



CRITICAL CARE CASE STUDIES



REDEFINING CRITICAL CARE

Critical care, also called Intensive Care, is a clinical specialty that deals with seriously or critically ill people who have, or are at risk of, or are recovering from life-threatening conditions. Critical care involves coordination between the medical team and patients, including their families.

Apollo Hospitals is one of the few hospitals in India offering comprehensive critical care services using state-of-the-art technology and multi-disciplinary specialists to treat complications from surgery, infections, serious accidents, severe breathing issues and any other health emergencies – round-the-clock throughout the country.

Harnessing the power of technology and the experience and expertise of critical care specialists, Apollo Hospitals launched **Apollo eACCESS**, a transformational electronic Critical Care and Emergency program. **Apollo eACCESS** combines the audio-visual technology, data visualization, predictive analytics and advanced reporting capabilities delivered by Apollo emergency and critical care specialists with more than 38 years of proven success in patient outcomes.

We would like to share some real-life critical care cases to showcase how lives were saved remotely using **Apollo eACCESS** platform.

CASE 1



TIMELY INTERVENTION SAVES

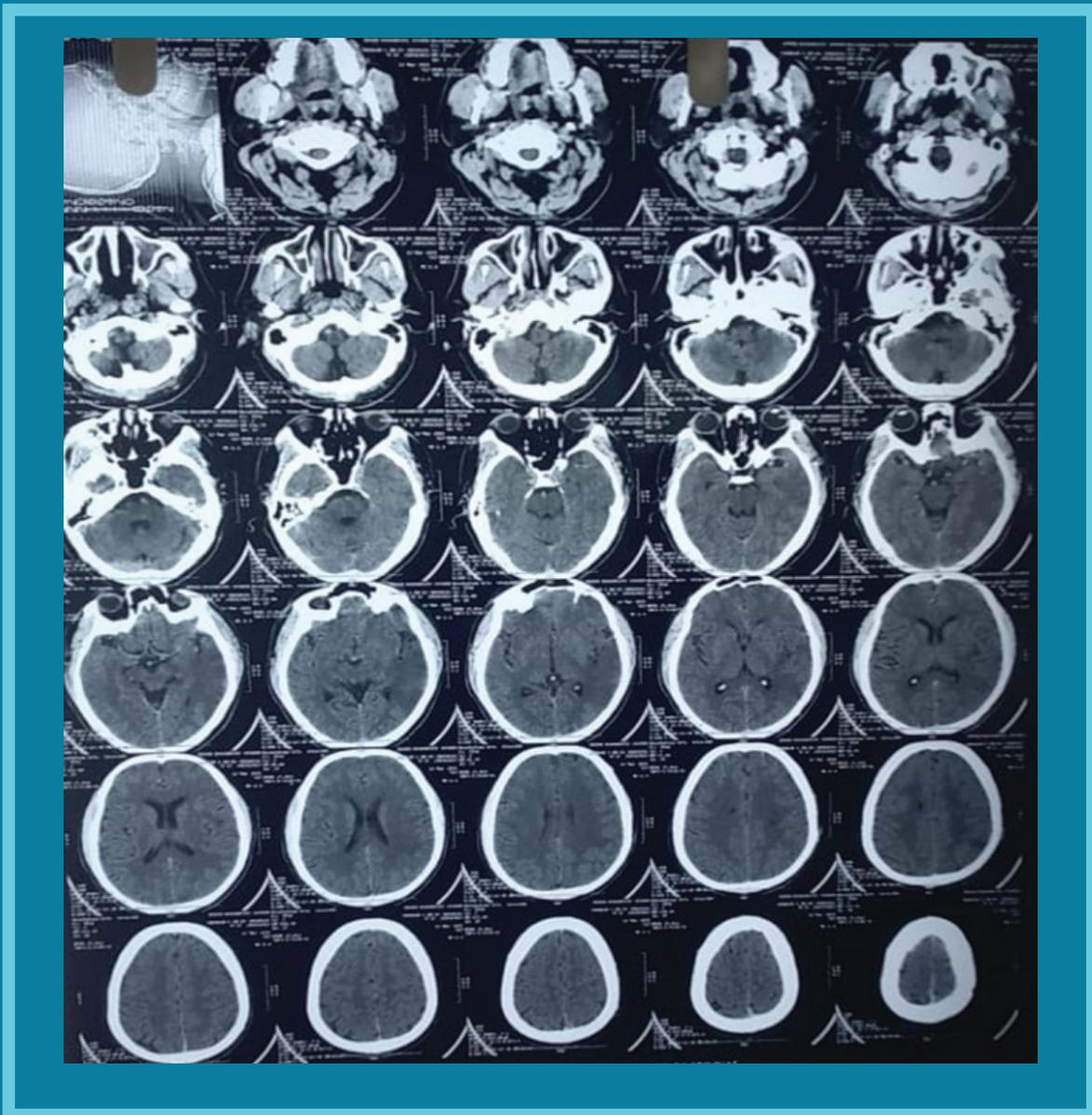
A YOUNG
32-YEAR-OLD MAN
WITH ACUTE STROKE

