

Brief report

Psychiatric sequelae of cardiac arrest

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This manuscript summarizes the literature on mental health outcomes after cardiac arrest. Survivors of cardiac arrest show high rates of mental illness with more than 40% suffering from anxiety, 30% from depression, and 25% from posttraumatic stress disorder (PTSD). Mental health outcomes may differ depending on the setting in which the cardiac arrest occurred. A major problem is reduced neuropsychological functioning. Between 30% and 50% of survivors of cardiac arrest suffer from cognitive deficits. Deficits of attention, declarative memory, executive function, visual-spatial abilities, and verbal fluency have been observed. As a result of numerous psychopathological symptoms (depression in 14% to 45%, anxiety in 13% to 61%, and PTSD in 19% to 27%) and reduced cognitive functioning (about 20% to 60%), relevantly reduced quality of life is observed in about 20% of cardiac arrest survivors.

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Introduction

Most studies addressing outcomes after cardiac arrest (CA) focus on the event occurring outside of the hospital setting, the so-called out-of-hospital cardiac arrest (OHCA), often associated with poor prognosis. Global prevalence of OHCA is estimated at 50 to 55 events per 100 000 person-years.¹ Survival rates are low, in the range between 2% and 23%,² dependent on a variety of regional, social, and medical factors. The interest in the long-term functional outcomes of patients surviving OHCA initially focused mostly on neurological symptoms, but in the last decade, psychiatric symptoms or mental health outcomes and, particularly, quality of life (QoL) have become areas of scientific interest. Several methodological problems make it difficult to draw clear conclusions: an unclear differentiation between transient ischemic attack (TIA) and cardiac arrest at times, as well as the use of rather heterogeneous instruments to assess psychopathology, cognitive functioning, and QoL.

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Brief report

Psychiatric symptoms

Mental health is an area of significant concern for survivors of OHCA.³ In a recent review, high rates of psychological distress were reported: incidence of depression ranged from 14% to 45%, anxiety between 13% and 61%, and PTSD from 19% to 27%. Variability is related to methodological variations in measures, time since arrest, and research setting.

In a retrospective Dutch study with an average duration of 3 years after cardiac arrest, 74% of the patients reported a low participation level in society; over 50%, severe fatigue; 38%, feelings of anxiety and/or depression; and 24%, decreased QoL.⁴ There was a better outcome in an Australian study in young patients (18 to 39 years), 5 years after cardiac arrest.⁵ Of these, 84% were living at home independently, 68% had returned to work, and only 11% reported marked or severe disability. The majority of patients had no problems with mobility (75%), personal care (70%), usual activities (66%), or pain/discomfort (71%). However, 71% reported moderate (48%) or severe (30%) anxiety.⁵

Not only patients, but also caregivers may suffer from psychiatric symptoms. Wachelder⁴ reported clinically relevant PTSD symptoms in 50% of the carers of OHCA survivors, compared with 21% of the survivors, reflecting the emotional burden of such an event on patients and their families. Similarly, in a recent investigation in relatives of OHCA patients, PTSD was detected in 40%, with risk factors including delayed prognostic information, perceived insufficiency of self-management strategies, and conflict with intensive care unit (ICU) staff.⁶

Prevalence of PTSD in survivors of stroke and TIA was investigated in nine studies with 1138 patients; PTSD varied significantly across studies by timing of PTSD assessment. The rate was 23% within 1 year of the stroke or TIA and 11% after 1 year.⁷ Similar data were obtained from a German study⁸ reporting on 108 patients with TIA. PTSD was found in 30% of these patients. Risk factors were maladaptive coping strategies and subjectively rated high stroke risk, as well as younger age.

Prevalence of PTSD and the relevance of specific factors related to the development of PTSD, including sedation and analgesia during or after cardiac arrest, were investigated in 143 patients who were discharged with favorable neurological outcomes.⁹ Thirty-nine pa-

tients (27%) fulfilled criteria for PTSD, significantly associated with a lower QoL. The only independent risk factor for the development of PTSD was younger age; neither clinical factors nor sedation and/or analgesia were associated with the development of PTSD. In a systematic review on cardiac disease-induced PTSD (CD-PTSD), Vilchinsky et al¹⁰ found that the prevalence of CD-PTSD ranged between 0% and 38% and was highly dependent on the assessment tool used. The most consistent risk factors were of a psychological nature (eg, premorbid distress).

In an early psychiatric trial on PTSD patients after OHCA, the 45 survivors had levels of psychological adjustment similar to those of 35 cardiac patients without cardiac arrest. However, the diagnosis of PTSD (n=8) sharply separated favorable and unfavorable outcomes.¹¹ Long-acting sedation at illness onset significantly predicted a favorable outcome.

Cognitive functioning

The range of lasting cognitive impairment differs widely between reports, with between 6% and 100% of patients surviving OHCA,^{12,13} but most relevant studies reduce the range to 34% to 50%.^{12,14} Severity of memory impairment correlated significantly with the duration of cardiac arrest.¹⁴ Most commonly reduced neuropsychological domains include memory impairment, attention impairment, executive function, impairment of visual-spatial abilities, and verbal fluency.^{12,15} There is no consensus on whether cognitive deficits recover over time. Better prognosis in OHCA patients was observed by Beesems et al,¹⁶ who reported that the great majority of the 220 survivors had normal cognitive functioning 6 to 12 months after OHCA. Lundgren-Nilsson¹⁷ found not much improvement of neuropsychological deficits, but great improvement in QoL during the first year. In a recent Polish study, 100% (N=29) of OHCA survivors were cognitively impaired 3 days after arrest; 77% (N=21), at 3 months; 57% (N=17), at 6 months; and 57% (N=14), at 1 year after OHCA.¹⁵

Quality of life

Systematic reviews of QoL after OHCA^{12,18} indicate that the majority of studies concluded that QoL after cardiac arrest was good. However, the authors reported remarkable methodological problems regarding the

definition of QoL and the instruments used. Most studies indicate no relevant differences between survivors of OHCA and population norms.^{16,19-22} However, when individual scores rather than group averages were compared, 17% and 20% of Dutch OCHA survivors were impaired on physical and mental health components respectively.⁴ A Swedish study¹⁷ described only moderate positive changes in cognitive functioning, but great improvement in QoL during the first year after cardiac arrest.

