Cohort

1-Treatment outcomes in patients with VEXAS syndrome a retrospective cohort study

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Abstract

Background Vacuoles, E1 enzyme, X-linked, autoinflammatory, somatic (VEXAS) syndrome is a recently described autoinflammatory disorder with little therapeutic evidence. We compared treatment outcomes of targeted therapies versus prednisolone alone in the largest UK cohort of patients with VEXAS syndrome to date. Methods In this retrospective cohort study, we analysed the outcomes of targeted therapies in patients with VEXAS syndrome in six tertiary referral centres across the UK between July 22, 2014, and Oct 19, 2024. The inclusion criteria were genetically confirmed VEXAS syndrome and receipt of at least one targeted therapy or prednisolone alone. Patients without clinical information at all timepoints after baseline were excluded. Data collection forms were used to record clinical and biochemical data at the following timepoints: time of diagnosis, initiation of treatment, and follow-up at 3 months, 6 months, and 12 months from the initiation of treatment (+/- 28 days). Laboratory parameters, including C-reactive protein (CRP) and haemoglobin, and glucocorticoid doses were collected at each timepoint and compared between timepoints. Primary outcomes were complete response (ie, clinical remission, CRP <= 10 mg/L, and prednisolone <= 10 mg per day) and partial response (ie, clinical remission with >= 50% reductions in both CRP and glucocorticoid dose from baseline) to treatment. Treatment discontinuation and adverse events were documented for each treatment. Due to the high prevalence of cytopenias in VEXAS syndrome, these were only recorded as adverse events when necessitating treatment change. People with lived experience were not involved in the study. Findings We analysed 71 targeted therapies in 59 patients with genetically confirmed VEXAS syndrome. Of the 59 patients, 58 (98%) were male and one (2%) was female, with a mean age of 71 years (SD 8), and 27 (46%) had myelodysplastic syndrome. The treatments included tocilizumab (n=19), anakinra (n=13), azacitidine (n=13), baricitinib (n=11), and prednisolone only (n=10). At 6 months, in those who continued therapy, ten (91%) of 11 patients receiving azacitidine showed a response (three [27%] complete responses), as well as did seven (64%) of 11 receiving tocilizumab (four [36%] complete responses), three (100%) of three receiving anakinra (one [33%] complete response), and two (40%) of five receiving baricitinib (no complete responses). Although all patients who tolerated anakinra had a response, the discontinuation rate was high (eight [62%] of 13), mostly due to severe injection-site reactions (n=5). Patients were more likely to respond to azacitidine than to other therapies at 6 months (risk ratio 247, 95% CI 118-520; p=0018). Absence of fever or thromboembolism at diagnosis was associated with better outcomes. By 6 months, median CRP concentrations had decreased in patients receiving tocilizumab (from 30 mg/L [IQR 13-45] to 4 mg/L [3-37]) or anakinra (from 18 mg/L [11-52] to 2 mg/L [1-28]), whereas azacitidine showed the greatest increase in haemoglobin (from mean concentration 104 g/L [SD 175] to 120 g/L [144]). 28 (39%) of 71

treatments were discontinued, most commonly due to serious adverse events (12 [17%]) and death (nine [13%]). Infections were most frequent with azacitidine (eight [62%] of 13) and tocilizumab (nine [47%] of 19). Interpretation In this UK cohort of patients with VEXAS syndrome, azacitidine and tocilizumab showed superior effectiveness compared with anakinra, baricitinib, and prednisolone only. Treatment selection should consider individual risk factors and tolerability. Prospective studies are needed to confirm optimal treatment strategies and develop standardised protocols.

Cohort

2-Changes in frailty and incident cardiovascular disease in three prospective cohorts

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By He, D (He, Di) [1] , [2] ; Wang, ZP (Wang, Zhaoping) [1] , [2] ; Li, J (Li, Jun) [1] , [2] ; Yu, KX (Yu, Kaixin) [1] , [2] ; He, YS (He, Yusa) [1] , [2] ; He, XY (He, Xinyue) [1] , [2] ; Liu, YJ (Liu, Yuanjiao) [1] , [2] ; Li, YH (Li, Yuhao) [1] , [2] ; Fu, RY (Fu, Ruiyi) [1] , [2] ; Zhou, D (Zhou, Dan) [3] , [4] , [5] ; **(provided by Clarivate) , Source: EUROPEAN HEART JOURNAL, Volume: 45, Issue: 12, Page: 1058-1068, Special Issue: SI, DOI: 10.1093/eurheartj/ehad885, Published: MAR 27 2024, Early Access: JAN 2024, Indexed: 2024-01-24, Document Type: Article**

Abstract

Background and Aims Previous studies found that frailty was an important risk factor for cardiovascular disease (CVD). However, previous studies only focused on baseline frailty status, not taking into consideration the changes in frailty status during follow-up. The aim of this study was to investigate the associations of changes in frailty status with incident CVD.Methods This study used data of three prospective cohorts: China Health and Retirement Longitudinal Study (CHARLS), English Longitudinal Study of Ageing (ELSA), and Health and Retirement Study (HRS). Frailty status was evaluated by the Rockwood frailty index and classified as robust, pre-frail, or frail. Changes in frailty status were assessed by frailty status at baseline and the second survey which was two years after the baseline. Cardiovascular disease was ascertained by self-reported physician-diagnosed heart disease (including angina, heart attack, congestive heart failure, and other heart problems) or stroke. Cox proportional hazard models were used to calculate the hazard ratio (HR) and 95% confidence interval (95% CI) after adjusting for potential confounders.Results A total of 7116 participants from CHARLS (female: 48.6%, mean age: 57.4 years), 5303 from ELSA (female: 57.7%, mean age: 63.7 years), and 7266 from HRS (female: 64.9%, mean age: 65.1 years) were included according to inclusion and exclusion criteria. The median follow-up periods were 5.0 years in the CHARLS, 10.7 years in the ELSA, and 9.5 years in the HRS. Compared with stable robust participants, robust participants who progressed to pre-frail or frail status had increased risks of incident CVD (CHARLS, HR = 1.84, 95% CI: 1.54-2.21; ELSA, HR = 1.53, 95% CI: 1.25-1.86; HRS, HR = 1.59, 95% CI: 1.31-1.92). In contrast, frail participants who recovered to robust or pre-frail status presented decreased risks of incident CVD (CHARLS, HR = 0.62, 95% CI: 0.47-0.81; ELSA, HR = 0.49, 95% CI: 0.34-0.69; HRS, HR = 0.70, 95% CI: 0.55-0.89) when compared with stable frail participants. These decreased risks of incident CVD were also observed in pre-frail participants who recovered to robust status (CHARLS, HR = 0.66, 95% CI: 0.52-0.83; ELSA, HR = 0.65, 95% CI: 0.49-0.85; HRS, HR = 0.71, 95% CI: 0.56-0.91) when compared with stable pre-frail participants.Conclusions Different changes in frailty status are associated with different risks of incident CVD. Progression of frailty status increases incident CVD risks, while recovery of frailty status decreases incident CVD risks.

