CASE REPORT

Simultaneous Hemorrhage and Ischemic Stroke in the Same Brain: A Case Report

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ABSTRACT

This is a case of a fibrotic lung lesion combined with ischemic stroke in one side of the brain and a hemorrhage in the other side of the brain. The patient has no history of hypertension or diabetes. The case shows some signs of ground-glass opacity in the lung which is a classic sign for COVID−19. The hemorrhage in the brain is in the vein of Labbe's territory which could be caused by dural venous sinus thrombosis. This case report will discuss which causes all of these complications and whether these events are connected or triggered by a single factor or event?.

Key words: Fibrotic Lung Lesion, Hemorrhage, Ischemic Stroke, Computed Tomography.

CASE REPORT

A 70−year−old male patient came to the emergency room (ER) unconscious and has breathing issues and with no history of hypertension or diabetes. For one week, the patient had a severe headache, but he did not go to the hospital. His blood pressure was 130/94, pulse rate was 88 beats per minute, respiratory rate of 12 breaths per minute, oxygen saturation was 73%, temperature of 37.5◦C, and Conscious Glasgow Scale (CGS) was 9. A CT scan was done for the chest and the brain. The brain CT showed an ischemic stroke on the left centrum semi−ovale and an inter−parenchymal hemorrhage on the right side in the temporal lobe see (Figure 1&2) and senile atrophic changes were noticed in the brain CT. The chest CT showed a ground-glass opacity in the basal periphery of the right lung and upper left lobe on the periphery side which represent a fibrotic lesion see (Figure 3&4). A polymerase chain reaction (PCR) was done and came back negative for SARS-CoV-2 a.k.a COVID−19. The patient was admitted to the intensive care unit (ICU) and he was discharged after spending one week in ICU. The patient's verbal communication and other cognitive functions were not affected in these events. There is some motor weakness on both sides and he needed assistance. The territory that was affected by the hemorrhage is the vein of Labbe's territory which indicates a dural venous sinus thrombosis. The area was affected by the ischemic stroke on the left side is the centrum semi−ovale. A Tissue Plasminogen Activator (TPA) was not given. As well, no CT scan with contrast was conducted to check for any filling defect in the dural venous sinuses.

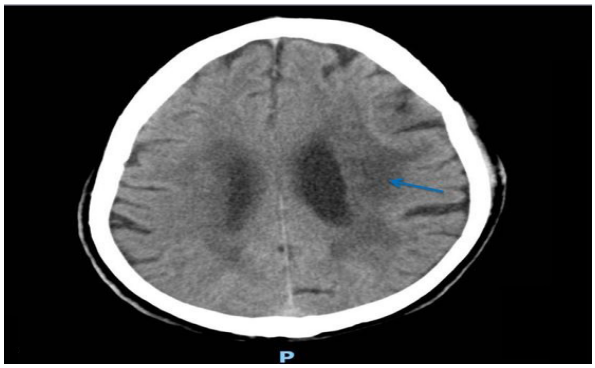

Figure 1. A brain CT scan using the brain window shows a hypodensity on the left side of the brain in the centrum semi−ovale area which indicates an ischemic stroke (blue arrow).

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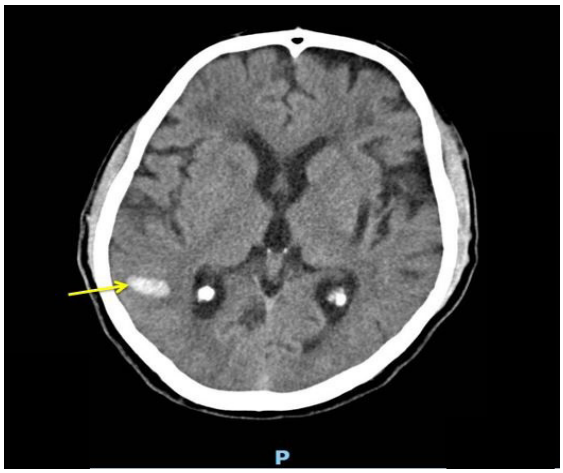

Figure 2. A brain CT scan using the brain window shows an acute intra-cerebral hemorrhage on the right side of the brain in the vein of Labbe's territory (yellow arrow).

