Case Report

Acute Medical Illness in Critically Ill Immunocompromised Oncology Patient- A Treatment Barrier?

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Five per cent of patients with solid tumours and up to 15% of patients with haematological malignancies require intensive care unit (ICU) admissions due to acute medical complications during the early phases of their disease.[1,2] It is imperative to decide how aggressive the treatment should be for the patient, based on the primary disease condition and overall prognosis.

Case

A 62 Year male, known case of recurrent nasopharyngeal carcinoma post-surgery, chemotherapy, currently on radiotherapy, with multiple comorbidities including diabetes, hypertension, hypothyroidism, triple vessel disease, post percutaneous intervention, presented with fever for two days, breathing difficulty and epigastric pain for one day. On arrival in ICU, patient was normotensive, with pulse rate -124bpm, BP-220/140mmHg, RR-40 breaths per minute, SpO2= 78% on room air and 93% on 10 litter oxygen by face mask with APACHE-II score of 19. On examination, he had an open dry wound on neck and bilateral fine crepitations on auscultation. Initially, he was medically managed symptomatically and shifted out of ICU. He got readmitted to ICU with complaint of desaturation and increased O2 requirement. Gradually, he developed hypotension requiring vasopressors. On investigation, oropharyngeal swab polymerase chain reaction detected H3N2. Echocardiography revealed left ventricular ejection fraction of 40-45% with basal and posterior septal regional wall motion abnormality. He was kept in isolation room, started on tablet Oseltamivir, and needed high flow nasal cannula and awake proning. He was supported with invasive mechanical ventilation in view of worsening oxygenation. Meanwhile, he also developed oral bleed with coagulopathy and anaemia which required transfusions. He was eventually tracheostomised in view of prolonged ventilation and was weaned off ventilator gradually. Further, during the course in ICU, sputum sample was positive for pneumocystis jiroveci for which he was started on intravenous Trimethoprim Sulfamethoxazole. Later, he developed urinary tract infection caused by eneterococcus faecalis, for which antibiotics were adjusted as per sensitivity and renal function. He also developed multiple other hospital acquired infections including bacteraemia and MDR klebsiella pneumonia, for which received Polymyxins- IV and inhaled. He also had to undergo slow low efficiency dialysis. Once shifted to ward, he was readmitted to ICU twice, once with desaturation and other after cardio pulmonary arrest for 15mins. Eventually, after 38days of hospitalisation, having utmost turbulent course with multiple ICU admissions, many deadly infections, various invasive procedures, patient was discharged in stable condition.

The usual approach to such oncology patients is palliative care and family counselling with early prognostication. Here, we highlight that persistent high quality multi-disciplinary management in timely fashion may change the outcome in critically ill immunocompromised oncology patients to a favourable one. In the present case, though there was nothing unusual in the management of this

patient or no out of the box therapy was given, there was a positive result despite the odds of multiple comorbidities and poor immunity status. Involvement of an intensivists, onco-physician, ID physician, and trained staff nurses not only prevented him from succumbing to various infections he caught, it also provided a decent quality of life as well post prolonged ICU stay.

INFAUCI study discussed the effect of at admission infection, subsequent infections, host's non-modifiable characteristics including comorbidities along with the process of care parameters on mortality and concluded that hospital mortality increased with sepsis severity, from 20.8% in patients with sepsis to 48.8% in patients with septic shock (p <0.01). They unveiled potential areas that may influence the outcome of severely infected patients, namely assuring timely ICU admission and appropriate initial antibiotic therapy, maximizing microbiological documentation (currently around 50%), preventing new ICU-acquired infections and carefully selecting the discharge area for post-ICU care. ICU-acquired infections were equally common both in patients with and without infection on admission and this had an impact on mortality and LOS.[3] Improvements in the process of care are associated with the decrease in mortality and costs.[4] Another study found that male sex, higher APACHE II score on admission, chronic heart failure, and dialysis were independently associated with risk of hospital mortality in patients admitted to ICU with pneumonia. In this study, they had compared the baseline characters including immunocompetence and presence of malignancy between the survivors and non survivors and had found both to be non confounding.[5]

In a Spanish study by Bulnes et al, determinants of mortality were studied in cancer patients (both solid and haematological tumours). They found out that, Per se in solid malignancies, median APACHE score (16 Vs 23, *P:<0.001*), medical cause of admission (*P:0.009*), LOS before ICU admission (*P: <0.001*), antibiotic use in last 48hours (*P: 0.041*), renal replacement therapy (*4.4 Vs 10.8; P:0.03*), sepsis as a cause [88(38.6) Vs 23 (27.7)] and need of mechanical ventilation [79 (34.6) Vs 58 (69.9) *P<0.001*] were significantly associated with mortality.[6] They also noticed that lung cancer has higher mortality than other solid tumour or haematological malignancy. This implies that outcome of patient with malignancy does not depend on the mere presence of tumour, it also depends on many other physiological and clinical parameters. Hence, continuous efforts in selected patients may end up in positive outcome.

Pierrick Le Borgne et al studied short- and long-term mortality in a septic shock patient with or without cancer admitted to ICU and found out that In-hospital and ICU mortality, as well as LOS, were not different, with and without cancer, in septic shock patients suggesting that malignancies should no longer be considered a barrier to ICU admission and management.[7]

A review discussed the admission criteria and adequate therapy goals for ICU patients with cancer. They also emphasised that multidisciplinary teamwork is the key when it comes down to decisions on ICU admission, planning of therapeutic aims, patient management in the ICU and tailored therapy limiting with smooth transition into a palliative care (PC) setting, whenever appropriate. They seconded the opinion of incorporating the oncological long-term prognosis as well as the anticipated quality of life into the decision.[8] Because of the considerable heterogeneity among cancer entities and the continuous growth of effective therapeutic options, there has been a gross shift in the outcome and quality of care for cancer patients admitted to ICU.

A recent article on prognosis of critically ill immunocompromised patient with virus (influenza/ parainfluenza/respiratory syncytial virus) associated respiratory failure found out that compared to non-viral respiratory failure, they have lower in-hospital mortality.[9] Therefore, our patient, who was admitted with acute viral pneumonia, was treated patiently and progressively for this as well as subsequent infections. The meticulous bundle care with positive hopeful attitude not only provided mortality benefit, it also granted good quality of life to the patient.

Early aggressive multi-speciality team involvement along with persistent efforts may bring a change in outcome even in immunocompromised oncology patients admitted to critical care unit. Mere presence of malignancy should not

be considered as a poor prognostic marker and tenacious efforts should be undertaken when admitted to ICU for acute medical illness, esp. the most frequent infections, namely, viral pneumonias.

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