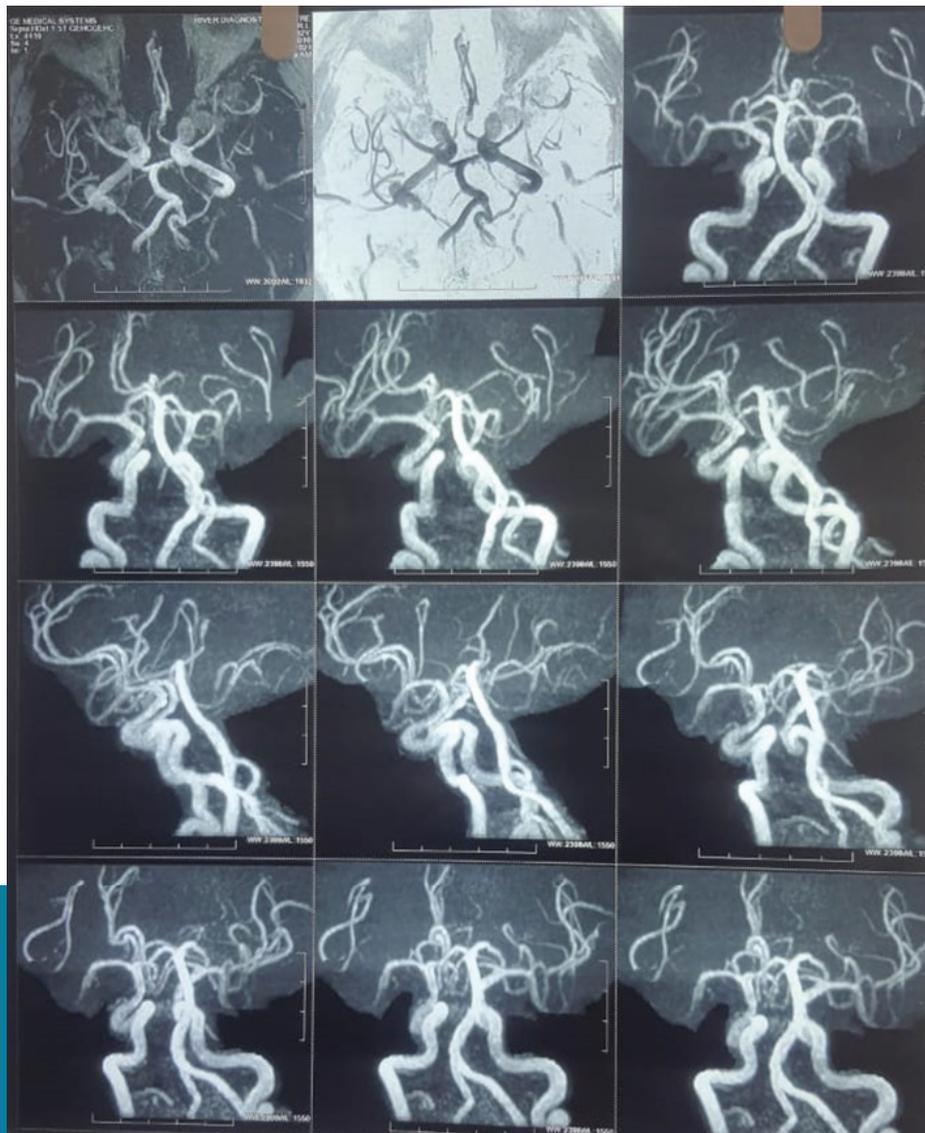
Clinical Background

A 32-year-old male presented to our connected hospital with a history of falling off from a bike and with altered sensorium subsequently. The patient was a known hypertensive with non-compliance to medications.

Clinical Evaluation

The onsite ICU team evaluated and managed the head injury. The primary and secondary studies revealed mild paucity in the movement of the right upper and lower limbs. The CT brain scan showed ill-defined hypodensity of HU 22 to 24 involving left temporoparietal lobes likely of vascular etiology and appearance of an acute infarct.





Diagnosis

Subsequently, the case was referred to Apollo eACCESS by the onsite ICU team. Remote neurology consultation was done, following which MRI brain stroke protocol was advised. The MRI Brain + Angio indicated an acute infarct in the left MCA territory. The diagnosis revealed stroke in a young person (acute ischemic stroke, left MCA infarct).