Structured Graphical Abstract Changes in frailty status and the risks of incident cardiovascular disease. CHARLS, China Health and Retirement Longitudinal Study; ELSA, English Longitudinal Study of Ageing; HRS, Health and Retirement Study; HR, hazard ratio; CI, confidence interval.

Keywords

Author Keywords

Cohort

FrailtyCardiovascular diseaseDynamic natureEpidemiology

Keywords Plus

ALL-CAUSERISKHEALTHMORTALITYPROFILEADULTSRETIREMENTPREDICTORINDEXCHINA

Cohort

3-Blood-based tests for multicancer early detection (PATHFINDER): a prospective cohort study

By Schrag, D (Schrag, Deb) [1] ; Beer, TM (Beer, Tomasz M.) [2] ; McDonnell, CH III (McDonnell III, Charles H.) [3] ; Nadauld, L (Nadauld, Lincoln) [4] ; Dilaveri, CA (Dilaveri, Christina A.) [5] ; Reid, R (Reid, Robert) [6] ; Marinac, CR (Marinac, Catherine R.) [7] ; Chung, KC (Chung, Karen C.) [8] ; Lopatin, M (Lopatin, Margarita) [8] ; Fung, ET (Fung, Eric T.) [8] ; (provided by Clarivate), **Source: LANCET Volume: 402, Issue: 10409, Page: 1251-1260, DOI: 10.1016/s0140-6736(23)01700-2, Published OCT 7 2023, Early Access: OCT 2023, Indexed: 2023-11-13, Document Type: Article**

Abstract

Background Multicancer early detection (MCED) blood tests can detect a cancer signal from circulating cell-free DNA (cfDNA). PATHFINDER was a prospective cohort study investigating the feasibility of MCED testing for cancer screening. Methods In this prospective cohort study done in oncology and primary care outpatient clinics at seven US health networks, a convenience sample of adults aged 50 years or older without signs or symptoms of cancer consented to MCED testing. We collected blood, analysed cfDNA, and returned results to participants' doctors. If a methylation signature indicative of cancer was detected, predicted cancer signal origin(s) informed diagnostic assessment. The primary outcome was time to, and extent of, diagnostic testing required to confirm the presence or absence of cancer. This trial is registered at ClinicalTrials.gov, NCT04241796, and is completed. Findings Between Dec 12, 2019, and Dec 4, 2020, we recruited 6662 participants. 4204 (63 center dot 5%) of 6621 participants with analysable results were women, 2417 (36 center dot 5%) were men, and 6071 (91 center dot 7%) were White. A cancer signal was detected in 92 (1 center dot 4%) of 6621 participants with analysable results. 35 (38%) participants were diagnosed with cancer (true positives) and 57 (62%) had no cancer diagnosis (false positives). Excluding two participants whose diagnostic assessments began before MCED test results were reported, median time to diagnostic resolution was 79 days (IQR 37-219): 57 days (33-143) in true-positive and 162 days (44-248) in false-positive participants. Most participants had both laboratory tests (26 [79%] of 33 with true-positive results and 50 [88%] of 57 with false-positive results) and imaging (30 [91%] of 33 with true-positive results and 53 [93%] of 57 with false-positive results). Fewer procedures were done in participants with false-positive results (17 [30%] of 57) than true-positive results (27 [82%] of 33) and few had surgery (one with a false-positive result and three with a true-positive result). Interpretation This study supports the feasibility of MCED screening for cancer and underscores the need for further research investigating the test's clinical utility.

Keywords

Keywords Plus

NATIONAL PERFORMANCE BENCHMARKSDIGITAL MAMMOGRAPHY UPDATECANCER-DETECTIONLUNG-CANCERFRACTIONPLASMA

Cohort

4-The impact of nuance DAX ambient listening AI documentation: a cohort study

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By Haberle, T (Haberle, Tyler) [1] , [2] ; Cleveland, C (Cleveland, Courtney) [1] ; Snow, GL (Snow, Greg L.) [1] ; Barber, C (Barber, Chris) [1] ; Stookey, N (Stookey, Nikki) [1] ; Thornock, C (Thornock, Cari) [1] ; Younger, L (Younger, Laurie) [1] ; Mullahkhel, B (Mullahkhel, Buzzy) [1] ; Ize-Ludlow, D (Ize-Ludlow, Diego) [1] (provided by Clarivate) , **Source: JOURNAL OF THE AMERICAN MEDICAL , INFORMATICS ASSOCIATION, Volume: 31, Issue: 4, Page :975-979, DOI: 10.1093/jamia/ocae022 Published: APR 3 2024, Early Access: FEB 2024, Indexed: 2024-02-26, Document Type: Article**

