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During COMA, Body Pathology of CT/MRI Changes: A Case Report with Literature Review

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ABSTRACT

The goal of this case study is to find out more about irreversible coma. Further findings on coma will hopefully lead to a better treatment protocol. This study discovered that the body changes during cardiopulmonary arrest. Internal body pathology observation in detail and patient CT/MRI changes by the time the cardiopulmonary arrest happened.

Keywords: COMA, Irreversible coma, Cardiac arrest, During the coma, and Body pathology changes.

INTRODUCTION:

During a cardiac arrest, the body slowly changes. Although an MRI reveals certain signs, it might take up to a day for a CT scan to detect the cardiac arrest. However, in 24 hours of monitoring, CT scans did not show any results. However, this time there was a cardiac arrest and internal bleeding. However, at CPR, the GWR (gray-white matter ratio) changes after cardiac arrest (Rana *et al*., 2021).

MATERIALS AND METHODS:

We found in the case study, the patient was healthy and fine. The hospital doctor and I have decided to come up with a case study from The Affiliated Hospital of Medical School of Ningbo University data and get other similar data from PubMed, Google scholar.

We have taken ECG, records from the ICU, a CT scan of the pulmonary artery, and a CT scan of the brain from the Ningbo University Hospital.

Case History

The procedure for spinal or epidural anaesthesia is very smooth. A 62-year-old man with an inguinal hernia who is otherwise healthy. The patient looked healthy, but during spinal anaesthesia, the patient had a cardiac arrest, and after CPR, the patient was in a coma.

The return of a patient's normal neurological function following effective cardiac resuscitation.

RESULTS AND DISCUSSION:

After one day, a CT scan reveals that the gray-white matter ratio (GWR) radiographic measure of tissue changes after cardiac arrest (Bone and Fuller, 2001), indicating hypoxic-ischemic encephalopathy. Due to hypoxic-ischemic encephalopathy, individual's resuscitated from cardiac arrest (CA) (Cronberg *et al.* 2020) has a high risk of death or survival in unresponsive wakefulness (HIE). After 24 hours, alterations in cerebral ischemia and an MRI scan are

required. Changes in humans' brains remain in a persistent vegetative state following resuscitation after cardiac arrest using high-field MR imaging (De Herdt, 2020).

MR images, but not CT scans, revealed what were assumed to be hemoglobin degradation products (Edlow *et al.* 2014). Which derived from minor haemorrhage's localized in the thalami (Giacino *et al.,* 2018), bilateral basal ganglia, and substantial. Several prognostic tests, such as EEG and neurological examination, CT/MRI, have been found to have a high degree of specificity in predicting bad outcomes (Kondziella *et al.,* 2020).

Alterations in cerebral ischemia; senile brain changes; MRI scan if required; Mild inflammation of both lungs, with a little enlargement of the lower leaves of both lungs and a partial thickening of the pleura on both sides. After a CT scan has been performed for 24 hours (Nuwer, 2021), On both sides of the chest wall, there is a little degree of emphysema.