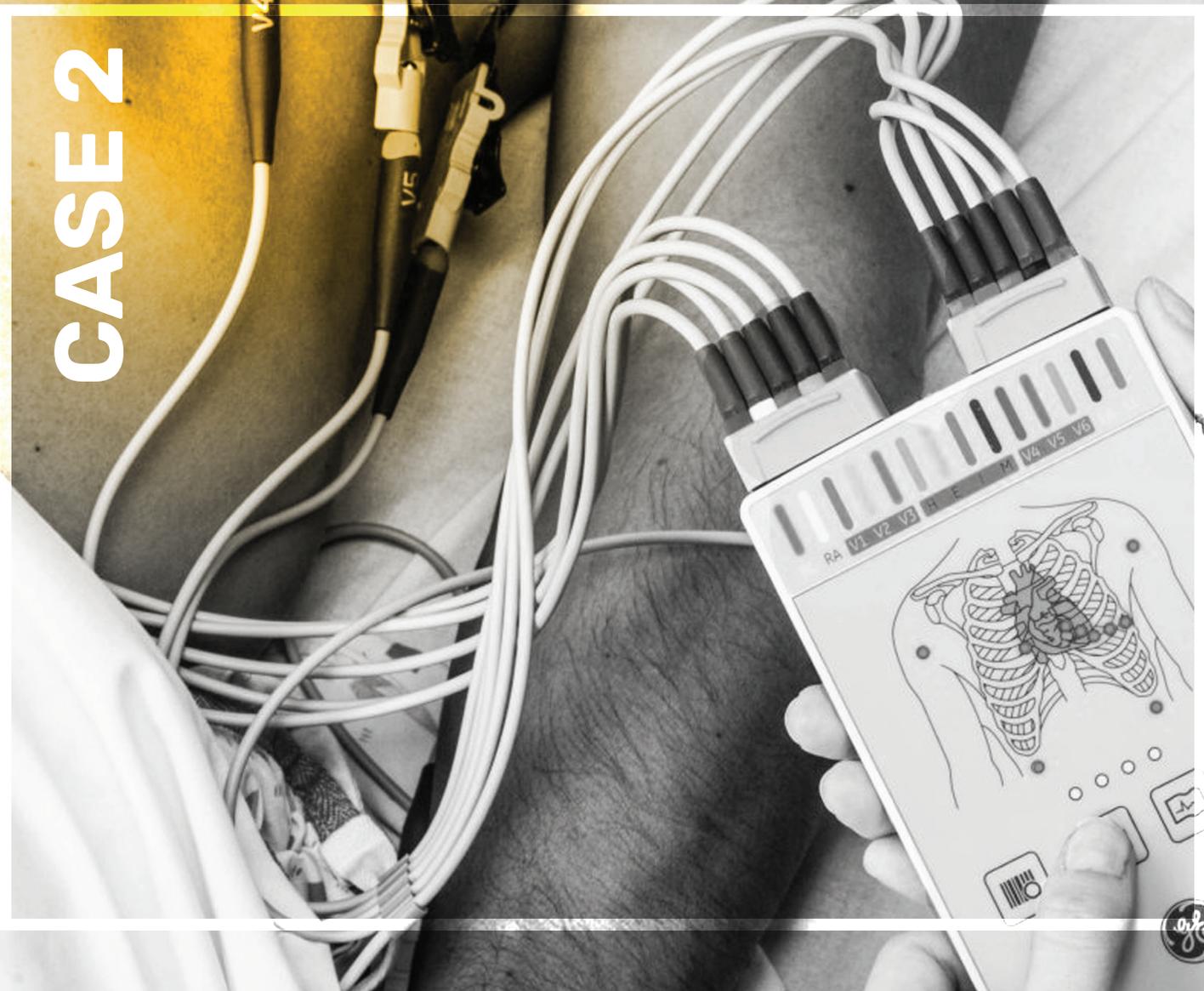
Treatment and Recovery

Patient was started on anti-platelets and statins followed by neuro-protective measures. Evaluation for stroke in young was done. Cardiac evaluation was normal. Appropriate limb physiotherapy was advised.

Conclusion

Timely diagnosis and treatment of this young 32-year-old man with acute stroke with the help of **Apollo eACCESS** platform involving super-speciality like neurology saved a life.

