

ABSTRACT

Background: Elite volleyball players are at risk of ischemic digits due to arterial emboli originating from an aneurysmal and thrombosed posterior circumflex humeral artery (PCHA) in the dominant shoulder. The prevalence of PCHA pathology (PCHAP), and associated symptoms and risk factors, is unknown. This hampers clinical management.

Purpose: To provide individual risk profiles for clinical management of PCHAP based on prevalence, symptoms and associated risk factors in elite volleyball players.

Study Design: Cross-sectional study

Methods: From January through July 2014, ultrasound (US) assessment of the PCHA in the dominant shoulder was performed, and evaluated by two experienced vascular technologists and a vascular radiologist. PCHAP was defined as local vessel dilatation, aneurysm, and occlusion. A questionnaire (Q) survey assessed the presence of symptoms of digital ischemia (DI) in the dominant hand and possible risk factors. Binary logistic regression was performed to calculate Odds Ratios (OR) including 90% confidence intervals (90%CI).

Results: Two-hundred-seventy-eight elite indoor and beach volleyball players participated. PCHAP was detected in 17 participants (6.1%): three dilatations (1.1%), 13 aneurysms (4.7%), of which three contained intravascular thrombus, and one occlusion (0.4%). Three participants with PCHAP (two aneurysms and one occlusion) were symptomatic (18%) and 14 were not (82%). In total, 96 of 278 participants (35%) reported symptoms, of whom 93 had no PCHAP (OR=0.39; 95%CI 0.13-1.13). A total volleyball career duration of 17 years or more and an age of 27 years or more were associated with a 9-fold (90%CI 1.61-52.63) and 14-fold (90%CI 2.43-76.40) increased risk of PCHAP, respectively. A dose-response relationship seemed present for both risk factors. The distribution across the four risk profiles, based on the presence of PCHAP (US+ or US-) and symptoms of DI (Q+ or Q-), was: I) 1.1% US+Q+ (n=3); II) 5.0% US+Q- (n=14); III) 33.5% US-Q+ (n=93); and IV) 60.4% US-Q- (n=168).

Conclusion: Four risk profiles (US+Q+, US+Q-, US-Q+, US-Q-) were recognized among elite volleyball players based on the combination of presence of US-detected PCHAP, with a 6.1% prevalence, and reporting of symptoms of DI. For each profile, recommendations for clinical management are proposed to optimize care for this potentially limb-threatening injury.