Epidemiological Analysis of Foot and Ankle Injuries in Athletes: Experience of a Single Specialized Center

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Introduction/Purpose: The number of professional and amateur athletes has increased, consequently leading to an increase in the incidence of sports injuries. Understanding the epidemiological profile of foot and ankle’s injuries in athletes is relevant for the prevention and treatment its occurrence. As far as we know, there is a lack of studies that report the epidemiological profile of athletes with foot and ankle disorders considering different sports. The aim of this study is to describe the epidemiology of foot and ankle injuries in athletes treated at an outpatient clinic specializing in injuries resulting from sports practice. The primary hypothesis is that ankle instability is the most frequent injury in athletes in the foot and ankle specialty outpatient clinic.

Methods: Observational, retrospective, descriptive and comparative level IV of evidence study. The sample consisted of patients treated at an outpatient clinic specializing in foot and ankle injuries in sport, between January 1, 2015 and December 31, 2020. Three certified orthopedic physicians reviewed the charts and documented patient demographics, sport, diagnosis and lesion laterality. Age was analyzed according to age groups. The inclusion criteria were patients practicing amateurs or sports professionals of all age groups. We only count the first visits and the main modality and diagnosis of the patient. Exclusion criteria were insufficient data documented in chart, injuries that did not occur secondary to sports practice, and patients with conditions unrelated to the ankle and foot. Statistical analyzes were performed using software: SPSS V20, Minitab 16 and Excel Office 2010. We performed a multivariate logistic regression analysis to verify the association of gender, age and laterality with the main injuries documented.

Results: A total of 763 patients (387 men and 376 women) met the inclusion criteria. The mean age was 35 years (SD= ±14.1; min=8.9; max=77). The most prevalent age group was young adults with 51.7% and the least prevalent was children with 1.4%. The most prevalent diseases were chronic lateral ankle instability (n=134, 17.6%), acute lateral ankle sprain (n=120, 15.7%) and plantar fasciitis (n=69, 9%). The multivariable analysis by logistic regression identified as a risk factor for lateral ankle instability the age group of young adults and females. In acute lateral ankle sprain, age was identified as a risk factor with statistical significance. In overuse injuries, only the female gender was evidenced as a risk factor. In non-insertional Achilles tendinopathy, bilateral was associated as a risk factor with disease while in insertional Achilles tendinopathy, only the male gender was identified as a risk factor, as well as in Achilles tendon rupture.

Conclusion: The literature specifically describing foot and ankle injuries during sport is limited, despite being highly prevalent injuries. Our work correlated several factors such as age, gender and laterality with specific sports through multivariate analysis, adding epidemiological data to the literature that help in the prevention and treatment of foot and ankle injuries in sports.

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Multivariate logistic regression analysis with the main injuries documented.

|                                                | Odds Ratio | P-value |
|------------------------------------------------|------------|---------|
|                                                | OR         | Inferior Limit | Superior Limit |
| **Cronic Lateral Ankle Instability**           |            |             |                |
| Age                                            | 0.96       | 0.95       | 0.98           | <0.001        |
| Gender Male/Female                             | 0.58       | 0.39       | 0.86           | 0.007         |
| Laterality: Right/Left                         | 1.13       | 0.75       | 1.72           | 0.556         |
| **Acute Lateral Ankle Sprain**                 |            |             |                |
| Age                                            | 0.97       | 0.95       | 0.98           | <0.001        |
| Gender Male/Female                             | 1.49       | 0.99       | 2.25           | 0.058         |
| Laterality: D/E                                | 1.20       | 0.80       | 1.81           | 0.381         |
| **Overuse Injury**                             |            |             |                |
| Age                                            | 1.00       | 1.00       | 1.00           | 0.866         |
| Gender Male/Female                             | 0.43       | 0.25       | 0.73           | 0.002         |
| Laterality: Right/Left                         | 0.88       | 0.50       | 1.54           | 0.655         |
| **Non-insertional Achilles Tendinopathy**     |            |             |                |
| Age                                            | 1.00       | 1.00       | 1.00           | 0.872         |
| Gender Male/Female                             | 1.85       | 0.98       | 3.49           | 0.059         |
| Laterality: Right/Left                         | 1.17       | 0.55       | 2.48           | 0.678         |
| Laterality: Bilateral/Left                     | 3.28       | 1.46       | 7.35           | 0.004         |
| **Insertional Achilles Tendinopathy**         |            |             |                |
| Age                                            | 1.00       | 1.00       | 1.00           | 0.887         |
| Gender Male/Female                             | 4.86       | 2.22       | 10.63          | <0.001        |
| Laterality: Right/Left                         | 0.59       | 0.29       | 1.20           | 0.144         |
| **Acute Achilles Tendon Rupture**              |            |             |                |
| Age                                            | 1.00       | 1.00       | 1.00           | 0.842         |
| Gender Male/Female                             | 2.60       | 1.13       | 5.96           | 0.024         |
| Laterality: Right/Left                         | 1.29       | 0.60       | 2.78           | 0.518         |