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Increasing Incidence of Cardiac Arrests in Footballers; A Mere Coincidence or a Cause of Concern?

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Abstract

Footballers have had a history of on-field collapses due to heart conditions and respiratory issues, however in the recent post-COVID world, the frequency of such incidences have increased. Multiple footballers were televised collapsing on the pitch or gasping for air before being taken off. This calls for the need of investigation into the cause of this rise. Many have used this data to blame it on the side-effects of COVID-19 vaccine while others speculate this as a sequalae of COVID-19 itself. There's a need for synergistic use of multiple medical examinations (Electrocardiogram, Echocardiography, Endomyocardial biopsy, laboratory results, Cardiac MRI, chest X-ray, Exercise tolerance test) to help prevent such incidences. Defibrillators should be present at even youth and amateur levels as their effectiveness is proven. Football governing body needs to establish protocol for health screening rather than only ensuring presence of defibrillators and medical staff.

Keywords: Sudden cardiac death; Cardiac arrhythmias; Defibrillator

Introduction

Footballers have had a history of on-field collapses due to heart conditions and respiratory issues, however in the recent post-COVID world, the frequency of such incidences have increased. Multiple footballers were televised collapsing on the pitch or gasping for air before being taken off.

Perhaps the most high-profile case out of all the recent cases was that of Christian Eriksen, a 29-year-old Danish international football player who collapsed on the pitch halfway through the opening match of tournament 'Euro 2020' played in Denmark on 12th June 2021. The cause was determined to be cardiopulmonary arrest, the etiology of which wasn't determined his physical exams since he started playing professionally were unremarkable. The director of his football club commented that neither Eriksen was ever tested COVID positive nor was he administered COVID vaccine before this incident. However, the origin was due to arrhythmic activity which led of unexpected disruption of heart function and reduced brain perfusion leading to loss of consciousness [1]. He recovered on the pitch after the administration of shock therapy via an Automated External Defibrillator (AED) and now has a defibrillator implanted to help him function.

Some other incidents are as follows from 12th June 2021-31st December 2021 (The day of completion of this manuscript):

- Kun Aguero, 33, felt chest pain and was substituted before halfway through the game in Barcelona, Spain on 31st October 2021. He was diagnosed with cardiac arrhythmia and treated by catheter ablation of abnormal tissue where arrhythmias originated from and later retired from football. Aguero's all prior medical examinations were normal. Sergio Aguero had contracted COVID-19 towards end of 2020 and was jabbed fully for COVID vaccine. However, Aguero's cardiologist explained that the player had been diagnosed with arrhythmias back in 2004 and had undergone similar catheter ablation.

- Sofiane Loukar, 30, passed away after collapsing on pitch during 35th minute of the match played in Algeria on 25th December 2021. The reason of death was pronounced as a myocardial infarction.

- Marin Cacic, 23, collapsed during training session with his club in Croatia. After 3 days in coma, the footballer was pronounced dead by the doctors on 23rd December 2021 with diagnosis of heart failure.

- Mukhaled Al-Raqadi, 29, passed away while training with his club in Oman on 22nd December 2021. The death was ruled due to myocardial infarction.

- Piotr Zielinski, 27, had to be taken off only 16 minutes into the game in Italy on 12th December 2021 after he grabbed his neck gesturing difficulty in breathing. He tested negative for COVID-19 at that moment but was tested positive back in October. All his prior medical examinations were normal.

- Martin Terrier, 24, was forced off 20 minutes into his game played in France due to respiratory difficulties on 12th December 2021. Martin had also collapsed on 26th January 2020, 20 minutes into the game due to a vasovagal attack.

- Victor Lindelof, 27, was taken out of the game due to respiratory issues on 11th December and high heart rate as he went down grabbing his chest in England. Although as per officials this wasn't linked to the COVID-19 outbreak in club. He had to wear a heart monitor for following couple of days but as per his wife all returned normal. Earlier, all his annual physical exams returned normal.

- Ricardo Gomes, 29, collapsed during training at his club in Serbia on December 9th 2021. He was deemed in a serious condition.

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He had received vaccinations about 6 weeks ago.

- Dylan Rich, 17, died during a youth football match played in England on 2nd September 2021. The diagnosis of cardiac arrests was made.

- Adama Traore, 26, of Sheriff Tiraspol went down clutching his chest during a game in Moldova on 25th November 2021. The player continued breathing and responded to smelling salts. No etiology was figured out.

- Charlie Wyke, 28, suddenly collapsed during a training session held on November 23 in England due to cardiac arrest. He received immediate CPR from club's manager (whoo had learnt it just weeks ago in a CPR training session at the club) which stabilized him. It was clarified that Charlie hadn't received COVID-19 immunization vaccine.