Abstract

Objective To assess the impact of the use of an ambient listening/digital scribing solution (Nuance Dragon Ambient eXperience (DAX)) on caregiver engagement, time spent on Electronic Health Record (EHR) including time after hours, productivity, attributed panel size for value-based care providers, documentation timeliness, and Current Procedural Terminology (CPT) submissions.Materials and Methods We performed a peer-matched controlled cohort study from March to September 2022 to evaluate the impact of DAX in outpatient clinics in an integrated healthcare system. Primary outcome measurements included provider engagement survey results, reported patient safety events related to DAX use, patients' Likelihood to Recommend score, number of patients opting out of ambient listening, change in work relative values units, attributed value-based primary care panel size, documentation completion and CPT code submission deficiency rates, and note turnaround time.Results A total of 99 providers representing 12 specialties enrolled in the study; 76 matched control group providers were included for analysis. Median utilization of DAX was 47% among active participants. We found positive trends in provider engagement, while non-participants saw worsening engagement and no practical change in productivity. There was a statistically significant worsening of after-hours EHR. There was no quantifiable effect on patient safety.Discussion Nuance DAX use showed positive trends in provider engagement at no risk to patient safety, experience, or clinical documentation. There were no significant benefits to patient experience, documentation, or measures of provider productivity.Conclusion Our results highlight the potential of ambient dictation as a tool for improving the provider experience. Head-to-head comparisons of EHR documentation efficiency training are needed.

Keywords
Author Keywords
Dragon Ambient eXperienceAI documentationgenerative AIambient listening technologyprovider engagement
Keywords Plus
INTELLIGENCEBURNOUTCARE

Cohort

5-Multi-cohort cerebrospinal fluid proteomics identifies robust molecular signatures across the Alzheimer disease continuum

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By Ali, M (Ali, Muhammad) [1] ; Western, D (Western, Daniel) [1] ; Liu, MH (Liu, Menghan) [1] ; Beric, A (Beric, Aleksandra) [1] ; Budde, J (Budde, John) [1] ; Do, A (Do, Anh) [1] ; Heo, G (Heo, Gyujin) [1] ; Wang, LH (Wang, Lihua) [1] ; Gentsch, J (Gentsch, Jen) [1] ; Schindler, SE (Schindler, Suzanne E.) [2] ; Group Authors: Knight Alzheimer Dis Res Ctr Knight ADRC (Knight Alzheimer Dis Res Ctr Knight ADRC) ; Alzheimer Dis Neuroimaging Initiative ADNI (Alzheimer Dis Neuroimaging Initiative ADNI) ; Fdn ACE Alzheimer Ctr Barcelona FACE (Fdn ACE Alzheimer Ctr Barcelona FACE) ; Barcelona-1 (Barcelona-1) ; Stanford Alzheimer Dis Res Ctr Stanford ADRC (Stanford Alzheimer Dis Res Ctr Stanford ADRC), (provided by Clarivate), **Source: NEURON, Volume: 113, Issue: 9, Page: 1363-1379, DOI: 10.1016/j.neuron.2025.02.014, Published: MAY 7 2025, Indexed: 2025-07-03, Document Type**

Article

Abstract

Changes in b-amyloid (Ab) and hyperphosphorylated tau (T) in brain and cerebrospinal fluid (CSF) precede Alzheimer's disease (AD) symptoms, making the CSF proteome a potential avenue to understand disease pathophysiology and facilitate reliable diagnostics and therapies. Using the AT framework and a three-stage study design (discovery, replication, and meta-analysis), we identified 2,173 analytes (2,029 unique proteins) dysregulated in AD. Of these, 865 (43%) were previously reported, and 1,164 (57%) are novel. The identified proteins cluster in four different pseudo-trajectories groups spanning the AD continuum and were enriched in pathways including neuronal death, apoptosis, and tau phosphorylation (early stages), microglia dysregulation and endolysosomal dysfunction (mid stages), brain plasticity and longevity (mid stages), and microglianeuron crosstalk (late stages). Using machine learning, we created and validated highly accurate and replicable (area under the curve [AUC] > 0.90) models that predict AD biomarker positivity and clinical status. These models can also identify people that will convert to AD.

Keywords

Keywords Plus

NF-KAPPA-BDIAGNOSISMEMORYINFLAMMATIONPATHOGENESISMECHANISMSPROTEASOMEBIOMARKERSMARKERSMODELS

Cohort

6-Changes in prevalence and incidence of dementia and risk factors for dementia: an analysis from cohort studies

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By Mukadam, N (Mukadam, Naaheed) [1] ; Wolters, FJ (Wolters, Frank J.) [2] ; Walsh, S (Walsh, Sebastian) [3] , [4] ; Wallace, L (Wallace, Lindsay) [3] , [4] ; Brayne, C (Brayne, Carol) [3] , [4] ; Matthews, FE (Matthews, Fiona E.) [5] ; Sacuiu, S (Sacuiu, Simona) [6] , [7] , [8] , [9] , [10] ; Skoog, I (Skoog, Ingmar) [8] , [9] , [10] ; Seshadri, S (Seshadri, Sudha) [11] , [12] ; Beiser, A (Beiser, Alexa) [12] ; (provided by Clarivate) ,**Source: LANCET PUBLIC HEALTH, Volume: 9, Issue: 7, Page: e443-e460, DOI: 10.1016/S2468-2667(24)00120-8, Published: JUL 2024, Early Access: JUN 2024, Indexed: 2024-07-14**
Document Type: Article