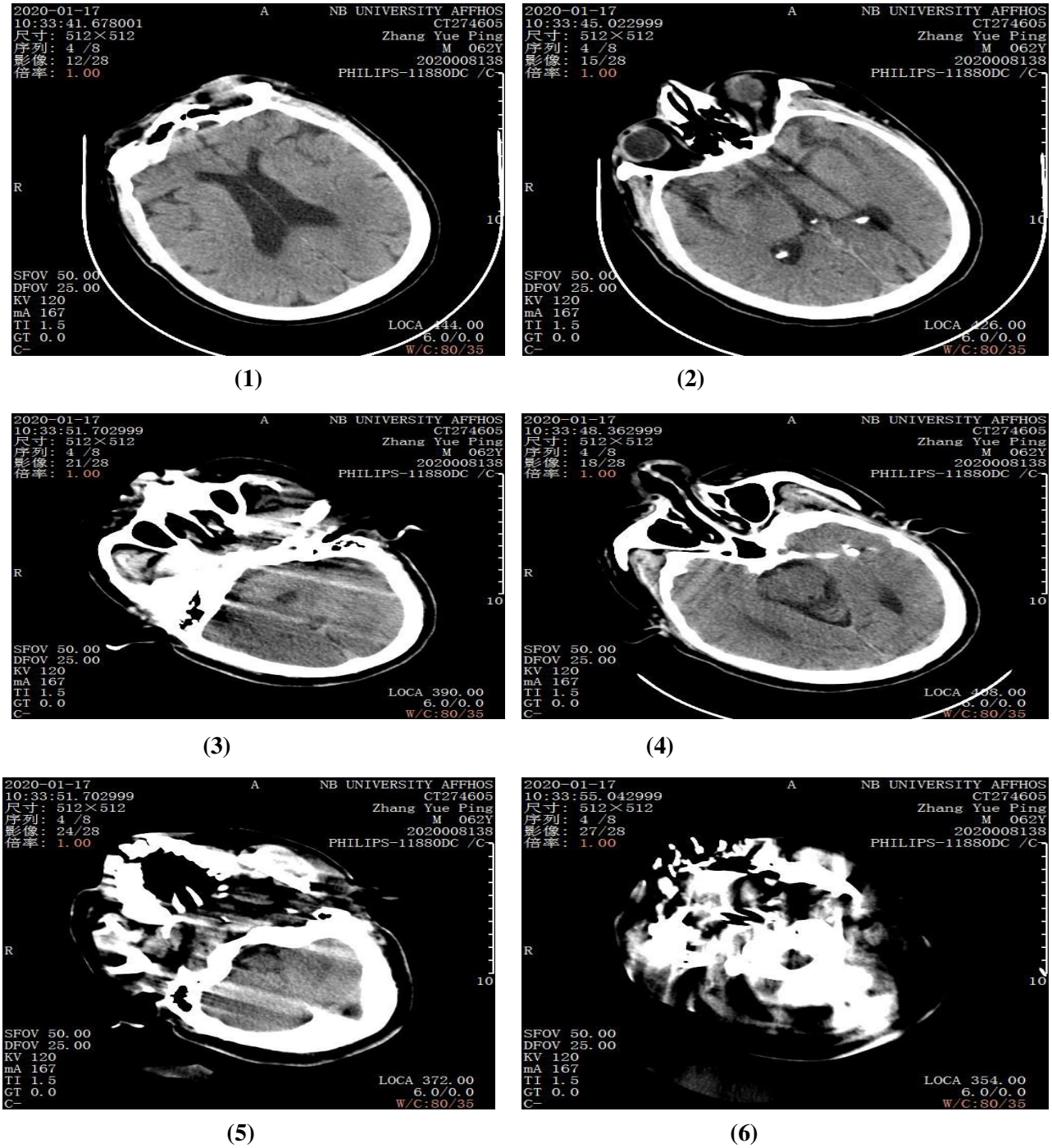

Fig. 1-6: CT SCAN OF BRAIN, After CPR CT scan results of DAY 1 TO DAY 4. Changes in cerebral ischemia; senile brain changes.

There was no obvious pleural effusion, and the two thoracic membranes had a localized uneven thickening. A little amount of gas density was found beneath both sides of the chest wall. The two lungs are obscured by a massive blur, with the lower left lung's boundary uncertain (**Fig. 1** to **6**). After 96 hours, a CT scan clearly demonstrates brain abnormalities, GWR changes, and some gray matter with white portion plainly demonstrating the stroke (Young, 2009).

Multiple air shadows were detected under the chest walls on a CT scan of the pulmonary artery (Rabinstein, 2018). Both sides of the pulmonary artery showed no evident indications of embolism. A minor quantity of fluid has accumulated in the chest, and the bottom portion of the lungs has partially expanded (Rossetti *et al.* 2016).

ECG Vector Examination + Routine ECG Examination Check: R-wave in-crease of anterior wall of sinus rhythm unconscionable indoor conduction when combined with conventional ECG and ECG vector Part of the T-wave change Reporter is delayed. The patient's pupil and limb motions are more flexible than they were after 124 hours, but he is still not awake (Wijdicks, 2018). He had a tracheotomy this afternoon and the ICU data revealed partial hemorrhage (Traub and Wijdicks, 2016).

After cardiac arrest, measures of neurological state do not directly predict total functional prognosis (Trinka and Leitinger, 2015). GWR on brain CT and DW-MRI combined (Wijdicks, 2016), rather than each modality separately, appears to enhance sensitivity for predicting neurologic prognosis following cardiac arrest. To validate these findings, large prospective multicenter trials should be undertaken. The physique of the patient changes with time. It was proven by ICU data and an MRI/CT scan. The patient, on the other hand, shows no symptoms of being awake. After CPR, some people remain in a minimally aware or vegetative state, and only a small percentage of people awaken neurologically intact (Kumari *et al.,* 2021; Pervin and Hassan, 2020).

