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Risk Factors for Central Retinal Vein Occlusions in Young Adults

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Purpose:
Several risk factors have been identified for central retinal vein occlusion (CRVO) in older populations. CRVO in young is uncommon, and the risk factors in this group are unclear. This large retrospective, cross-sectional study used the National Inpatient Sample (NIS) Database to evaluate the risk factors for CRVO in patients 18-40 years of age.

Methods:
The NIS database from 2002-2014 was used. All cases with a hospital diagnosis of CRVO between the ages of 18-40 were identified using diagnostic codes from International Classification of Diseases, Ninth Edition. Age- and gender-matched non-CRVO controls were randomly selected from NIS, using a ratio of 10 controls for every case. The primary outcome was identification of risk factors for CRVO in young adults. Chi-square Analysis and Firth Logistic Regression were performed with IBM SPSS 23 and R package version 3.4.3, respectively. P < 0.05 was considered significant for Chi-square and univariate analyses, whereas P < 0.0026 was considered significant for multivariate analyses after Bonferroni Correction.

Results:
A total of 399 weighted young CRVO patients were identified. The average age was 31.32 ± 6.65 years with no gender predilection. Systemic and ocular conditions found to have statistically significant associations with CRVO included non-stroke cerebrovascular diseases (OR 273.36, p<0.001), hypercoagulability (OR 22.75, p<0.001), antiplatelet use (OR 18.98, p<0.001), anticoagulation use (OR 16.20, p<0.001), pseudotumor cerebri (OR 14.30, p=0.001), congestive heart failure (CHF) (OR 10.05, p<0.001), rheumatoid arthritis/collagen vascular disease (RA/CVD) (OR 8.46, p<0.001), diabetes with chronic complications (OR 8.58, p<0.001), stroke (OR 4.15, p=0.0015), obesity (OR 2.50, p<0.001), glaucoma (OR 339.24, p<0.001), and smoking (OR 0.56, p<0.001).

Conclusions:
Young patients may have distinct risk factors for developing CRVO. Our study suggests hypercoagulable states, inflammatory conditions, and vascular diseases play an important role in the pathogenesis of CRVO in young adults; significant risk factors identified in this study included glaucoma, non-stroke cerebrovascular diseases, hypercoagulable conditions, antiplatelet use, anticoagulation use, pseudotumor cerebri, CHF, RA/CVD, diabetes with complications and obesity. Traditional cardiovascular risk factors, such as hypertension and hyperlipidemia did not pose any significant risk; whereas, surprisingly, tobacco use was deemed protective against developing CRVO in young adults.