Abstract

Background Some cohort studies have reported a decline in dementia prevalence and incidence over time, although these findings have not been consistent across studies. We reviewed evidence on changes in dementia prevalence and incidence over time using published population -based cohort studies that had used consistent methods with each wave and aimed to quantify associated changes in risk factors over time using population attributable fractions (PAFs). Methods We searched for systematic reviews of cohort studies examining changes in dementia prevalence or incidence over time. We searched PubMed for publications from database inception up to Jan 12, 2023, using the search terms "systematic review" AND "dementia" AND ("prevalence" OR "incidence"), with no language restrictions. We repeated this search on March 28, 2024. From eligible systematic reviews, we searched the references and selected peerreviewed publications about cohort studies where dementia prevalence or incidence was measured in the same geographical location, at a minimum of two timepoints, and that reported age -standardised prevalence or incidence of dementia. Additionally, data had to be from population -based samples, in which participants' cognitive status was assessed and where validated criteria were used to diagnose dementia. We extracted summary -level data from each paper about dementia risk factors, contacting authors when such data were not available in the published paper, and calculated PAFs for each risk factor at all available timepoints. Where possible, we linked changes in dementia prevalence or incidence with changes in the prevalence of risk factors. Findings We identified 1925 records in our initial search, of which five eligible systematic reviews were identified. Within these systematic reviews, we identified 71 potentially eligible primary papers, of which 27 were included in our analysis. 13 (48%) of 27 primary papers reported change in prevalence of dementia, ten (37%) reported change in incidence of dementia, and four (15%) reported change in both incidence and prevalence of dementia. Studies reporting change in dementia incidence over time in Europe (n=5) and the USA (n=5) consistently reported a declining incidence in dementia. One study from Japan reported an increase in dementia prevalence and incidence and a stable incidence was reported in one study from Nigeria. Overall, across studies, the PAFs for less education or smoking, or both, generally declined over time, whereas PAFs for obesity, hypertension, and diabetes generally increased. The decrease in PAFs for less education and smoking was associated with a decline in the incidence of dementia in the Framingham study (Framingham, MA, USA, 1997-2013), the only study with sufficient data to allow analysis. Interpretation Our findings suggest that lifestyle

interventions such as compulsory education and reducing rates of smoking through country -level policy changes could be associated with an observed reduction, and therefore future reduction, in the incidence of dementia. More studies are needed in low-income and middle -income countries, where the burden of dementia is highest, and continues to increase. Funding National Institute for Health and Care Research Three Schools' Dementia Research Programme.

Keywords

Keywords Plus

UNITED-STATESALZHEIMERS-DISEASEAFRICAN-AMERICANSSECULAR TRENDSTIME PERIODSINTERVENTIONPREVENTIONENGLAND

Cohort

7-The STROCSS 2024 guideline: strengthening the reporting of cohort, cross-sectional, and case-control studies in surgery

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By Rashid, R (Rashid, Rasha) [1] ; Sohrabi, C (Sohrabi, Catrin) [2] ; Kerwan, A (Kerwan, Ahmed) [3] ; Franchi, T (Franchi, Thomas) [4] ; Mathew, G (Mathew, Ginimol) [2] ; Nicola, M (Nicola, Maria) [5] ; Agha, RA (Agha, Riaz A.) [6], (provided by Clarivate) , **Source: INTERNATIONAL JOURNAL OF SURGERY, Volume: 110, Issue: 6, Page: 3151-3165, DOI: 10.1097/JS9.0000000000001268, Published JUN 2024, Indexed: 2024-06-29, Document Type: Article**

Abstract

Introduction:First released in 2017, the STROCSS guidelines have become integral for promoting high-quality reporting of observational research in surgery. However, regular updates are essential to ensure they remain relevant and of value to surgeons. Building on the 2021 updates, the authors have developed the STROCSS 2024 guidelines. This timely revision aims to address residual reporting gaps, assimilate recent advances, and further strengthen observational study quality across all surgical disciplines.Methods:A core steering committee compiled proposed changes to update the STROCSS 2021 guidelines based on identified gaps in prior iterations. An expert panel of surgical research leaders then evaluated the proposed changes for inclusion. A Delphi consensus exercise was used. Proposals that scored between 7-9 on a nine-point Likert agreement scale, by >= 70% of Delphi participants, were integrated into the STROCSS 2024 checklist.Results:In total, 46 of 56 invited participants (82%) completed the Delphi survey and hence participated in the development of STROCSS 2024. All suggested amendments met the criteria for inclusion, indicating a high level of agreement among the Delphi group. All proposed items were therefore integrated into the final revised checklist.Conclusion:The authors present the updated STROCSS 2024 guidelines, which have been developed through expert consensus to further enhance the transparency and reporting quality of observational research in surgery.

Keywords
Author Keywords
case-control studiescohort studiescross-sectional studiesreporting guidelinesSTROCSS

Keywords Plus
IMPACT

Cohort

8-Prognostic value of preoperative modified Glasgow prognostic score in predicting overall survival in breast cancer patients: A retrospective cohort study

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By Chen, Y (Chen, Yi) [1] , [2] ; Zhang, BX (Zhang, Boxiang) [1] , [2] ; Wang, XL (Wang, Xiaoli) [1] , [2] ; Chen, YY (Chen, Yanyan) [1] , [2] ; Anwar, M (Anwar, Munawar) [1] , [2] ; Fan, JJ (Fan, Jingjing) [1] , [2] ; Ma, BL (Ma, Binlin) [1] , [2] , (provided by Clarivate) , **Source: ONCOLOGY LETTERS Volume: 29, Issue: 4, DOI: 10.3892/ol.2025.14926, Article Number: 180, Published: APR 2025 Indexed: 2025-03-05, Document Type: Article**

Abstract

The modified Glasgow prognostic score (mGPS), based on C-reactive protein and albumin levels, is an inflammation-based prognostic tool used in various cancers. However, related research in breast cancer is limited. The present study evaluated the prognostic value of the preoperative mGPS in predicting overall survival (OS) of patients with breast cancer undergoing surgery. A retrospective cohort study was conducted involving 300 patients with breast cancer with up to 10 years of follow-up. Patients were categorized into three groups based on mGPS scores of 0, 1 and 2, and their clinical and pathological data were collected. Kaplan-Meier survival analysis and Cox proportional hazards models were used to assess survival outcomes and identify risk factors associated with higher mGPS scores. A prognostic nomogram was developed based on multivariate analysis to predict 5- and 10-year OS. Patients with high mGPS scores showed significantly poor survival outcomes. The 5- and 10-year survival rates for mGPS 0, 1 and 2 were 80, 70 and 55%, and 71, 55 and 22%, respectively (P<0.001). Multivariate Cox analysis identified the mGPS, age, smoking, PAM50 and TNM stage as independent predictors of OS. The nomogram based on the mGPS demonstrated good predictive accuracy (concordance index: 0.81) and calibration. The preoperative mGPS is an independent prognostic factor for OS of patients with breast cancer. It is a simple, cost-effective tool that can aid in risk stratification and guide treatment strategies. Further validation in larger cohorts is recommended.

