



First Observation of Hb South Florida [beta 1(NA1) Val>Met] in Turkey

Türkiye’de Gözlenen ilk Hb South Florida [beta 1(NA1) Val>Met] Olgusu

Ayça Dilruba Aslanger¹, Aynur Akbulut², Gül Tokgöz³, Sakine Türkmen⁴, Kanay Yararbaş⁵

¹ Kocaeli Derince Training and Research Hospital, Medical Genetics Department, Kocaeli, Turkey

² Kocaeli Derince Training and Research Hospital, Department of Pediatrics, Kocaeli, Turkey

³ Kocaeli Derince Training and Research Hospital, Department of Hematology, Kocaeli, Turkey

⁴ Hemoglobinopathy Screening Center, Child, and Family Planning, Department of Health of Mother, Kocaeli, Turkey

⁵Düzen Laboratory Group, İstanbul, Turkey

To the Editor,

Hemoglobin (Hb) South Florida [beta1(NA1) Val>Met] is a rare beta hemoglobin variant that was first reported in 1985 from South Florida [1,2]. We report here, for the first time in Turkey, a 17-year-old female originally from Kars with Hb South Florida. She was referred to the Hemoglobinopathy Screening Center because of the history of thalassemia in some of her distant relatives. The variant was detected by high-performance liquid chromatography (HPLC) and confirmed with DNA sequencing. HPLC was performed with a Primus Ultra2 Hb variant analyzer (Trinity Biotech Dublin, Ireland) with the following results: Hb rate for HbA0 44%, HbA2 3.2%, spurious HbA1c peak (Acetyl Hb South Florida) 16%, Hb X₁ (Hb South Florida 1) 26.3%, Hb X₂ (Hb South Florida 2) 4.2%, and HbA1 (the sum of all HbA1 forms including those with several minor peaks [range: 0.1%-3.4%]) 6.3% (Figure 1). Red blood cell parameters were all in normal ranges, as follows: Hb 13.2 g/dL, Hct 38.5%, RBC 4.8×10¹²/L, MCV 81 fL, MCH 27.7 pg, and MCHC 34.2 g/dL. HbA1c was shown to be 3.0% with the Glycohemoglobin Analyzer’s standard analysis mode (Tosoh Bioscience, Tokyo, Japan). DNA sequencing (ABI 3130 Genetic Analyzer, Applied Biosystems, Foster City, CA, USA) confirmed this Hb variant

with a heterozygous mutation at the β-globin gene exon 1 codon 2 (c.4G>A, p.Val2Met, rs33395835, NG_000007.3). This mutation, next to the initiation codon, was named as codon 1 by the Huisman Database [beta1(NA1) Val>Met] [3].

Hb South Florida was first reported in a Caucasian boy who had markedly elevated HbA1c (14.8%) [1,2]. The detecting methods for HbA1c have the potential of detecting coexisting Hb variants or hemoglobinopathies. However, the HPLC techniques for HbA1c testing used in many hospitals are not designed for diagnosing Hb variants [4]. Thus, our case had a spuriously high HbA1c result of 16% in HPLC for variant hemoglobinopathy analysis mode, which measures acetyl Hb, and HbA1c of 3% in HPLC for standard analysis mode. Therefore, it is hard to identify this variant with a routine HbA1c measurement.

This hemoglobin variant in the heterozygous state does not produce any clinical symptoms. Only one other patient from Malaysia has been reported since the original report with a compound heterozygote mutation of c.4G>A (GTG>ATG) and IVS1-1 (G→A) [5,6]. Although the combination of Hb South Florida with β-thalassemia was found in the Malay with no associated clinical symptoms except hematological results consistent with the beta thalassemia trait, we knew that the

Address for Correspondence: Ayça Dilruba ASLANGER, M.D.,
Kocaeli Derince Training and Research Hospital, Medical Genetics Department, Kocaeli, Turkey
Phone: +90 262 317 80 00 E-mail: aaslanger@yahoo.com

Received/Geliş tarihi : January 14, 2013

Accepted/Kabul tarihi : March 01, 2013

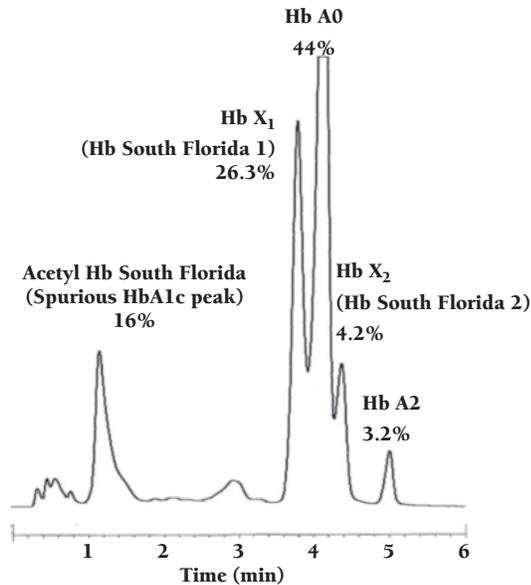


Figure 1: HPLC result of heterozygous Hb South Florida case.

interactions between 2 different Hb variants could result in more severe disease. This is especially important for countries like Turkey where the prevalence of the β -thalassemia carrier state and abnormal Hb is very high [7].

Key words: Abnormal hemoglobin, Hemoglobinopathy, HbA1c, Hb South Florida

References

1. Boissel JP, Kasper TJ, Shah SC, Malone JI, Bunn HF. Amino-terminal processing of protein: hemoglobin South Florida, a

variant with retention of initiator methionine and N-alpha-acetylation. Proc Natl Acad Sci USA 1985;82:8448-8452.

2. Shah SC, Malone JI, Boissel JP, Kasper TJ. Hemoglobin South Florida. New variant with normal electrophoretic pattern mistaken for glycosylated hemoglobin. Diabetes 1986;35:1073-1076.
3. Huisman THJ, Carver MFH, Efremov GD. Hb South Florida. In: A Syllabus of Human Hemoglobin Variants (1996). Huisman Syllabus [database on the Internet]. The Sickle Cell Anemia Foundation, Augusta, GA, USA. Last accessed January 2013; available at http://globin.bx.psu.edu/cgi-bin/hbvar/query_vars3?mode=output&display_format=page&i=713.
4. Thomas LB, Agosti SJ, Man MA, Mastroides SM. Screening for hemoglobinopathies during routine hemoglobin A1c testing using the Tosoh G7 Glycohemoglobin Analyzer. Ann Clin Lab Sci 2007;37:251-255.
5. Tan JA, Chin PS, Wong YC, Tan KL, Chan LL, George E. Characterization and confirmation of rare beta-thalassaemias mutations in the Malay, Chinese and Indian ethnic groups in Malaysia. Pathology 2006;38:437-441.
6. Tan JA, Tan KL, Omar KZ, Chan LL, Wee YC, George E. Interaction of Hb South Florida (codon 1; GTG→ATG) and HbE, with beta-thalassaemia (IVS1-1; G→A): expression of different clinical phenotypes. Eur J Pediatr 2009;168:1049-1054.
7. Acemoglu H, Beyhun NE, Vancelik S, Polat H, Guraksin A. Thalassemia screening in a non-prevalent region of a prevalent country (Turkey): is it necessary? Public Health 2008;122:620-624.