Congress Round-Up

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Content

1. Surgery saves lives in patients with oesophageal fistula
2. MANIFEST-PF: Good results for the pentaspline PFA catheter
3. POWER FAST III: High-power, short-duration radiofrequency ablation for AF
4. High-power, short-duration ablation linked to a higher stroke risk
5. Early or delayed ablation for AF?
6. CEASE-AF meets primary endpoint in persistent AF
7. Promising results for Marshall Plan ablation strategy
8. Can ICD-EG-derived information improve ventricular tachycardia ablation outcomes?
9. Prolonged ECG monitoring detects relevant arrhythmias in HCM
10. Does adaptive pacing work in patients with HF, LBBB, and intact AV conduction?
11. Can we identify patients who may not benefit from ICD therapy?
12. Statins display benefits for AF patients in a large population-based study
13. ANTWERP score selects HF patients for AF ablation
14. Epicardial ablation successful in Brugada syndrome
15. Highly increased risk of arrhythmias after mechanical ventilation for COVID-19

“We bring the Congress to the Physician” through fast dissemination of new clinical insights with scientific scrutiny from the major medical congresses through multiple channels.
This podcast channel includes a summary of articles presented at the major international medical conferences in cardiology.
1. Surgery saves lives in patients with oesophageal fistula

The large, real-world POTTER-AF study showed that a surgical or an endoscopic intervention is a necessity to reduce the risk of death in patients with oesophageal fistula (OF) following catheter ablation for atrial fibrillation (AF). With conservative treatment only, the mortality rate is approximately 90%.

"OFs are a rare but devastating complication of AF," said Prof. Roland Tilz (University Heart Center Lübeck, Germany) [1]. "Currently, data on the incidence, management, and outcomes of OF is sparse." Thus, the POTTER-AF study (NCT05273645) aimed to investigate the real-world incidence, management, and outcomes of OF in patients with AF who underwent catheter ablation [1,2].

In total, 214 centres in 35 countries performed 553,729 procedures; 138 cases of OF were detected, resulting in an incidence of 0.025% in the study population. Furthermore, the risk of OF was higher in those undergoing radiofrequency ablation compared with those receiving cryoballoon ablation (0.038% vs 0.0015%; P<0.001). Prof. Tilz mentioned that the median time to symptom onset was 18 days and that the median time to OF diagnosis was 21 days. "Fever, chest pain, neurological symptoms, and odynophagia were the most common symptoms," he added. The most common delayed complication was severe sepsis, occurring in more than 50% of the patients with OF. Additionally, approximately 25% of the patients suffered from a cerebrovascular event, and 1 out of 5 patients had a cardiac arrest.

"The outcomes for OF are abysmal, with a mortality rate of 65.8%," emphasised Prof. Tilz. "Only 15.4% of the patients survive without sequelae." Importantly, the death rate is much higher in patients who were treated conservatively (90%) than in patients who underwent endoscopic treatment (56%) or surgical treatment (52%). Finally, the use of an oesophageal temperature probe and the type of anaesthesia (i.e. conscious sedation) were associated with better survival outcomes.

"Thus, surgical or endoscopic intervention is mandatory to improve the survival outcomes in patients with OF," concluded Prof. Tilz.

1. Tilz RR, et al. Prognosis following oesophageal fistula formation in patients undergoing catheter ablation for AF: The POTTER AF Study. Late-Breaking Science Day 1, EHRA 2023, 16–18 April, Barcelona, Spain.

2. MANIFEST-PF: Good results for the pentaspline PFA catheter

The 1-year results of the MANIFEST-PF registry showed that patients with atrial fibrillation (AF) undergoing a first ablation using the pentaspline pulsed-field ablation (PFA) catheter had 1-year freedom from an AF recurrence rate of 78%.

Dr Vivek Reddy (Mount Sinai Hospital, NY, USA) presented the results of a retrospective study, including 1,568 patients who underwent first-time PFA for AF [1]. The primary effectiveness outcome was freedom from AF/atrial flutter (AFL)/atrial tachycardia (AT) recurrence of 30 seconds or more. The median follow-up time was 367 days.

The primary outcome showed a success rate of 78.1% after 12 months of follow-up. In addition, the success rate was higher in patients with paroxysmal AF than in patients with persistent AF (81.6% vs 71.5%; log-rank=0.001). Furthermore, Dr Reddy mentioned that a left atrial diameter of >45 mm, a left ventricular ejection fraction of ≤50%, a procedure time of >60 minutes, age >65 years, and persistent AF were independent risk factors for primary efficacy failure (P<0.001 for all). For the secondary endpoint of freedom from AF/AFL/AT or antiarrhythmic drugs or redo ablation, the success rate was 70.8% after 12 months.