CASE 2



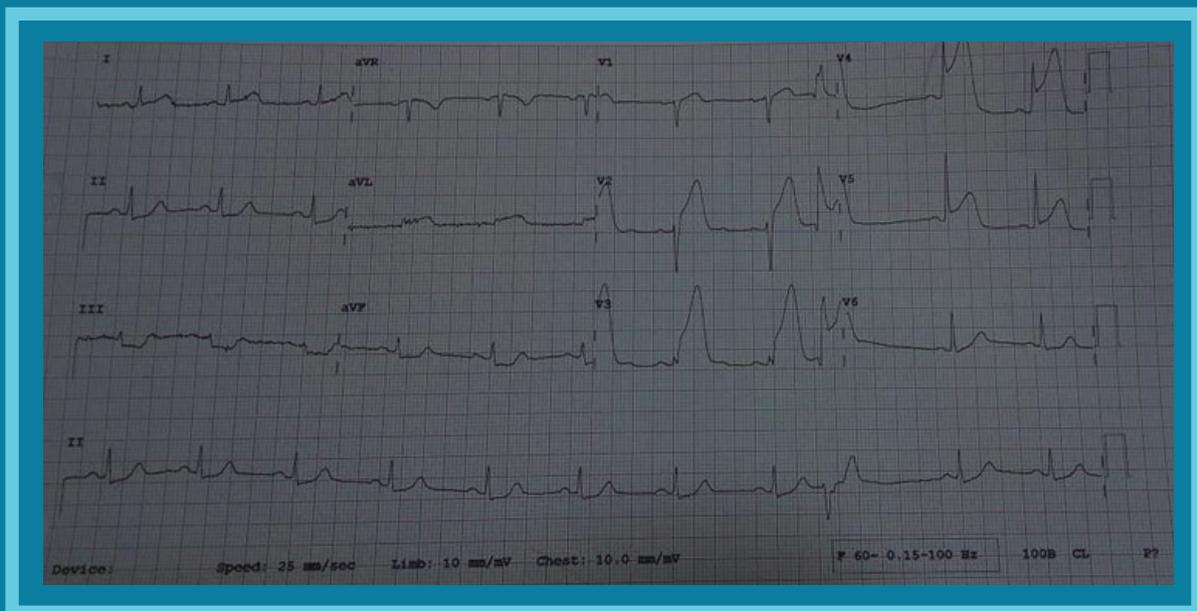
CRITICAL ECG EVALUATION BY APOLLO eACCESS SAVES A YOUNG MAN

Clinical Background

The onsite ICU team from a connected healthcare center referred a 40-year-old man, a known diabetic and hypertensive patient, to Apollo eACCESS. He complained of epigastric pain with radiation to the left arm lasting for 20 minutes, followed by sweating.

Clinical Evaluation

The patient was conscious and coherent during the examination at the connected healthcare centre. He was complaining of pain but with decreased intensity. He had no breathlessness and was talking comfortably without any dyspnea. His vitals and 12 lead ECG were recorded. His blood pressure and pulse were normal. His oxygen saturation on room air was 96 per cent.



Diagnosis

The onsite ICU team contacted Apollo eACCESS at this point. Experts at eACCESS noted all case details, including the patient's history and ECG. His ECG showed an Anterolateral wall MI (Myocardial Infarction).

Treatment and Recovery

Apollo eACCESS contacted the cardiology team at Apollo Hospitals immediately for an urgent consultation. The patient was administered dual antiplatelets. Subsequently, upon the advice of the Apollo cardiologist, the patient was thrombolysed immediately. He was then shifted to a tertiary care centre for further management.

Conclusion

Prompt and proactive response from Critical Care Specialists at Apollo eACCESS and timely consultation from a cardiologist (using audio-visual technology) helped diagnose the patient's problem immediately, thus helping caretakers take the right course of treatment.

CASE 3



