

オミクロン株流行期にCoronavirus disease 2019に罹患したアスリートの心電図変化に関する検討

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【目的】

オミクロン株流行期におけるCOVID-19に罹患したアスリートの罹患前後のECG変化の実態を明らかにすることを目的とした。

【方法】

2022年1月-8月に当該大学附属クリニックでCOVID-19の診断に至り、競技復帰前に受診した選手137名(年齢:19.8±0.9歳)を対象とし、罹患年次の定期健康診断時(罹患前)と競技復帰前受診時(罹患後)のECG測定値及びAHSの該当者数を後方視的に比較した。さらに療養期間を[31日未満群]、[31日以上群]の2群に、また運動強度を静的要素[中強度以上群]と[低強度群]の2群に分類し、それぞれ罹患前後におけるECG測定値の変化を反復測定二元配置分散分析によって検討した。

【結果】

全例軽症ないし無症状病原体保有者であり、心拍数は罹患後有意に上昇し(58.7±9.4bpm vs 62.9±10.1bpm, $p<0.001$)、SV1高、RV5高、SV1+RV5高はそれぞれ有意に低下した(10.0[7.5-15.1]mm vs 9.1[6.9-12.4]mm, 18.9±6.1mm vs 17.4±5.5mm, 30.2±9.8mm vs 27.3±7.7mm, 全て $p<0.001$)。AHSの該当者数および該当所見数はともに罹患後に減少した(112名 vs 100名, 延べ221件 vs 延べ193件)。療養期間別の検討では、両群ともRV5高、SV1+RV5高は罹患後に有意に低下したが(いずれも $p<0.05$)、心拍数は[31日以上群]のみで罹患後有意に上昇した(56.6±7.5bpm vs 63.1±11.0 bpm, $p<0.001$)。また、運動強度別の検討では、SV1+RV5高は罹患前後ともに[中強度以上群]が[低強度群]より有意に高値であったが(罹患前: 32.1±9.8 vs 25.8±8.4, $p<0.001$ 、罹患後: 28.4±7.8 vs 25.0±6.9, $p=0.017$)、罹患前後比較では[中強度以上群]のみで罹患後有意に低下した(32.1±9.8 vs 28.4±7.8mm, $p<0.001$)。

【結論】

オミクロン株流行期のCOVID-19に罹患したアスリートにおいて、罹患前後でECG上、心拍数上昇や左室電位低下を認めた。療養期間や運動強度を検討した結果、COVID-19罹患による影響よりも、罹患後のディトレニングの影響や運動強度を反映する変化であると考えられた。

Comparison of ECG changes in athletes before and after contracting COVID-19 during the Omicron variant pandemic

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[Purpose]

This study aimed to clarify changes in ECG of athletes before and after infection with the COVID-19 Omicron variant.

[Methods]

The participants were 137 collegiate athletes (age; 19.8 ± 0.9 years) with COVID-19 diagnosed at the University Clinic between January and August 2022, who underwent medical examination before return-to-play (RTP). We retrospectively compared ECG at annual medical check-up, before the infection, and upon visiting the clinic before RTP, after the infection. The number of participants with AHS and relevance of each measurement item that comprise diagnostic criteria for AHS were retrospectively compared before and after the infection. Moreover, the resting period and exercise intensity in static factors were divided into two groups; the < 31 days and >31 days groups and moderate or higher intensity and low intensity groups, respectively. The changes in each group were examined before and after infection using repeated two-way ANOVA.

[Results]

All patients were mild or asymptomatic carriers. Heart rate (HR) increased significantly after infection (58.7 ± 9.4 bpm vs 62.9 ± 10.1 bpm, $p < 0.001$). The height of SV1, RV5, and SV1+RV5 decreased significantly after infection ($10.0 [7.5-15.1]$ mm vs $9.1 [6.9-12.4]$ mm), (18.9 ± 6.1 mm vs 17.4 ± 5.5 mm), (30.4 ± 9.5 mm vs 27.3 ± 7.7 mm), respectively, $p < 0.001$. The numbers of athletes with AHS and relevant findings decreased after infection (112 vs 100 athletes, and 221 vs 193 cases, respectively). In the resting period, although height of RV5 and SV1+RV5 after the infection significantly decreased in both groups, HR in the >31 days group significantly increased after the infection (56.6 ± 7.5 bpm vs 63.1 ± 11.0 bpm, $p < 0.001$). Moreover, the height of SV1+RV5 in the moderate or higher intensity group was significantly higher than in the low intensity group before and after infection (32.1 ± 9.8 vs 25.8 ± 8.4 , $p < 0.001$ and 28.4 ± 7.8 vs 25.0 ± 6.9 , $p = 0.017$, respectively).

[Conclusion]

In athletes with COVID-19 Omicron variant pandemic, ECG after the infection revealed increased HR and decreased left ventricular potential. Considering the resting period and exercise intensity, these change are considered to reflect the effects of detraining after contracting COVID-19 rather than changes associated with COVID-19 infection.