Finally, Dr Reddy said that the safety profile of the PFA catheter was good, with no cases of oesophageal damage or pulmonary vein stenosis, and major adverse events occurred in 1.9% of the patients. "However, 1 patient sustained a phrenic nerve injury beyond hospitalisation," according to Dr Reddy.

Dr Reddy concluded that the 1-year effectiveness and safety data of the pentaspline PFA catheter were good in the population of patients with AF who underwent a first ablation.

1. Reddy VY, et al. 1-year outcomes from the MANIFEST-PF Registry. Late-Breaking Science Day 1, EHRA 2023, 16–18 April, Barcelona, Spain.

3. POWER FAST III: High-power, short-duration radiofrequency ablation for AF

Preliminary results of the POWER FAST III trial showed that high-power, short-duration (HPSD) radiofrequency pulmonary vein isolation (PVI) was non-inferior to low-power, long-duration (LPLD) radiofrequency PVI in terms of arrhythmia recurrence rates in patients with atrial fibrillation (AF).

The POWER FAST III trial (NCT04153747) compared the oesophageal safety and efficacy of an HPSD radiofrequency application for PVI (70 W for 9–10 s) with an LPLD
radiofrequency procedure (25–40 W guided by ablation lesion indexes) in 301 patients with AF [1]. The participants were randomised 1:1 to 1 of the 2 procedures. The preliminary findings were presented by Dr Sergio Castrejón (La Paz University Hospital, Spain).

The rate of first-pass PVI was significantly lower in the experimental arm compared with the control arm (70.8% vs 82.8%; P=0.022), a result that was mainly driven by left PV interventions. Although radiofrequency to final PVI time was shorter in the high-power arm, the total procedural time was similar for the 2 study arms. Importantly, the ‘freedom from arrhythmia recurrences’ rate did not significantly differ between the high-power and the lower-power arm (69.9% vs 75.0%; P_{log-rank}=0.43). Furthermore, the incidence of oesophageal thermal lesions was low and not significantly different when comparing the high-power (3.6%) to the low-power arm (2.7%; P=0.68).

Dr Castrejón commented that the complication rate was similar for the 2 arms of the study (5.6% vs 4.6%; P=0.72), but that the rate of stroke/TIA/systemic embolism was higher in the experimental arm (2.8% vs 0.0%; P=0.04). “This finding raises concerns and warrants further investigation,” emphasised Dr Castrejón.


4. High-power, short-duration ablation linked to a higher stroke risk

A substudy of the POWER FAST III trial demonstrated that a high-power, short-duration (HPSD) radiofrequency application for pulmonary vein isolation (PVI) was associated with a higher risk for subclinical stroke lesions in patients with atrial fibrillation (AF) than conventional radiofrequency applications.

“Diffusion-weighted imaging (DWI) has revealed that novel, ischaemic lesions may arise in patients with AF undergoing catheter ablation, with a particularly high incidence in patients who are treated with some of the newer techniques or catheters,” explained Dr José Merino (La Paz University Hospital, Spain) [1]. The current substudy aimed to compare the rates of procedural, subclinical complications (both strokes and bleedings) for undergoing HPSD or low-power, long-duration (LPLD) radiofrequency in the POWER FAST III trial (NCT04153747).

A cerebral DWI study was conducted 24 hours after the procedure in 144 patients; 75 received the LPLD radiofrequency modality, and 69 patients were treated with the HPSD radiofrequency application. Of note, 3 patients in the HPSD arm were removed from the current analysis due to the occurrence of a clinical stroke or TIA.

Subclinical ischaemic brain lesions were observed in 41.1% of the patients. However, the rate of ischaemic brain lesions was significantly higher in patients who received HPSD radiofrequency ablation than in patients who were treated with LPLD radiofrequency ablation (59.1% vs 25.3%; P<0.001). Moreover, within the subgroup of patients who displayed lesions, the number of lesions was higher in the HPSD arm than in the LPLD arm (P<0.001). Furthermore, a multivariate logistic regression analysis showed that HPSD (OR 4.9; P<0.001) and persistent AF (OR 3.8; P=0.001) were independent predictors of DWI lesions. Finally, the rate of microbleeds was not significantly higher in the HPSD arm compared with the LPLD arm (27.3% vs 16.0%; P=0.1).

