



Editorial

Inherited Arrhythmogenic Syndromes

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Inherited arrhythmogenic syndromes (IASs) are a heterogeneous group of rare cardiac entities of genetic origin [1]. IASs usually lead to malignant arrhythmias, syncope and sudden cardiac death (SCD) [2]. A lethal episode could be the first manifestation of an IAS, so early identification and adoption of therapeutic measures are essential to reduce the risk of malignant arrhythmias and SCD [3]. Incomplete penetrance and variable expressivity are hallmarks of IAS; therefore diagnosis, risk stratification and adoption of therapeutic measures must be carried out in a personalized approach [4]. Risk stratification, especially in asymptomatic patients, continues to be one of the greatest clinical challenges today. Due to the improvement in genetic analysis in recent years, genetic testing has been included as part of global diagnosis, helping to unravel the origin of diseases but also facilitating the early identification of relatives who harbour the genetic alteration. In cases of unexplained deaths following a complete autopsy, especially in the young population, it is recommended to perform a post-mortem genetic analysis (molecular autopsy) and family segregation [5]. This early identification is especially important in asymptomatic family members who may harbor a deleterious disorder, which poses a risk of malignant episodes [6]. In order to incorporate genetic information into the diagnosis, an exhaustive and conclusive interpretation is crucial [7]. However, a suitable interpretation of genetic data represents another significant challenge for clinicians. Given the complexity of IAS, a multidisciplinary approach is necessary in specialized centers that include a team of cardiologists, pediatricians, geneticists, genetic counselors and even psychologists, in order to provide personalized attention to the whole family. This multidisciplinary strategy is increasingly recommended in order to adopt measures to prevent and treat SCD [8]. In this Special Issue dedicated to IAS, different studies focused on diagnosis, prevention and treatment, as well as the genetic bases and pathophysiological mechanisms involved in these arrhythmogenic pathologies, are included.



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References

1. Martinez, H.R.; Beasley, G.S.; Miller, N.; Goldberg, J.F.; Jefferies, J.L. Clinical Insights Into Heritable Cardiomyopathies. *Front. Genet.* **2021**, *12*, 663450. [[CrossRef](#)] [[PubMed](#)]
2. Tfelt-Hansen, J.; Garcia, R.; Albert, C.; Merino, J.; Krahn, A.; Marijon, E.; Basso, C.; Wilde, A.A.M.; Haugaa, K.H. Risk stratification of sudden cardiac death: A review. *Europace* **2023**, *25*, euad203. [[CrossRef](#)] [[PubMed](#)]
3. Scrocco, C.; Bezzina, C.R.; Ackerman, M.J.; Behr, E.R. Genetics and genomics of arrhythmic risk: Current and future strategies to prevent sudden cardiac death. *Nat. Rev. Cardiol.* **2021**, *18*, 774–784. [[CrossRef](#)] [[PubMed](#)]
4. Musunuru, K.; Hershberger, R.E.; Day, S.M.; Klinedinst, N.J.; Landstrom, A.P.; Parikh, V.N.; Prakash, S.; Semsarian, C.; Sturm, A.C.; American Heart Association Council on Genomic and Precision Medicine; et al. Genetic Testing for Inherited Cardiovascular Diseases: A Scientific Statement From the American Heart Association. *Circ. Genom. Precis. Med.* **2020**, *13*, e000067. [[CrossRef](#)] [[PubMed](#)]
5. Martinez-Barrios, E.; Grassi, S.; Brion, M.; Toro, R.; Cesar, S.; Cruzalegui, J.; Coll, M.; Alcalde, M.; Brugada, R.; Greco, A.; et al. Molecular autopsy: Twenty years of post-mortem diagnosis in sudden cardiac death. *Front. Med.* **2023**, *10*, 1118585. [[CrossRef](#)] [[PubMed](#)]
6. Wilde, A.A.M.; Semsarian, C.; Marquez, M.F.; Sepeshri Shamloo, A.; Ackerman, M.J.; Ashley, E.A.; Sternick, E.B.; Barajas-Martinez, H.; Behr, E.R.; Bezzina, C.R.; et al. European Heart Rhythm Association (EHRA)/Heart Rhythm Society (HRS)/Asia Pacific Heart Rhythm Society (APHRS)/Latin American Heart Rhythm Society (LAHRS) Expert Consensus Statement on the State of Genetic Testing for Cardiac Diseases. *Heart Rhythm* **2022**, *19*, e1–e60. [[CrossRef](#)] [[PubMed](#)]
7. Walsh, R.; Lahrouchi, N.; Tadros, R.; Kyndt, F.; Glinge, C.; Postema, P.G.; Amin, A.S.; Nannenberg, E.A.; Ware, J.S.; Whiffin, N.; et al. Enhancing rare variant interpretation in inherited arrhythmias through quantitative analysis of consortium disease cohorts and population controls. *Genet. Med.* **2021**, *23*, 47–58. [[CrossRef](#)] [[PubMed](#)]
8. Marijon, E.; Narayanan, K.; Smith, K.; Barra, S.; Basso, C.; Blom, M.T.; Crotti, L.; D'Avila, A.; Deo, R.; Dumas, F.; et al. The Lancet Commission to reduce the global burden of sudden cardiac death: A call for multidisciplinary action. *Lancet* **2023**, *402*, 883–936. [[CrossRef](#)] [[PubMed](#)]

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