CONCLUSION:

Even yet, there is no way to bring the patient out of his coma. Despite this, the patient's internal changes might be seen on an MRI or CT scan while he or she is in a coma. Body pathological changes are apparent.

CONFLICTS OF INTEREST:

No conflict of interest in conducting this research.

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REFERENCES:

1) Bone, I. & Fuller, G. N. (2001). Neur-ology in practice: sleep and coma. *J Neurol Neurosurg Psychiatry,* **71**, Suppl 1**,** i1-2. https://doi.org/10.1136/jnnp.71.suppl_1.i13
2) Cronberg, T., Greer, D. M., Lilja, G., Moulaert, V., Seindell, P. & Rossetti, A. O. (2020). Brain injury after cardiac arrest: from prognostication of comatose patients to rehabilitation. *Lancet Neurol,* **19,** 611-622.
3) De Herdt, V. (2020). Diagnosing consciousness: Editorial commentary on 'European Academy of Neurology guideline on the diagnosis of coma and other disorders of consciousness' by Kondziella D. *et al*. *Eur J Neurol,* **27**, 739-740. https://doi.org/10.1111/ene.14165
4) Edlow, J. A., Rabinstein, A., Traub, S. J. & Wijdicks, E. F. (2014). Diagnosis of reversible causes of coma. *Lancet,* **384**, 2064-76.
5) Giacino, J. T., Katz, D. I., Schiff, N. D., *et al.,* (2018). Practice guideline update recommendations summary: Disorders of consciousness: Report of the Guideline Develoment, Dissemination, and Implementation Subcommittee of the American Academy of Neurology; the American Congress of Rehabilitation Medicine; and the National Institute on Disability, Independent Living, and Rehabilitation Research. *Neurology,* **91**, 450-460. https://doi.org/10.1212/WNL.0000000000005926
6) Kondziella, D., Bender, A., Diserens, K.,. (2020). European Academy of Neurology guideline on the diagnosis of coma and other disorders of consciousness. *Eur J Neurol,* **27**, 741-756.
7) Kumari, R., Venaik, A., Hasibuzzaman, M., *et al.,* (2021). Repurposing of the Herbals as Immune-Boosters in the Prevention and Management of COVID-19: A Review. *Journal of Pure and Applied Microbiology*, **15**(1), pp.1-19. https://doi.org/10.1021/np50107a017

8) Nuwer, M. R. (2021). Alpha coma in COVID encephalopathy. *Clin Neurophysiol,* **132**, 202-203. https://doi.org/10.1016/j.clinph.2020.10.005
9) Pervin, Z. and Hassan, M., (2020). Synergistic therapeutic actions of antimicrobial peptides to treat multidrug-resistant bacterial infection. *Reviews in Medical Microbiology*, **32**(2), pp.83-89. https://doi.org/10.1097/MRM.0000000000000239
10) RABINSTEIN, A. A. (2018). Coma and Brain Death. *Continuum (Minneap Minn),* **24**, 1708-1731.
11) Rana S, Hossen M, Islam A, Shah S, Parvin T, Muraduzzaman SM, and Jalali MA. (2021). Interpretation of the common MRI findings in patients with painful knee joint, *Eur. J. Med. Health Sci*., **3**(1), 19-26. https://doi.org/10.34104/ejmhs.021.019026
12) Rossetti, A. O., Rabinstein, A. A. & Oddo, M. (2016). Neurological prognostication of outcome in patients in coma after cardiac arrest. *Lancet Neurol,* **15**, 597-609. https://doi.org/10.1016/S1474-4422(16)00015-6
13) Traub, S. J. & Wijdicks, E. F. (2016). Initial Diagnosis and Management of Coma. *Emerg Med Clin North Am,* **34**, 777-793.
14) Trinka, E. & Letnger, M. (2015). Which EEG patterns in coma are nonconvulsive status epilepticus? *Epilepsy Behav,* **49**, 203-22. https://doi.org/10.1016/j.yebeh.2015.05.005
15) Wijdicks, E. F. (2016). Neurology of Critical Care. *Semin Neurol,* **36,** 483-491.
16) Wijdicks, E. F. M. (2018). How Harvard Defined Irreversible Coma. *Neurocrit Care,* 29, 136-141. https://doi.org/10.1007/s12028-018-0579-8
17) Young, G. B. (2009). Coma. *Ann N Y Acad Sci,* **1157**, 32-47.

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