In conclusion, HPSD radiofrequency for PVI was associated with an increased risk for subclinical stroke lesions as compared with LPLD radiofrequency ablation.


5. Early or delayed ablation for AF?

A prospective, randomised study investigating the timing of ablation in patients with atrial fibrillation (AF) found that it is feasible to treat patients with symptomatic AF with anti-arrhythmic drugs (AADs) for at least 1 year without hampering the outcomes of subsequent ablation.

Prof. Jonathan Kalman (Royal Melbourne Hospital, Australia) and colleagues conducted a prospective, multicentre study to compare the outcomes of early ablation (i.e. <1 month after diagnosis) with optimised AAD plus delayed ablation (i.e. 12 months after diagnosis) in patients with AF [1]. The study included 89 participants, 41 of whom received early ablation and 48 participants underwent delayed ablation. The primary outcome was atrial arrhythmia-free survival at 12 months post-ablation.

At 12 months after ablation, no difference was measured between the early ablation group and the delayed ablation group in atrial arrhythmia-free survival (43.7% vs 41.4%; P=0.82). Similarly, 1 year after ablation the 2 study groups did not differ in terms of atrial arrhythmia burden, symptom severity, or AAD use.

According to Prof. Kalman, the current study provided reassuring evidence that, if applicable, patients with symptomatic AF may be treated with AADs for at least 1 year, without negatively influencing the results of subsequent ablation.

6. CEASE-AF meets primary endpoint in persistent AF

The primary results of the CEASE-AF trial demonstrated that hybrid ablation, epicardial plus endocardial ablation, was superior to endocardial ablation alone in reducing atrial arrhythmias in patients with persistent and longstanding persistent atrial fibrillation (AF), without increasing adverse events.

Prof. Nicolas Doll (Georg August University, Germany) presented the primary results of the prospective CEASE-AF trial (NCT02695277). This study randomised 170 patients with persistent AF and enlarged left atria or longstanding persistent AF 2:1 to hybrid ablation or endocardial catheter ablation [1]. In the hybrid ablation arm, patients first underwent epicardial ablation, followed by a 90-day blanking period and subsequent endocardial ablation. The primary efficacy outcome was the freedom from AF, atrial flutter, or atrial tachycardia >30 seconds through 12 months.

The primary endpoint was reached by 71.6% of the participants in the hybrid arm and by 39.2% of the participants in the endocardial ablation arm, representing a significant difference in efficacy between the 2 study arms (P<0.001). Furthermore, the rates of ‘repeat ablations’ (4.2% vs 35.3%; P<0.001) and cardioversions (11.6% vs 25.5%; P=0.037) were lower in the intervention arm. Notably, no significant difference was observed in terms of safety: the composite complication rate at 30 days post-index and 30 days post-second stage plus repeat ablation were 7.8% in the intervention arm and 5.8% in the control arm (P=0.75). Prof. Doll stressed that the success of an epicardial-endocardial approach emphasizes the role of a collaborative heart team approach in the treatment of non-paroxysmal AF.


7. Promising results for Marshall Plan ablation strategy

Preliminary results from the PLAN-MARSHALL trial showed that the Marshall-Plan ablation strategy may outperform pulmonary vein isolation (PVI) alone with regard to the recurrence of atrial fibrillation (AF) in patients with persistent AF.

The Marshall Plan is an ablation strategy that aims to perform a complete lesion set in patients with AF, with the following steps:
- vein of Marshall ethanol infusion,
- PVI,
- mitral line block,
- dome transection (roof or floor), and
- cavo-tricuspid isthmus line block.

Dr Thomas Pambrun (Bordeaux University Hospital, France) and colleagues conducted the prospective, monocentric PLAN-MARSHALL trial (NCT04206982), randomising 120 patients with persistent AF 1:1 to the Marshall Plan strategy for ablation or to PVI alone. The primary endpoint was the recurrence of AF or atrial tachycardia >30 seconds at 12 months.

The current results indicated that the Marshall Plan may be superior to PVI alone: after a mean follow-up time of 10.5 months, the sinus maintenance rate was 69% in the PVI arm and 84% in the Marshall Plan arm (log-rank statistic 4.32; P=0.038). Dr Pambrun added that the results suggested that AF recurrence is relatively more common in the PVI arm (94% vs 75% of the recurrences), whereas atrial tachycardia was relatively more common in the Marshall Plan arm (25% vs 6%).