Keywords

Author Keywords

breast cancermodified Glasgow prognostic scoreoverall survivalprognostic biomarkernomogram

Keywords Plus

MGPS

Cohort

9-A risk prediction system for depression in middle-aged and older adults grounded in machine learning and visualization technology: a cohort study

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By Du, JS (Du, Jinsong) [1] , [2] , [3] ; Tao, XR (Tao, Xinru) [1] ; Zhu, L (Zhu, Le) [1] ; Qi, WH (Qi, Wenhao) [4] ; Min, XQ (Min, Xiaoqiang) [3] , [5] ; Deng, HY (Deng, Hongyan) [1] ; Wei, SJ (Wei, Shujie) [6] ; Zhang, XY (Zhang, Xiaoyan) [7] ; Chang, X (Chang, Xiao) [2], (provided by Clarivate)
Source: FRONTIERS IN PUBLIC HEALTH, Volume: 13, DOI: 10.3389/fpubh.2025.1606316, **Article Number** 1606316: **Published,** JUN 4 2025, **Indexed:** 2025-06-21, **Document Type:** Article

Abstract

Introduction Middle-aged and older adults are highly susceptible to depression. For this reason, early identification and intervention can substantially reduce its prevalence. This study innovatively proposed a visual risk prediction system for depressive symptoms and depression in middle-aged and older adults, rooted in machine learning and visualization technologies.Methods Using cohort data from the China Health and Retirement Longitudinal Study (CHARLS), involving 8,839 middle-aged and older adult participants, the study developed predictive models based on eight machine learning algorithms, primarily including LightGBM, XGBoost, and AdaBoost. To enhance the interpretability of the XGBoost model, SHAP technology was employed to visualize the prediction results. The model was then deployed on a web platform to establish the risk prediction system.Results Among the models, XGBoost demonstrated the best performance, achieving an average ROC-AUC of 0.69, and was ultimately selected as the predictive model for depressive symptoms and depression risk in this population. The developed risk prediction system can output the probability of users developing depressive symptoms or depression within five years and provide explanations for the prediction results, improving user accessibility and interpretability.Discussion Rooted in China's national longitudinal cohort, this platform integrates machine learning analytics with interactive visualization, with web deployment enhancing its clinical translational value. By enabling early depression detection and evidence-based interventions for middle-aged and older adult populations, it establishes a novel health management paradigm with demonstrated potential to improve quality of life.

Keywords
Author Keywords
depressionmachine learningCHARLSrisk predictionvisualization

Keywords Plus
CHINA HEALTHSYMPTOMS

Cohort

10-Cognitive and psychiatric symptom trajectories 2-3 years after hospital admission for COVID-19: a longitudinal, prospective cohort study in the UK

By Taquet, M (Taquet, Maxime) [1] , [4] , [5] ; Skorniewska, Z (Skorniewska, Zuzanna) ; De Deyn, T (De Deyn, Thomas) ; Hampshire, A (Hampshire, Adam) [1] , [5] ; Trender, WR (Trender, William R.) [8] , [23] ; Hellyer, PJ (Hellyer, Peter J.) ; Chalmers, J (Chalmers, James) ; Ho, LP (Ho, Ling-Pei) ; Horsley, A (Horsley, Alex) [10] , [11] ; Marks, M (Marks, Michael) [13] , [14] ; Group Author PHOSP-COVID Study Collaborative Grp (PHOSP-COVID Study Collaborative Grp) [4], (provided by Clarivate) , **Source: LANCET PSYCHIATRY, Volume: 11, Issue: 9, Page: 696-708, DOI: 10.1016/S2215-0366(24)00214-1, Published: SEP 2024, Early Access, AUG 2024, Indexed: 2024-12-03, Document Type: Article**

Abstract

Background COVID-19 is known to be associated with increased risks of cognitive and psychiatric outcomes after the acute phase of disease. We aimed to assess whether these symptoms can emerge or persist more than 1 year after hospitalisation for COVID-19, to identify which early aspects of COVID-19 illness predict longer-term symptoms, and to establish how these symptoms relate to occupational functioning. Methods The Post-hospitalisation COVID-19 study (PHOSP-COVID) is a prospective, longitudinal cohort study of adults (aged >= 18 years) who were hospitalised with a clinical diagnosis of COVID-19 at participating National Health Service hospitals across the UK. In the C-Fog study, a subset of PHOSP-COVID participants who consented to be recontacted for other research were invited to complete a computerised cognitive assessment and clinical scales between 2 years and 3 years after hospital admission. Participants completed eight cognitive tasks, covering eight cognitive domains, from the Cognitron battery, in addition to the 9-item Patient Health Questionnaire for depression, the Generalised Anxiety Disorder 7-item scale, the Functional Assessment of Chronic Illness Therapy Fatigue Scale, and the 20-item Cognitive Change Index (CCI-20) questionnaire to assess subjective cognitive decline. We evaluated how the absolute risks of symptoms evolved between follow-ups at 6 months, 12 months, and 2-3 years, and whether symptoms at 2-3 years were predicted by earlier aspects of COVID-19 illness. Participants completed an occupation change questionnaire to establish whether their occupation or working status had changed and, if so, why. We assessed which symptoms at 2-3 years were associated with occupation change. People with lived experience were involved in the study. Findings 2469 PHOSP-COVID participants were invited to participate in the C-Fog study, and 475 participants (191 [402%] females and 284 [598%] males; mean age 5826 [SD 1113] years) who were discharged from one of 83 hospitals provided data at the 2-3-year follow-up. Participants had worse cognitive scores than would be expected on the basis of their sociodemographic characteristics across all cognitive domains tested (average score 071 SD below the mean [IQR 016-104]; p<00001). Most participants reported at least mild depression (263 [745%] of 353), anxiety (189 [535%] of 353), fatigue (220 [623%] of 353), or subjective cognitive decline (184 [521%] of 353), and more than a fifth reported severe depression (79 [224%] of 353), fatigue (87 [246%] of 353), or subjective cognitive decline (88 [249%] of 353). Depression, anxiety, and fatigue were worse at 2-3 years than at 6 months or 12 months, with evidence of both worsening of existing symptoms and emergence of new symptoms. Symptoms at 2-3 years were not predicted by the

