These genetic disorders, if co-inherited with HbA2, are always detected at HPLC or electrophoresis and commonly are associated with reduced HbA2 levels. In screening programs for \(\alpha\)-thalassemia carrier identification, these disorders may modify the HbA2 levels making difficult the \(\alpha\)-thalassemia carrier identification. In this study we have performed the molecular analysis of \(\alpha\)-globin gene in subjects with reduced HbA2 (<1.8%).

**RESULTS**

- Eleven different nucleotide substitutions have been identified: 8 of them have been previously described and 3 were of new identification (fig 1). All the identified mutations were in the coding regions, therefore responsible of structural HbA2 variants.
- The most common mutations were cd 27 G>T (HbA2 Yialousa or +27) and HbA2 CD7 (U.V.)
- Four variants (cd 16G>C HbA2 or B2), cd 93 T>G HbA2 S. Anticco, cd 116G>A HbA2 Coburg, cd 142 C>A HbA2 Fitzroy) were evident as abnormal peaks or bands on HPLC or electrophoresis respectively (fig 2).

**CONCLUSIONS**

- \(\alpha\)-globin gene mutations are heterogeneous in Sardinian population.
- All mutations are located in the exonic regions of the \(\alpha\)-globin gene, therefore all are structural variants which are not always detected at HPLC or electrophoresis and commonly are associated with reduced HbA2 levels.
- The cd 27 G>T mutation resulting in Alu27Ser aminoacid change and at the same time activating a criptic splice site (Mo et al) is the most common mutation in Sardinian population, as well as in the Cypriot population. Since the \(\alpha\)=27 associated haplotype is different in these populations, the independent origin of the mutation can be hypothized (Trifillis et al)
- In screening programs for \(\beta\)-thalassemia, the molecular characterization of mutations in the \(\alpha\)-globin gene may be useful to identify double heterozygotes for \(\beta\)-thalassemia and \(\alpha\)-globin gene mutations, that may have normal or borderline HbA2 levels and so escaping identification.

**References**

Cao A. "Carrier screening and genetics counseling in \(\alpha\)-thalassemia". Int J Hematol. 2003 Dec;78 Suppl 1:51-8. [PubMed] [CrossRef]