Mid-term acylcarnitine profile evolution in survivors of a prolonged ICU stay.

A. Ngongan[1], F. Boemer[2], C. Colson[3], B. Misset[3], G. Minguet[1,4], A.-F. Rousseau[3,4]
[1]University Hospital of Liège, Anaesthesiology, Liège, Belgium, [2]University Hospital of Liège, Biochemical Genetics Laboratory, Liège, Belgium, [3]University Hospital of Liège, Intensive Care, Liège, Belgium, [4]University of Liège, GIGA-Research, GIGA-I3 Thematic Unit, Inflammation and Enhanced Rehabilitation Laboratory (Intensive Care), Liège, Belgium
Topic: 9: Intensive Care Medicine
Abstract text: **Background and Goal of Study**: In a previous study [1], we observed an abnormal acylcarnitine (AC) profile in survivors recently discharged from in intensive care unit (ICU) after a prolonged stay. Whether such alteration persists over time is unknown. This observational study aimed to describe the mid-term AC profile evolution in survivors of a prolonged ICU stay.
Materials and Methods: Adults who survived an ICU stay ≥ 7days between September 2020 and March 2022 were included if they were enrolled in our follow-up program and if they attended the consultation 3 months (M3) after ICU discharge. Exclusion criteria were known primary carnitine deficiency and ongoing treatment with zidovudine, valproate, cyclosporine or cisplatin. Serum AC concentrations, determined by liquid chromatography with tandem mass spectrometry, were assessed as routine practice during the first 7 days following ICU discharge (T0) and at the M3 consultation.
Results and Discussion: A total of 64 survivors (69% males, age 63 (50-69) years, SAPS2 33 (26-54)) were analyzed, after an ICU stay of 15 (9-24) days for mixed medical (34/64, 53%) and surgical diseases. During ICU stay, 46/64 (72%) patients were sedated using propofol, and 10/64 16%) were fed at least partly by parenteral route during 7 (4-9) days. Free carnitine (C0) concentration (normal range 14.95-84.34 µmol/l) decreased from 45.89 (35.80-127.5) to 28.73 (20.31-38.93) µmol/l (p<0.001). C0 deficiency was not observed at T0 and in 7/64 (11%) survivors at M3. The sum of short-chain ACs (C3, C4 and C5) (normal range 0.270-4.071 µmol/l) decreased from 1.310 (0.927-1.829) at T0 to 0.945 (0.709-1.127) µmol/l at M3 (p<0.001). The long-chain ACs (normal range 0.195-1.295 µmol/l) were similar at T0 and M3, respectively 0.812 (0.579-1.065) and 0.825 (0.582-1.020) µmol/l (p=0.845). The total AC/C0 ratio (normal ≤ 0.4) was 0.33 (0.24-0.39) at T0 and reached 0.39 (0.30-0.56) at M3 (p=0.001). A ratio >0.4 was observed in 16/64 (25%) at T0 and in 32/64 (50%) at M3 (p=0.006).
Conclusion(s): In patients surviving a prolonged ICU stay, occurrence of C0 deficiency increased within the 3 months following discharge. The concomitant decrease in short-chain ACs may suggest a progressive resolution of protein catabolism. On the contrary, the increasing proportion of abnormal AC/C0 ratio may reflect a worsening of mitochondrial function, as suggested by published observations of mid-term exercise intolerance in ICU survivors.
References: [1] Rousseau AF, Schmitz S, Cavalier E, Misset B, Boemer F. Altered Serum Acylcarnitines Profile after a Prolonged Stay in Intensive Care. Nutrients. 2022;14.
1st Keyword: Intensive care
2nd Keyword: Recovery
Abstract type: none case report: 1. Prospective observational only
Ethical Research: I hereby confirm that an Institutional Review Board (IRB), Independent Ethics Committee (IEC), Ethical Review Board approved the study.
Institution: Comité d'Ethique Hospitalo-Facultaire Universitaire de Liège
Name of the Ethical Committee Chair: Vincent Seutin
Approval reference: 2020/424
Date of approval: 2nd February 2021
I hereby confirm that the written consent has been received from the patient.: No
I hereby confirm that the institutional standards for animals have been reached.: No
I hereby confirm that I have been informed and agree with that ESAIC contacting the above mentioned IRB/IEC/ERB in order to inspect this review.: Yes
I hereby confirm that the Ethical Declaration is not required.: No
Conflict of interest to declare?: No
I confirm that I previewed this abstract and that all information is correct. I accept that the content of this abstract cannot be modified or corrected after final submission and I am aware that it will be published as submitted. The corresponding author is responsible for informing the other authors about the status of the abstract: Yes
The work in the abstract should not be presented at any large English-speaking meeting before the Euroanaesthesia 2023 Congress, nor should the work appear in another format at any other international English-speaking meeting.

The work has not been published before the Euroanaesthesia 2023 Congress, in whole or in abstract, in an indexed journal.

The presentation will be unbiased, based on the best available evidence and all elements of the presentation will be free from the control of commercial interests.: Yes
In consideration of the European Society of Anaesthesiology and Intensive Care taking action in reviewing and editing the submission, the author(s) transfer, assign, and otherwise convey copyright of ownership in said work to the European Society of Anaesthesiology and Intensive Care in the event said work is published by the Society. This copyright assignment applies only to the abstract submitted and does not apply to, or prevent, subsequent publication elsewhere of a full manuscript relating to the subject matter of such abstract: Yes
If the abstract is accepted, the author commits him/herself to present his/her work at the Euroanaesthesia 2023. Presenters of accepted abstracts must preregister for the congress before 29 March 2023 (23:59, CET). Abstract(s) will not be published in Euroanaesthesia 2023 related publications (the e-supplement of the European Journal of Anaesthesiology, abstract publication website and online Final Programme) and will be rejected for presentation at Euroanaesthesia 2023 if the presenter fails to register before 29 March 2023 (23:59, CET).: Yes
If an individual submits multiple abstracts and more than one abstract is accepted for presentation, the ESAIC will attempt to schedule the presentations to prevent time conflicts for the presenter. Because of the complexity of scheduling the large number of accepted abstracts, some conflicts in presentation times may be unavoidable. If a scheduling conflict occurs, the original abstract presenter is responsible for selecting a co-author to present the abstract. The new abstract presenter should clearly understand the study and the abstract and should register for the congress on time.: Yes
If a submitted abstract must be withdrawn, written withdrawal request must be submitted to the ESAIC Secretariat (abstracts@esaic.org) by e-mail originating from the presenter's e-mail address. This notice must clearly mention: Abstract submission number; title and presenter contact data; reason(s) for withdrawal of the abstract and attest that all authors are in agreement that the abstract must be withdrawn. An abstract is considered withdrawn as soon as the written confirmation of its withdrawal is received from the organisers. If such a confirmation is not received within 3 working days after the request has been sent, the abstract presenter should contact the ESAIC Secretariat (abstracts@esaic.org).: Yes
If the presenter of an accepted abstract has not registered by 29 March 2023 (23:59, CET), his abstract will be withdrawn by the ESAIC

and removed from all Euroanaesthesia 2023 related publications (abstract e-book, abstract publication website(s) or online Final Programme).

If the presenter has registered but decides to withdraw the submitted abstract(s) after 29 March 2023 (23:59, CET), the ESAIC will not be able to withdraw the abstract from the above-mentioned publications.: Yes