- John Fleck, 30, suffered from a seizure during a match on 23rd November 2021 in England. He had to be administered 10 minutes of on-field treatment before being taken to a hospital. Fleck had received his second vaccine dose back in August.

- Emil Palsson, 28, collapsed on-pitch with cardiac arrest during the 12th minute of the game in Norway on 1st November 2021. He had no discernible waves for about 4 minutes but was revived due to CPR administration by the medical team. He was also implanted by a cardioverter defibrillator device.

These incidents were not limited to players multiple televised games had to be briefly paused due to fans collapsing in the audience. As in the past 2 months there were more than 8 cases of games had to be put on hold.

Cardiac arrests in players are not a new issue. Some of the notable cases are:

- Ilker Casillas, 37, collapsed in training on 1st May 2019 in Portugal. The etiology was ruled as cardiac arrest. He did get back into training but didn't play again on a professional level before retiring about a year later.

- Frabrice Muamba, 23, collapsed during 43rd minute of a play due to cardiac arrest on 17th March 2012 in England. He was administered CPR immediately but his start didn't beat itself for about 78 minutes.

- Abdelhak Nouri, 20, collapsed during a training match on 8th July 2017 in Netherlands. He was given immediate CPR but due to absence of a defibrillator he wasn't administered shocks until he was airlifted to a hospital. This resulted him to end up in a coma which went on for about 3 years.

- Cheick Tiote, 30, also collapsed and passed away during a training on 5th June 2017 in China.

- Daniel Jarque, 26, collapsed in his hotel room after a morning training session on 8th August 2009 in Italy. Death was ruled as a systolic heart failure with CPR administration not adequate.

- Antonio Puerta, 22, died 3 days after collapsing on pitch on 28th August 2007 in Spain. The cause was determined as multiple organ failure and irreversible brain damage due to multiple prolonged cardiac arrests due to an incurable, hereditary heart disease known as arrhythmogenic right ventricular dysplasia. However, he had passed medical with his club 3 days back.

- Marc-Vivien Foe, 28, died due to a cardiac arrest back on 23rd June 2003 playing in France despite immediate medical care administered.

Sudden Cardiac Death (SCD) is considered to be sports-related when it occurs during or within an hour after moderate- to high-intensity exercise [1]. A study based in United Kingdom which screened adolescent players for cardiac screening found out the incidence of SCD to be 6.8 per 100,000 athletes; majority went undetected on screening [2].

It is evident that cardiac episodes were not uncommon in football players before the pandemic; however the increased frequency of events concentrated in few months is definitely alarming. This calls for the need of investigation into the cause of this rise. Many have used this data to blame it on the side-effects of COVID-19 vaccine while others speculate this as a sequalae of COVID-19 itself. However, not all the players mentioned above had COVID vaccine or COVID itself.

One of the possible reasons for sudden cardiac arrest can be Myocarditis, which is heart muscle inflammation that presents with chest discomfort, shortness of breath, and palpitations [3]. Sudden mortality with cardiac etiology in athletes has been linked to post-viral myocarditis [4]. Similarly, literature shows involvement of COVID-19 in cardiac arrests, myocarditis, and other cardiovascular pathologies [5]. Literature also indicates an increased risk of myocarditis in vaccinated individuals [6].

However, if we attribute this rise and timing to mere coincidence there's a question left unanswered; if this were a coincidence and the pathological basis lies elsewhere then why wasn't it uncovered in the medical examinations and what else should the clubs do to avoid such incidents in the future.

Screening for potential cardiovascular pathology remains key to avoid such incidents. A study from 1996 to 2016 found 0.38% (42 out of 14,794) football players in Football Association (FA) had underlying cardiac issues that predisposed them to diseases linked with sudden cardiac deaths [7].

There's a need for synergistic use of multiple medical examinations (Electrocardiogram, Echocardiography, Endomyocardial biopsy, laboratory results, Cardiac MRI, chest x-ray, Exercise tolerance test) to help prevent such incidences. Currently FA conducts cardiac examinations every two years for footballers aged 16 to 22 and then every club conducts these tests every year. Nevertheless, these incidents indicate that some clues may be missed by the machines in these checkups and arrangements should be made to pick these clues up as these tests have been proven to reduce morbidity and mortality [7]. In case of Aguero, he had arrhythmias treated in his youth and kept returning normal test results until he experienced chest tightness years later. Lastly, defibrillators should be present at even youth and amateur levels as their effectiveness is proven. Football governing body needs to establish protocol for health screening rather than only ensuring presence of defibrillators and medical staff.

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