TIMELY ACTION BY MULTI-SPECIALITY TEAM AT APOLLO eACCESS SAVES 23-YEAR OLD TRAUMA PATIENT

Clinical Background

A 23-year-old man with alleged history of trauma – a fall from tractor at his work field – came to the connected healthcare center on 4th August 2020, at around 10 AM. The patient was found to have severe pain in the chest on arrival at the center. His vitals were stable. He was also conscious and oriented. The onsite ICU team called Apollo eACCESS immediately for initial stabilization and further management.

Clinical Evaluation

Primary evaluation was done under the supervision of the Apollo eACCESS team. Routine lab investigations, including blood grouping and coagulation profile, were ordered. Chest X-ray was done, which revealed bilateral pneumothorax with underlying lung compression and multiple rib fractures. Apollo eACCESS experts advised bilateral ICD insertion immediately, which was promptly done by the onsite ICU team. The HRCT taken revealed gross right and mild left-sided pneumothorax causing collapse of the underlying lung and mediastinal displacement to the left with bilateral lung contusions and left upper lung lobar lacerated wound.

Other injuries included:

1. Fracture of medial end of right clavicle
2. Fracture of the posterior segment of right 1st, 3rd to 8th ribs and left 1st to 3rd ribs
3. Fracture of the anterior segment of right 2nd, 3rd, & 4th ribs
4. Fracture of angle of 3rd to 10th rib and left 2nd rib

However, bilateral chest tubes were in situ and CT brain scan was also normal. USG abdomen was conducted, which showed altered splenic echo texture and mild left pleural effusion.

