature of chronic obstructive pulmonary disease (COPD) is constant airflow limitation which is progressive. It is associated with an enhanced chronic inflammatory response in the airways.

Methods- It is a prospective study of 80 subjects divided into two groups including 40 healthy controls and 40 cases of COPD. Patients with history of respiratory infection, pneumonia, coronary heart disease, heart failure, and neuromuscular disease, renal and hepatic dysfunction were excluded.

Results- The statistically significant increased value of serum lactate dehydrogenase in cases as compared to control group with p value<0.05.

Conclusion- LDH levels increased in COPD patients.

Keywords- COPD, Lactate dehydrogenase, Smoking.

Introduction

The characteristic feature of chronic obstructive pulmonary disease (COPD) is constant airflow limitation which is progressive. It is associated with an enhanced chronic inflammatory response in the airways. ¹COPD is a chronic respiratory disease characterized by a decline in lung function over time and accompanied by respiratory

symptoms, primarily dyspnoea, cough, and sputum production. Exacerbations and co-morbidities contribute to the overall severity in individual patients.²Consequently, COPD is associated with a significant economic burden, including hospitalization, work absence, and disability. All these aspects of COPD are a matter of great concern as the current data suggest that COPD mortality is increasing.^{3,4}

Lactate dehydrogenase (LDH) is an intracellular cytoplasmic enzyme found in all tissues of the human body. There are five LDH isoenzymes present in blood, which are classified according to their electrophoretic movement. LDH-1 moves faster while LDH-5 is the slowest one. Elevated LDH isoenzymes levels indicate the organ specific origin of disease such as LDH-1, LDH-2 in heart, kidneys, erythrocytes and brain; LDH-3 in lungs, thyroid, pancreas, adrenals, spleen, thymus, lymph nodes and leukocytes; LDH-4 in skeletal muscles and the LDH-5 in hepatic system.

Normal concentration LDH in the serum is due to normal tissue breakdown which increases significantly after tissue damage. LDH being a cytoplasmic cellular enzyme if increased in serum serve as indicator suggestive of

disturbance of cellular integrity induced by pathological conditions.⁵ LDH is raised in number of pathological conditions like hematological disorders acute myocardial infarction, liver diseases and several respiratory conditions. Respiratory conditions include bronchial asthma, bronchopneumonia, pulmonary tuberculosis, chronic obstructive pulmonary disease (COPD). All these conditions have inflammation, cell damage or both as underlying pathological mechanism.⁶

Material and Methods

It is a prospective study of 80 subjects divided into two groups including 40 healthy controls and 40 cases of COPD. Patients with history of respiratory infection, pneumonia, coronary heart disease, heart failure, and neuromuscular disease, renal and hepatic dysfunction were excluded.

Overnight fasting blood samples were taken by venipuncture in plain vaccutainer. Grossly hemolysed and lipemic samples were excluded.

Results

Mean age in COPD patients was 38.20± 12.30years and control patients was 37.30± 11.30 years and age range was 25-65 years. Both groups were well matched for age and sex distribution.

Table .1 Comparision of biochemical parameters in case and controls.

Parameters	Case (n=30)	Control (n=30)	p-value
Serum LDH(U/L)	356.30± 72.50	296.30± 81.20	<0.05

The statistically significant increased value of serum lactate dehydrogenase in cases as compared to control group with p value<0.05.

Discussion

Pulmonary system related disorders as possible sources of serum LDH abnormalities have been underreported, and

isoenzyme patterns are seldom measured. This is the first study of its own kind in India to assess serum LDH level and lipid profile in patients with COPD. We found significant increase in Serum LDH level in the patients with COPD. This elevation is because of a predominant increase in serum LDH 3 isoenzymes which is released from cells of lung and airway origin.⁷ Airway mucosal changes consisting of increased broncho-alveolar mast cells, mononuclear phagocytic cells and epithelial shedding have been observed in chronic cough. In patients with chronic cough, a homogenous rise in cellular markers of inflammation has been observed in the bronchoalveolar lavage fluid⁸.

It is possible that persistent coughing may itself induce a degree of inflammation because of the trauma of the lining epithelium of the respiratory tract as well as that of the lung parenchyma. It is likely that the inflammatory process in patients with chronic cough is the cause of the increase in LDH.

Conclusion

LDH level increased in COPD patients.

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