severity of acute COVID-19 illness, but were strongly predicted by the degree of recovery at 6 months (explaining 350-488% of the variance in anxiety, depression, fatigue, and subjective cognitive decline); by a biocognitive profile linking acutely raised D-dimer relative to C-reactive protein with subjective cognitive deficits at 6 months (explaining 70-172% of the variance in anxiety, depression, fatigue, and subjective cognitive decline); and by anxiety, depression, fatigue, and subjective cognitive deficit at 6 months.
Objective cognitive deficits at 2-3 years were not predicted by any of the factors tested, except for cognitive deficits at 6 months, explaining 106% of their variance. 95 of 353 participants (269% [95% CI 226-318]) reported occupational change, with poor health being the most common reason for this change. Occupation change was strongly and specifically associated with objective cognitive deficits (odds ratio [OR] 151 [95% CI 104-222] for every SD decrease in overall cognitive score) and subjective cognitive decline (OR 154 [121-198] for every point increase in CCI-20). Interpretation Psychiatric and cognitive symptoms appear to increase over the first 2-3 years post-hospitalisation due to both worsening of symptoms already present at 6 months and emergence of new symptoms. New symptoms occur mostly in people with other symptoms already present at 6 months. Early identification and management of symptoms might therefore be an effective strategy to prevent later onset of a complex syndrome. Occupation change is common and associated mainly with objective and subjective cognitive deficits. Interventions to promote cognitive recovery or to prevent cognitive decline are therefore needed to limit the functional and economic impacts of COVID-19.

Cohort

11-The persistence of SARS-CoV-2 in tissues and its association with long COVID symptoms: a cross-sectional cohort study in China

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By Zuo, WT (Zuo, Wenting) [1] ; He, D (He, Di) [1] , [17] ; Liang, CY (Liang, Chaoyang) [1] , [2] ; Du, SY (Du, Shiyu) [3] ; Hua, Z (Hua, Zhan) [4] ; Nie, QQ (Nie, Qiangqiang) [7] ; Zhou, XF (Zhou, Xiaofeng) [8] ; Yang, M (Yang, Meng) [5] ; Tan, HD (Tan, Haidong) [6] ; Xu, JY (Xu, Jiuyang) [1] ; **(provided by Clarivate) Source: LANCET INFECTIOUS DISEASES, Volume: 24, Issue: 8, Page: 845-855, DOI: 10.1016/S1473-3099(24)00171-3, Published: AUG 2024, Early Access: JUL 2024, Indexed: 2024-08-07, Document Type: Article**

Abstract

Background Growing evidence suggests that symptoms associated with post-COVID-19 condition (also known as long COVID) can affect multiple organs and systems in the human body, but their association with viral persistence is not clear. The aim of this study was to investigate the persistence of SARS-CoV-2 in diverse tissues at three timepoints following recovery from mild COVID-19, as well as its association with long COVID symptoms. Methods This single-centre, cross-sectional cohort study was done at China-Japan Friendship Hospital in Beijing, China, following the omicron wave of COVID-19 in December, 2022. Individuals with mild COVID-19 confirmed by PCR or a lateral flow test scheduled to undergo gastroscopy, surgery, or chemotherapy, or scheduled for treatment in hospital for other reasons, at 1 month, 2 months, or 4 months after infection were enrolled in this study. Residual surgical samples, gastroscopy samples, and blood samples were collected approximately 1 month (18-33 days), 2 months (55-84 days), or 4 months (115-134 days) after infection. SARS-CoV-2 was detected by digital droplet PCR and further confirmed through RNA in-situ hybridisation, immunofluorescence, and immunohistochemistry. Telephone follow-up was done at 4 months post-infection to assess the association between the persistence of SARS-CoV-2 RNA and long COVID symptoms. Findings Between Jan 3 and April 28, 2023, 317 tissue samples were collected from 225 patients, including 201 residual surgical specimens, 59 gastroscopy samples, and 57 blood component samples. Viral RNA was detected in 16 (30%) of 53 solid tissue samples collected at 1 month, 38 (27%) of 141 collected at 2 months, and seven (11%) of 66 collected at 4 months. Viral RNA was distributed across ten different types of solid tissues, including liver, kidney, stomach, intestine, brain, blood vessel, lung, breast, skin, and thyroid. Additionally, subgenomic RNA was detected in 26 (43%) of 61 solid tissue samples tested for subgenomic RNA that also tested positive for viral RNA. At 2 months after infection, viral RNA was detected in the plasma of three (33%), granulocytes of one (11%), and peripheral blood mononuclear cells of two (22%) of nine patients who were immunocompromised, but in none of these blood compartments in ten patients who were immunocompetent. Among 213 patients who completed the telephone questionnaire, 72 (34%) reported at least one long COVID symptom, with fatigue (21%, 44 of 213) being the most frequent symptom. Detection of viral RNA in recovered patients was significantly associated with the development of long COVID symptoms (odds ratio 517, 95% CI 264-1013, p<00001). Patients with higher virus copy numbers had a higher likelihood of developing long COVID symptoms. Interpretation Our findings suggest that residual SARS-CoV-2 can persist in patients who have recovered from mild COVID-19 and that there is a significant association between viral persistence and long COVID symptoms. Further research is needed

to verify a mechanistic link and identify potential targets to improve long COVID symptoms.