"Interestingly, looking at redo procedures, all the 9 patients in the PVI group had all 4 PV’s isolated, meaning there was no room for improvement," said Dr Pambrun. "On the other hand, in the Marshall Plan arm, all patients who underwent redo procedures (n=6) had gaps in the lesion set, which means there is room for improvement in these patients."

Finally, in terms of complications, 1 case of oesopericardial fistula was reported in the PVI arm, and 1 massive groin haematoma was observed in the Marshall Plan arm.


8. Can ICD-ECG-derived information improve ventricular tachycardia ablation outcomes?

Information derived from implantable cardioverter-defibrillator (ICD)-electrograms (ECG) during ablation did not result in a significant decrease of the ventricular tachycardia (VT) recurrence rate in patients with structural heart disease and an indication for catheter ablation. However, the results trended towards a benefit of the experimental procedure and some of the secondary endpoints suggested that ICD-ECG-derived information may be useful.

Prof. Jesus Almendral (HM University Hospital, Spain) and co-investigators conducted a randomised trial (NCT02274168) that hypothesised that the information retrieved from ICD-ECG during ablation in patients with structural heart disease and an indication for
VT ablation leads to an accurate distinction between clinically and non-clinically induced VT and allows pace mapping [1]. This would instigate a more focalised ablation on the VT and result in a more successful procedure. The 260 included patients were randomised 1:1 to the ICD-ECG arm or the conventional ablation arm.

The ICD-ECG procedure was significantly associated with a clearer distinction between clinically and non-clinically induced VT compared with the conventional procedure (P<0.001). Also, pace mapping was more applicable in the experimental arm than in the control arm (P<0.001). However, the primary endpoint of VT recurrence at 6 months was not met: 36% in the ICD-ECG arm versus 46% in the conventional arm (HR 0.73; Plogrank=0.1). The number of VT recurrences (P=0.0001) and the occurrence of arrhythmic storms (Plogrank=0.007), which were secondary endpoints of the study, were significantly lower in the ICD-ECG arm than in the conventional arm, suggesting there might be a benefit from the experimental procedure.


9. Prolonged ECG monitoring detects relevant arrhythmias in HCM

Prolonged ECG monitoring led to the detection of significantly more arrhythmias in patients with non-high-risk hypertrophic cardiomyopathy (HCM) than in standard ECG monitoring. This was the main result of the TEMPO-HCM study.

The prospective, observational, multicentre TEMPO-HCM study assessed whether extended ECG monitoring (30 days) resulted in the detection of more relevant arrhythmias than standard 24-hour monitoring in patients with non-high-risk HCM [1]. The relevant arrhythmias were atrial fibrillation (AF), atrial flutter, and non-sustained ventricular tachycardia (NSVT). All included patients underwent 30-day ECG monitoring. Dr Juan Caro-Codón (La Paz University Hospital, Spain) presented the results of the first 100 patients.

In the first 24 hours of monitoring, the detection rate of relevant arrhythmias was 11%, whereas 30 days of monitoring resulted in a detection rate of 65% (P<0.001). The effect of prolonged monitoring was mainly driven by increased detection of NSVTs, with 8% in 24 hours and 62% in 30 days (P<0.001). Dr Caro Codón added that there were 6 cases of AF detected after 24 hours and an additional 4 cases after 30 days. "Although this result did not reach statistical significance, prolonged monitoring may have a role in the detection of AF in patients with HCM," he said. Finally, Dr Caro-Codón emphasised that approximately 60% of the included patients have NSVT, which warrants further investigation into its role as a risk factor for sudden cardiac death.


10. Does adaptive pacing work in patients with HF, LBBB, and intact AV conduction?

Adaptive cardiac resynchronisation therapy (CRT) did not reduce the risk of death or intervention for heart failure (HF) decompensation compared with conventional CRT in patients with HF, left bundle branch block (LBBB), and intact atrioventricular (AV) conduction, according to the AdaptResponse trial.

"Although CRT offers health benefits to patients with symptomatic HF, a prolonged QRS duration, and a reduced ejection fraction, up to 30% of the patients have been classified as non-responders to conventional CRT," said Dr Bruce Wilkoff (Cleveland Clinic, OH, USA) [1]. "Pacing the left ventricle only may be superior to biventricular pacing if conduction to the right ventricle is intact" [2]. The AdaptResponse trial (NCT02205359) randomised 3,618 patients with HF, LBBB, and intact AV conduction 1:1 to adaptive CRT, switching between left ventricular pacing and biventricular pacing based on the patients’ AV and heart rhythm, or conventional CRT [3]. The primary endpoint was death from any cause or intervention for HF decompensation.