Treatment and Recovery

The patient was immediately advised to have endotracheal intubation because of flail chest and paradoxical breathing pattern. The patient was intubated and initiated on the mechanical ventilator by the onsite ICU team. On the mechanical ventilator, his vital parameters and ventilation parameters were monitored closely by the Apollo eACCESS team. He was advised by eACCESS team to have sedation and paralysis because of multiple rib fractures.

The patient also, as noted, had a fracture of the right medial end of the clavicle, for which orthopaedic consultation was sought. The patient was advised to use an arm pouch. The patient developed an air leak from the left intercostal drainage tube, with an increase in drain output and haemoglobin loss on the third day (day 3). For this, the onsite ICU team sought cardiothoracic consultation through the eACCESS team.

Gradually patient's breathing pattern improved. Spontaneous breathing trials were given after four days of mechanical ventilation. He tolerated the SBT well, and he was extubated onto normal oxygen mask @5-6L/min on 8th August 2020.

After extubation, the patient had one episode of atrial fibrillation with a fast ventricular rate that was controlled with amiodarone injection. A cardiologist opinion was sought, and the advice was adhered to. The general condition of the patient improved, and oxygen was gradually tapered and stopped. The patient got discharged after 8 days of hospital stay on 12th August 2020, in a stable condition.

Conclusion

In summary, this is a classic example of how a young man admitted at a connected healthcare center with history of trauma (a fall) was saved successfully under the guidance and supervision of Apollo eACCESS multi-speciality team. The patient sustained polytrauma with bilateral multiple rib fractures with an underlying lung contusion, including fracture of the right clavicle and lacerated wound on the left upper lobe of the lung. All this was successfully managed by the multi-speciality physicians using the Apollo eACCESS platform.

This case provides clear evidence on how efficient telehealth services can be beneficial in the successful management of the patient without transferring the patient to another location, thus risking a patient's life.

CASE 4



APOLLO eACCESS **SAVES** AN 81-YEAR OLD COVID-19 POSITIVE MAN IN PSU HOSPITAL

Clinical Background

An 81-year-old man came to a connected healthcare center with fever, cough, and breathlessness for the past 4 days. The onsite ICU referred the case to Apollo eACCESS for evaluation and treatment. The eACCESS team had evaluated and closely monitored the case from Day 1, providing regular video counselling to the patient.

Clinical Evaluation

On arrival at connected healthcare center, the patient's vitals were:

- Blood pressure 116/70
- Pulse rate 92
- Oxygen saturation 86% on 10 liters of O₂ flow on high concentration mask

He was suspected to be COVID-19 positive, and a rapid antigen test was conducted, which confirmed the COVID-19 infection on 5th May 2021. Routine blood investigations, along with an ABG and panel of inflammatory markers, were sent for evaluation to the eACCESS team. His ABG showed hypoxemia with pO₂ of 50 mmHg. All other lab investigations were normal. His CT severity score was 25/40.

Treatment and Recovery

Injection Remdesivir, Dexamethasone and Enoxaparin, including other supportive medications, were started as part of the moderate-to-severe COVID-19 disease guidelines. While all other supportive care continued, the benefits of awake proning and deep breathing exercises were explained to the patient. His oxygen requirements increased to 15 liters on a high concentration mask.

The eACCESS team advised the patient to be kept on intermittent NIV with BiPAP, with IPAP of 12 and EPAP of 5 and with oxygen flow 8-10 liters/minute. On day 7, his oxygen levels started improving, and his requirements came down to 10 liters. He was eventually weaned off from NIV onto an oxygen mask. He remained stable, maintaining saturation on facemask with 4L oxygen till day 15 of his illness.

Gradually his breathing mechanics improved, and he maintained normal oxygen saturation on room air. His general condition also improved, and he got discharged on day 17 on room air in a stable condition.

Conclusion

The proactive collaboration of the Apollo eACCESS team with the bedside team at PSU Center helped reinforce evidence-based care, thus saving an older man with a safe outcome. The Apollo eACCESS team also helped coach and train the care team at the connected healthcare center on awake proning.



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