Cohort

12-Insulin resistance assessed by estimated glucose disposal rate and risk of incident cardiovascular diseases among individuals without diabetes: findings from a nationwide, population based, prospective cohort study

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By Zhang, ZL (Zhang, Zenglei) [1] ; Zhao, L (Zhao, Lin) [1] ; Lu, YT (Lu, Yiting) [1] ; Xiao, Y (Xiao, Yan) [1] ; Zhou, XL (Zhou, Xianliang) [1], (provided by Clarivate) , **Source: CARDIOVASCULAR DIABETOLOGY, Volume: 23, Issue :1, DOI: 10.1186/s12933-024-02256-5, Article Number: 194 Published: JUN 6 2024, Indexed: 2024-06-21, Document Type: Article**

Abstract

Background Recent studies have suggested that insulin resistance (IR) contributes to the development of cardiovascular diseases (CVD), and the estimated glucose disposal rate (eGDR) is considered to be a reliable surrogate marker of IR. However, most existing evidence stems from studies involving diabetic patients, potentially overstating the effects of eGDR on CVD. Therefore, the primary objective of this study is to examine the relationship of eGDR with incidence of CVD in non-diabetic participants. Method The current analysis included individuals from the China Health and Retirement Longitudinal Study (CHARLS) who were free of CVD and diabetes mellitus but had complete data on eGDR at baseline. The formula for calculating eGDR was as follows: eGDR (mg/kg/min) = 21.158 - (0.09 x WC) - (3.407 x hypertension) - (0.551 x HbA1c) [WC (cm), hypertension (yes = 1/no = 0), and HbA1c (%)]. The individuals were categorized into four subgroups according to the quartiles (Q) of eGDR. Crude incidence rate and hazard ratios (HRs) with 95% confidence intervals (CIs) were computed to investigate the association between eGDR and incident CVD, with the lowest quartile of eGDR (indicating the highest grade of insulin resistance) serving as the reference. Additionally, the multivariate adjusted restricted cubic spine (RCS) was employed to examine the dose-response relationship. Results We included 5512 participants in this study, with a mean age of 58.2 +/- 8.8 years, and 54.1% were female. Over a median follow-up duration of 79.4 months, 1213 incident CVD cases, including 927 heart disease and 391 stroke, were recorded. The RCS curves demonstrated a significant and linear relationship between eGDR and all outcomes (all P for non-linearity > 0.05). After multivariate adjustment, the lower eGDR levels were founded to be significantly associated with a higher risk of CVD. Compared with participants with Q1 of eGDR, the HRs (95% CIs) for those with Q2 - 4 were 0.88 (0.76 - 1.02), 0.69 (0.58 - 0.82), and 0.66 (0.56 - 0.79). When assessed as a continuous variable, per 1.0-SD increase in eGDR was associated a 17% (HR: 0.83, 95% CI: 0.78 - 0.89) lower risk of CVD, with the subgroup analyses indicating that smoking status modified the association (P for interaction = 0.012). Moreover, the mediation analysis revealed that obesity partly mediated the association. Additionally, incorporating eGDR into the basic model considerably improve the predictive ability for CVD. Conclusion A lower level of eGDR was found to be associated with increased risk of incident CVD among non-diabetic participants. This suggests that eGDR may serve as a promising and preferable predictor and intervention target for CVD.

Keywords
Author Keywords

Cohort

Insulin resistanceCardiovascular diseasesEstimated glucose disposal rateNon-diabetesPredictive performance

Keywords Plus

ALL-CAUSE MORTALITYGLOBAL BURDENHYPERGLYCEMIAASSOCIATIONTOLERANCE

Cohort

13-Association between the triglyceride glucose-body mass index and future cardiovascular disease risk in a population with Cardiovascular-Kidney-Metabolic syndrome stage 0-3: a nationwide prospective cohort study

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By Li, WP (Li, Weipeng) [1] , [2] , [3] ; Shen, CN (Shen, Chaonan) [1] , [2] , [3] ; Kong, WY (Kong, Weiya) [4] ; Zhou, XH (Zhou, Xiaohui) [1] ; Fan, HM (Fan, Huimin) [2] , [5] ; Zhang, YZ (Zhang, Yuzhen) [1] , [2] ; Liu, ZM (Liu, Zhongmin) [1] , [2] ; Zheng, L (Zheng, Liang) [1] , [2], (provided by Clarivate) , **Source :CARDIOVASCULAR DIABETOLOGY, Volume: 23, Issue: 1, DOI: 10.1186/s12933-024-02352-6, Article Number: 292, Published: AUG 7 2024, Indexed: 2024-08-13, Document Type: Article**

Abstract

Background The American Heart Association (AHA) has recently introduced the concept of Cardiovascular-Kidney-Metabolic (CKM) syndrome, which is the result of an increasing emphasis on the interplay of metabolic, renal and cardiovascular diseases (CVD). Furthermore, there is substantial evidence of a correlation between the triglyceride glucose-body mass index (TyG-BMI) and CVD as an assessment of insulin resistance (IR). However, it remains unknown whether this correlation exists in population with CKM syndrome. Methods All data for this study were obtained from the China Health and Retirement Longitudinal Study (CHARLS). The exposure was the participants' TyG-BMI at baseline, which was calculated using a combination of triglycerides (TG), fasting blood glucose (FBG) and body mass index (BMI). The primary outcome was CVD, which were determined by the use of a standardised questionnaire during follow-up. To examine the relationship between TyG-BMI and CVD incidence in population with CKM syndrome, both Cox regression analyses and restricted cubic spline (RCS) regression analyses were performed. Results A total of 7376 participants were included in the final analysis. Of these, 1139, 1515, 1839, and 2883 were in CKM syndrome stages 0, 1, 2, and 3, respectively, at baseline. The gender distribution was 52.62% female, and the mean age was 59.17 +/- 9.28 (years). The results of the fully adjusted COX regression analyses indicated that there was a 6.5% increase in the risk of developing CVD for each 10-unit increase in TyG-BMI,95% confidence interval (CI):1.041-1.090. The RCS regression analyses demonstrated a positive linear association between TyG-BMI and the incidence of CVD in the CKM syndrome population (P for overall < 0.001, P for nonlinear = 0.355). Conclusions This cohort study demonstrated a positive linear association between TyG-BMI index and increased CVD incidence in a population with CKM syndrome stage 0-3. This finding suggests that enhanced assessment of TyG-BMI index may provide a more convenient and effective tool for individuals at risk for CVD in CKM syndrome stage 0-3.

