Beckwith-Wiedemann syndrome in diverse populations (2019)

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Background

Beckwith-Wiedemann syndrome (BWS) can be caused by multiple different mechanisms affecting chromosome 11p15 and the clinical features and associated tumor risks of patients vary according to the molecular subtypes, referred to as (epi)genotype-phenotype correlations. For example, patients with loss of methylation at imprinting control region 2 (IC2 LOM) have higher frequencies of omphalocele, macroglossia, ear creases/pits, facial nevus simplex, and prematurity and lower frequencies of organomegaly/nephromegaly (enlarged kidneys), large size, lateralized overgrowth, and tumors compared to patients with other molecular defects causing BWS. BWS has been reported to occur regardless of race and ethnicity, although it is unknown whether molecular subtypes and clinical features differ between racial groups.

Purpose

This study evaluated the presence of clinical features and molecular subtypes within racial and ethnic groups of patients with BWS. Patients with a molecular diagnosis of BWS were grouped according to their reported race and ethnicity: Caucasian only (non-Hispanic); Mixed (more than one race or ethnicity); and Non-Caucasian (Hispanic only or a race that was non-Caucasian).

Findings

Trends in some clinical features were observed between the three groups. Patients in the Caucasian group more often presented with classic, visibly apparent features of BWS, such as omphalocele, macroglossia requiring a tongue reduction, and facial nevus simplex. Patients in the non-Caucasian group more often presented with less visibly apparent features such as severe hyperinsulinism and nephromegaly. Differences in the molecular subtype of patients were also noted. Patients in the Caucasian group were most likely to be affected by IC2 LOM while patients in the non-Caucasian group were more likely to be affected by paternal uniparental disomy of chromosome 11p15 (pUPD11). No significant trends or differences were noted in patients in the Mixed race/ethnicity group, possibly due to the fact that patients in this group were a combination of the other two race/ethnicity groups.

Conclusion

The differences observed raise the question of whether race and ethnicity affect the molecular subtype in patients with BWS or whether race and ethnicity affect the clinical features associated with each molecular subtype.

Key Points

- Patients in the Caucasian group are more often affected by IC2 LOM and visibly apparent BWS features.
- Patients in the Mixed race/ethnicity group did not demonstrate a significant difference or trend compared to the other groups.
- Patients in the non-Caucasian group are more often affected by pUPD11 and less visibly apparent BWS features.

Reference

Duffy KA et al. Beckwith–Wiedemann syndrome in diverse populations. *American Journal of Medical Genetics Part A*. 2019;179(4): 525-533. PubMed PMID: 30719840v

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