ABSTRACT ---

Reporting of misleading falsely Low HbA1C values in presence of Hb Variant – Common Problem and suggested solutions

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Introduction – Glycosylated Hemoglobin (HbA1C) is most widely used to monitor long term glycemic control in diabetic patients and is directly proportional to the mean concentration of plasma glucose in the blood and the life span of red blood cells . But sometimes falsely low levels not corresponding to their respective plasma glucose levels are observed. This may be because of abnormal haemoglobin variant. HPLC can be used as a screening tool to pick rare haemoglobin variants. In such cases reporting of HbA1C is a challenge. Immunoassay methods are felt to be reliable at detecting correct HbA1C value in such cases.

Design – All the HbA1C samples (n=11287) received in Fortis Hospital Laboratory during three years period (2015-2017) were processed via HPLC method and screened. Falsely low values observed were screened for abnormal Hb Variant and analysed via immunoassay technique to know the correct HbA1C value.

Results --- only 14 cases (0.12%) could not be reported due to abnormally low HbA1C value by HPLC method. Out of 14 only 11 cases could be screened for abnormal Hb Variant via haemoglobin electrophoresis. Out of 11 cases three cases were of HbE, Five cases were of HbD Punjab and One case of HbJ – Meerut and Hb Lepore each. Correct HbA1C value could be reported via immunoassay technique.

Conclusions – In the presence of Homozygous and compound heterozygous variant falsely low HbA1C values are observed indicating the presence of abnormal variant. It is recommended that interpretation of falsely low HbA1C results should be done carefully by immunoassay technique and presence of type of Hb Variant to be identified by haemoglobin electrophoresis.

Key Words- Glycosylated Hemoglobin (HbA1C), High performance Liquid Chromatography(HPLC), Hemoglobin Variant, Immunoassay technique.

Professional Biography ---

Dr. Neelima Verma is currently associated with Fortis Healthcare, India.She completed her PhD in the year 1989 and has since worked in various highly reputed hospitals of Delhi. Dr Neelima Verma has been actively involved in improving Laboratory Quality management Systems and is currently NABL Medical Lead assessor. She has many a feathers in her cap , She is also guest faculty with National institute of training and Standardization and quality Council of India for ISO 15189:2012 IA course. She is a life member of ACBI and ACBM. She has more than 20 National and International publications to her credit and has been actively participating in various national and international conferences/ seminars and promoting the cause of research in the field of Biochemistry. She is review board member of reputed journals too.