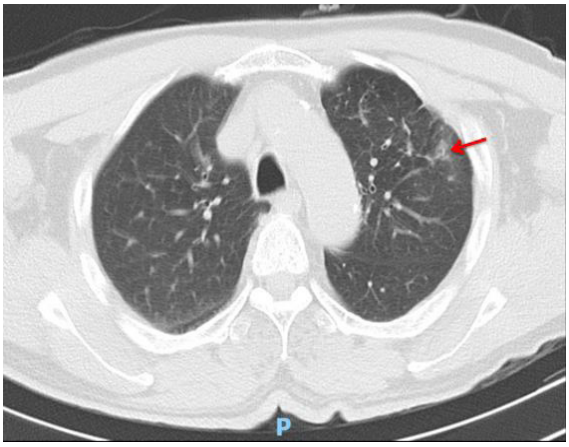

Figure 3. A chest CT scan using the lung window shows fibrotic changes and ground-glass opacity in the left upper lobe of the lung (red arrow).

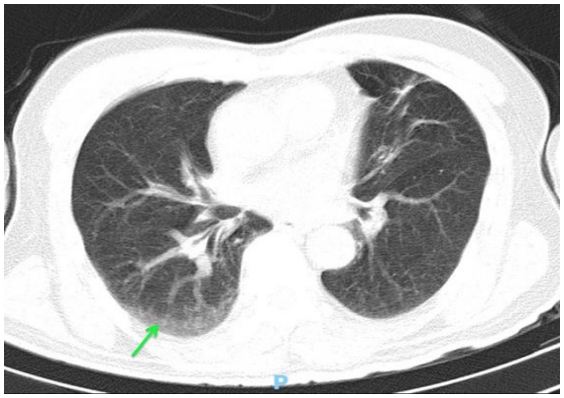

Figure 4. A chest CT scan using the lung window shows a ground-glass opacityin the basal, posterior, and peripheral of the right lung (green arrow).

DISCUSSION

The infarction in the centrum semi−ovale has no relation to embolism instead it's more related to intrinsic arterial pathology in the middle cerebral artery[1]. However, there is a relation between fibrotic lung lesions and brain ischemic infarctions according to some authors that ischemic infarctions can induce fibrotic changes in the lung[2,3]. As well, subarachnoid hemorrhage can lead to an acute lung injury in 30% of the subarachnoid hemorrhage cases. One-third of the ischemic stroke cases can be transformed into hemorrhagic stroke in the same territory[4]. The secondary intra−cerebral hemorrhage is an infarction that does not follow the typical arterial territory and it can be with or without hemorrhage[5].

Ischemic and hemorrhagic stroke can simultaneously occur onset in intracranial arterial dissection cases[6]. Another study showed that ischemic stroke can occur after intracranial hemorrhage[7].

The unilateral ground-glass opacity in the right lung which has the same as in CT findings of COVID−19 patients. These signs are bilateral basal and peripheral ground-glass opacity in COVID−19 positive patients, but in this case, the swab PCR test came negative. Plus, the fibrotic change in the left lung in the upper lobe suggests that this is not a COVID-19 case. According to a published study, all corona family viruses make the same neurological complications (i.e. intracranial hemorrhage) and they have the same appearance on the CT scan of the chest[8,9].

CONCLUSION

Whether the hemorrhage and ischemic stroke, in this case, are connected or not, the ischemic stroke and the fibrotic changes in the lung are connected based on the literature. This is not a COVID−19 case and it has not proven to be a dural venous sinus thrombosis caused the bleeding of the vein of Labbe.

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