Keywords
Author Keywords
Cardiovascular kidney metabolic syndromeCVDIRTyG-BMI

Keywords Plus
INSULIN-RESISTANCEPROFILEIMPACT

Cohort

14-Association between the stress hyperglycemia ratio and 28-day all-cause mortality in critically ill patients with sepsis: a retrospective cohort study and predictive model establishment based on machine learning

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By Yan, FJ (Yan, Fengjuan) [1] ; Chen, XH (Chen, Xiehui) [1] ; Quan, XQ (Quan, Xiaoqing) [1] ; Wang, LL (Wang, Lili) [2] ; Wei, XY (Wei, Xinyi) [3] ; Zhu, JL (Zhu, Jialiang) [4], **Source:** CARDIOVASCULAR DIABETOLOGY, Volume: 23, Issue: 1, DOI: 10.1186/s12933-024-02265-4, **Article Number:** 163
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Abstract

Background Sepsis is a severe form of systemic inflammatory response syndrome that is caused by infection. Sepsis is characterized by a marked state of stress, which manifests as nonspecific physiological and metabolic changes in response to the disease. Previous studies have indicated that the stress hyperglycemia ratio (SHR) can serve as a reliable predictor of adverse outcomes in various cardiovascular and cerebrovascular diseases. However, there is limited research on the relationship between the SHR and adverse outcomes in patients with infectious diseases, particularly in critically ill patients with sepsis. Therefore, this study aimed to explore the association between the SHR and adverse outcomes in critically ill patients with sepsis. Methods Clinical data from 2312 critically ill patients with sepsis were extracted from the MIMIC-IV (2.2) database. Based on the quartiles of the SHR, the study population was divided into four groups. The primary outcome was 28-day all-cause mortality, and the secondary outcome was in-hospital mortality. The relationship between the SHR and adverse outcomes was explored using restricted cubic splines, Cox proportional hazard regression, and Kaplan-Meier curves. The predictive ability of the SHR was assessed using the Boruta algorithm, and a prediction model was established using machine learning algorithms. Results Data from 2312 patients who were diagnosed with sepsis were analyzed. Restricted cubic splines demonstrated a "U-shaped" association between the SHR and survival rate, indicating that an increase in the SHR is related to an increased risk of adverse events. A higher SHR was significantly associated with an increased risk of 28-day mortality and in-hospital mortality in patients with sepsis (HR > 1, P < 0.05) compared to a lower SHR. Boruta feature selection showed that SHR had a higher Z score, and the model built using the rsf algorithm showed the best performance (AUC = 0.8322). Conclusion The SHR exhibited a U-shaped relationship with 28-day all-cause mortality and in-hospital mortality in critically ill patients with sepsis. A high SHR is significantly correlated with an increased risk of adverse events, thus indicating that is a potential predictor of adverse outcomes in patients with sepsis.

Keywords
Author Keywords
SepsisStress hyperglycemia ratioCritical illnessBoruta algorithmMachine learning

Keywords Plus
INSULIN-RESISTANCEOXIDATIVE STRESSINTERLEUKIN-6ACTIVATIONPROGNOSISPLATELETSURVIVALRELEASETERM

Cohort

15-Interacting and joint effects of triglyceride-glucose index (TyG) and body mass index on stroke risk and the mediating role of TyG in middle-aged and older Chinese adults: a nationwide prospective cohort study

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By Huo, RR (Huo, Rong-Rui) [1] ; Liao, Q (Liao, Qian) [2] ; Zhai, L (Zhai, Lu) [3] ; You, XM (You, Xue-Mei) [1] , [4] , [5] ; Zuo, YL (Zuo, Yan-Li) [2], (provided by Clarivate) , **Source: CARDIOVASCULAR DIABETOLOGY, Volume: 23, Issue: 1, DOI: 10.1186/s12933-024-02122-4, Article Number: 30, Published: JAN 13 2024, Indexed: 2024-01-23, Document Type: Article**

Abstract

Background: Individuals who are overweight or obese often develop insulin resistance, mediation of the association between body mass index (BMI) and stroke risk through the triglyceride-glucose index (TyG) seems plausible but has not been investigated. This study aims to examine whether TyG mediates associations of BMI with stroke risk and the extent of interaction or joint relations of TyG and BMI with stroke outcome.Methods: The China Health and Retirement Longitudinal Study, initiated in 2011, is a nationally representative, ongoing prospective cohort study involving 8 231 middle-aged and older Chinese adults without a stroke history at baseline. Exposures examined include BMI and the TyG, the latter being the logarithmized product of fasting triglyceride and glucose concentrations. The primary study outcome is stroke incidence, as determined through self-reports, with a follow-up period extending from June 1, 2011, to June 30, 2018.Results: Of the 8 231 participants, 3 815 (46.3%) were men; mean (SD) age was 59.23 (9.32) years. During a median follow-up of 7.1 years, 585 (7.1%) participants developed stroke. The TyG was found to mediate the association between BMI and incident stroke, proportions mediated were 16.3% for BMI in the 24.0-27.9 kg/m(2) group and 53.8% for BMI >= 28.0 kg/m(2) group. No significant multiplicative and additive interactions were found between BMI and TyG on incident stroke (Additive: RERI = 1.78, 95% CI - 1.29-4.86; Multiplicative, HR = 1.40, 95% CI 0.86-2.27). HRs for individuals with BMI >= 28.0 kg/m(2) and quartile 4 of TyG compared with those with BMI < 24.0 kg/m(2) and quartile 1 of TyG were 2.05 (95% CI 1.37-3.06) for incident stroke. Combining BMI and TyG enhanced predictive performance for stroke when compared to their individual (AUC(BMI+TyG) vs AUC(BMI) vs AUC(TyG), 0.602 vs 0.581 vs 0.583). Conclusions: TyG appeared to be associated with stroke risk and mediates more than 50% of the total association between BMI and stroke in middle-aged and older Chinese adults. Public health efforts aiming at the reduction of body weight might decrease the stroke risk due to insulin resistance and the burden of stroke.

Keywords

Author Keywords

StrokeTriglyceride glucose indexBody mass indexMediating effectCHARLS

Keywords Plus

INSULIN-RESISTANCEHEALTHEPIDEMIOLOGYMORTALITYGENETICSPRODUCTOBESITYPROFILE