The primary endpoint was not met, and the trial was stopped after the third interim analysis due to futility. The event rate was 33.7% in the conventional CRT group and 30.8% in the adaptive CRT group (HR 0.89; P=0.077). Similarly, secondary endpoints did not reach a statistically significant difference between the 2 study groups. Finally, Dr Wilkoff mentioned that a post-hoc analysis showed that participants in the adaptive CRT group with ≥85% synchronised left ventricular pacing had a significantly lower rate of mortality and intervention for HF decompensation than patients in the conventional CRT group (HR 0.76; P=0.0037).

11. Can we identify patients who may not benefit from ICD therapy?

An observational study showed that frailty and severe comorbidity were strong predictors of death without appropriate therapy in patients with implantable cardioverter defibrillators (ICDs), suggesting that certain patients may not benefit from ICD therapy.

“Although ICDs decrease mortality by reducing the risk for sudden cardiac death, most patients with these devices do not receive life-prolonging therapy,” explained Dr David Wilson (Worcestershire Royal Hospital, UK). “Older patients and patients with numerous comorbidities may have an increased risk of non-arrhythmic death and the benefits of ICDs may therefore be reduced in these patients.”

The current prospective, multicentre, observational COMFORT-Q study included 662 patients with ICDs to investigate which are the most important contributors to ‘death without appropriate therapy,’ which was the main outcome of the study. The research team asked the participants to complete several health questionnaires including the Fried frailty score, the 12-Item Short-Form Health Survey (SF-12), the EQ-5D-5L, and the Charlson comorbidity index. The mean age of the study population was 65.6 years, 23% were women, 12% of the participants were considered frail, and 11% of the participants had a severe Charlson comorbidity index.

After a follow-up of 2.5 years, 63 participants had died of whom 54 had died without receiving appropriate ICD therapy. Frailty was the strongest independent predictor for death without appropriate therapy (OR 3.41; P<0.001). Severe comorbidity (OR 2.72; P<0.001) and estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m² (OR 2.16; P<0.001) were other significant predictors for this event to occur. Age >70 years and an EQ-5D-5L score <0.6 were not significantly associated with ‘death without appropriate therapy’.


12. Statins display benefits for AF patients in a large population-based study

A population-based study including over 51,000 patients with atrial fibrillation (AF) showed that statin use was linked to a lower risk of ischaemic stroke and systemic embolism and other cerebral adverse events, compared with non-use of statins.

According to Ms Jiayi Huang (University of Hong Kong, Hong Kong), the literature on the influence of statin use on the risk of new-onset AF-related adverse outcomes is inconclusive. Therefore, she and her colleagues evaluated whether statin use improves health outcomes in patients with non-valvular AF without a history of stroke or related complications [1]. Of the 51,472 included patients, 11,866 received statins after their first diagnosis of AF and 39,606 were not treated with these agents. The primary endpoints included ischaemic stroke and systemic embolism, haemorrhagic stroke, and transient ischaemic attack.

After a median follow-up of 5.1 years, prior treatment with statins was linked to a lower risk of ischaemic stroke/systemic embolism than non-use of statins (sub-distribution hazard ratio [SHR] 0.83; 95% CI 0.78–0.89). Likewise, the risk for haemorrhagic stroke (SHR 0.93) and transient ischaemic attack (SHR 0.85) appeared to be lower in participants who had been treated with statins. Furthermore, long-term use of these agents (>6 years) resulted in a significantly reduced risk of these 3 endpoints compared with short-term use of statins (3 months to <2 years), with respective SHRs of 0.57, 0.56, and 0.58.

In conclusion, the current population-based study suggests that statin use is related to a reduced risk of cerebral adverse events in patients with AF, with a more pronounced effect on long-term users of these drugs.


13. ANTWERP score selects HF patients for AF ablation

The ANTWOORD II study successfully validated the ANTWERP score, which aims to identify patients with heart failure (HF) and atrial fibrillation (AF) who would benefit the most from ablation for AF. According to the authors, the results can be used to standardise shared decision-making in the clinic with regard to AF ablation.