Significant differences between patients and controls were observed in physical mobility, energy levels, emotional reactions, and sleep patterns, but none in anxiety, depression, vitality, general well-being, or self-control.²³ Bunch et al²⁰ reported a significant correlation of patient self-rated memory impairment with the 36-Item Short Form Health Survey (SF-36) subscales for general health, mental health, physical functioning, and vitality. Also, Moulaert¹² found self-reported cognitive deficits significantly contributed to both physical and mental components of QoL. In a study with a 17-year follow-up after cardiac arrest,²⁴ reduced cognitive functioning was observed in 7 of 8 patients. However, despite low scores in cognitive testing and low self-reported QoL, participants were contented with their life situation. No depression, PTSD, or anxiety disorder was found.

The findings of a high degree of fatigue experienced by survivors of OCHA are consistent. Clinically significant levels of fatigue were found in up to 56% of patients, expert-rated^{4,13} or self-rated.^{5,17,23}

Near-death experience

Near-death experience in cardiac arrest is an area of increasing scientific interest, but also of major disagreement. For many years, "opinion articles" dominated, but

since 2000, the number of longitudinal and cross-sectional studies has increased,²⁵ discussing the implications of near-death experiences for the mind-brain relationship. Near-death experiences were reported by 10% of OCHA patients and by 1% of other cardiac patients.²⁶ Patients with near-death experience were younger than other patients, reported previous paranormal experiences, and had greater "approach-oriented" death acceptance. Groups did not differ in sociodemographic variables, social support, QoL, and other social variables. In a Dutch study,²⁷ 344 cardiac arrest survivors were interviewed, and 14 patients, or 12%, reported near-death experiences. The first investigation to report cognitive processes during cardiac arrest was a small 1-year study showing that 6% of 63 OCHA patients reported lucid, well-structured thought processes, consistent with typical near-death experiences.²⁸

Conclusion

The pathophysiology of psychiatric symptoms after OHCA has not been well investigated. Whereas reduced cognitive capacity appears to be associated with cerebral dysfunction, psychopathological symptoms might be more closely related to psychological distress. This is suggested by the study by Wachelder et al,⁴ in which the incidence of PTSD was higher in caregivers of OCHA survivors than in the survivors.

The limited knowledge about pathophysiology is paralleled by the sparse literature on treatment or prevention of psychiatric complications after OHCA. Some authors suggest early screening; however, no specific studies have been performed, and no data are available regarding the success of psychotherapy or pharmacotherapy, such as antidepressant medication. □

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Brief report

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Secuelas psiquiátricas del paro cardíaco

Este artículo es un resumen de la literatura acerca de las consecuencias de un paro cardíaco sobre la salud mental. Los sobrevivientes de un paro cardíaco tienen una alta frecuencia de enfermedad mental; más del 40% presentan ansiedad, 30% depresión y 25% trastorno por estrés postraumático (TEPT). Las consecuencias sobre la salud mental pueden variar según el lugar donde ocurra el paro cardíaco. Un problema importante es la reducción del funcionamiento neuropsicológico. Entre el 30% y el 50% de los sobrevivientes de un paro cardíaco presentan déficits cognitivos. Se han observado déficits en la atención, en la memoria declarativa, en la función ejecutiva, en las habilidades viso-espaciales y en la fluidez verbal. Se ha encontrado una reducción importante en la calidad de vida en cerca del 20% de los sobrevivientes de un paro cardíaco, debido a los numerosos síntomas psicopatológicos (depresión en 14% a 45%, ansiedad en 13% a 61% y TEPT en 19% a 27% de los casos) y a la disminución de las funciones cognitivas (alrededor del 20% a 60%).

Les séquelles psychiatriques d'un arrêt cardiaque

Cet article est un résumé de la littérature sur les conséquences d'un arrêt cardiaque sur la santé mentale. Les survivants d'un arrêt cardiaque montrent des taux élevés de maladie mentale, plus de 40 % d'entre eux souffrant d'anxiété, 30 % de dépression et 25 % de trouble de stress post-traumatique (TSPT). Les effets sur la santé mentale diffèrent selon le contexte de survenue de l'arrêt cardiaque. Le problème majeur est la diminution du fonctionnement neuropsychologique. Entre 30 % et 50 % des survivants d'un arrêt cardiaque souffrent d'un déficit cognitif. Ont été observés : des déficits de l'attention, de la mémoire déclarative, des fonctions exécutives, des capacités visuo-spatiales et de la fluidité verbale. La qualité de vie est significativement dégradée chez environ 20 % des survivants d'un arrêt cardiaque, en raison de nombreux symptômes psychopathologiques (dépression dans 14 % à 45 % des cas, anxiété dans 13 % à 61 % des cas et TSPT dans 19 % à 27 % des cas) et d'une diminution des fonctions cognitives (environ 20 % à 60 %).