The previously published ANTWOORD I study assessed the ANTWERP score, which predicts left ventricular ejection fraction (LVEF) recovery after ablation in patients with HF and AF, scoring patients who have 1 or more of the
following 4 clinical and imaging parameters: known aetiology, wide QRS, severe atrial dilatation, and paroxysmal AF [1]. A higher score is related to a greater likelihood of non-recovery, whereas a lower score is linked to a greater likelihood of recovery (AUC 0.93). The current ANTWOORD II study aimed to externally validate these results. The trial included 605 patients with HF and impaired LVEF (<50%) who were referred for AF ablation [2]. The primary endpoint was the number of responders at 1-year follow-up. A response was defined as an LVEF >40% and +10% in case of HF with reduced ejection fraction and an LVEF ≥50% in case of HF with midrange ejection fraction. “Patients with a low score had a high percentage of LVEF recovery, and patients with a high score had a low percentage of LVEF recovery,” said Dr Marco Bergonti (Cardiocentro Ticino Institute, Switzerland). The corresponding AUC of the ANTWERP score was 0.859 (P<0.001). According to Dr Bergonti, the results were consistent across the LVEF spectrum and geographical regions. “The ANTWERP score identifies patients with HF who benefit the most from AF ablation,” said Dr Bergonti. Patients with a score <3 are estimated to have LVEF recovery in >90% of the cases and should receive early AF ablation. Those with a score >4 have a limited chance of responding (<20%) and physicians should look for alternative strategies to treat these patients. Finally, patients with a score of 3 or 4 have a recovery chance of approximately 50%. Further assessment is needed in these patients to decide which treatment strategy to apply.


14. Epicardial ablation successful in Brugada syndrome

Compared with implantable cardioverter-defibrillator (ICD) therapy alone, arrhythmogenic substrate ablation plus ICD therapy reduced the burden of ventricular tachycardia (VT) and ventricular fibrillation (VF) in patients with Brugada syndrome.

“Epicardial electrical abnormalities represent the hallmark phenotype signature of Brugada syndrome,” explained Prof. Carlo Pappone (Vita-Salute San Raffaele University, Italy). The current trial enrolled 37 patients with Brugada syndrome who had a prior cardiac arrest or had at least 1 ICD therapy to compare ICD therapy alone with ICD therapy plus epicardial catheter ablation of the arrhythmogenic substrate or ‘Brugada substrate’ (NCT03294278) [1]. The participants were randomised 2:1 to the experimental condition or ICD alone. The recurrence of VT/VF was the primary outcome of the trial.

After a median follow-up of 30.5 months, 43% of the patients in the ICD group experienced VT/VF recurrence compared with only 5% in the ablation arm (P<0.001). There were 7 participants who had major ICD-related complications: 2 inappropriate shocks due to supraventricular tachycardia, 4 ICD lead malfunctions, and 1 device infection. Furthermore, 2 cases were reported of pericarditis with pericardial effusion. Prof. Pappone concluded that catheter ablation is a safe procedure for patients with Brugada syndrome who are at risk of sudden death. Furthermore, arrhythmogenic substrate ablation decreased VT/VF recurrences in these patients, preventing recurrent ICD therapies. “The discovery of the so-called ‘Brugada syndrome’ opens avenues enabling further therapeutic strategies,” decided Prof. Pappone.


15. Highly increased risk of arrhythmias after mechanical ventilation for COVID-19

Patients who survived severe COVID-19, requiring mechanical ventilation, were at increased risk for major arrhythmic events after hospital discharge. After adjusting for cardiovascular risk factors and socioeconomic factors, the results were maintained.

Dr Andreas Liliequist (Karolinska University Hospital, Sweden) and colleagues conducted a nationwide, case-control study, evaluating the occurrence of arrhythmias in patients with severe COVID-19 who required mechanical ventilation and were discharged from the hospital [1]. The study included 3,023 patients with severe COVID-19 who were treated with mechanical ventilation and 28,463 matched control participants. The primary outcome was hospitalisation for arrhythmia.

After a mean follow-up of 12 months and adjustment for covariates, the risks for ventricular tachycardia (HR 16.3, 95% CI 7.9–33.9), atrial fibrillation (HR 12.6), other tachyarhythmias (HR 13.9), and bradycardia or pacemaker implantation (HR 8.6) were strongly increased in the COVID-19 group compared with the matched controls. According to the authors, these results imply that patients who were discharged from the hospital after mechanical ventilation for severe COVID-19 have inherent risk factors for developing arrhythmias and should be monitored closely.