

What can pharmacists contribute in helping patient to fight cancer?

It was a busy afternoon in the Cancer Day Clinic. The waiting room was packed with patients coming for chemotherapy. Mr. E. was sitting in a corner with his wife and was waiting patiently.

"Thank you for waiting Mr. E, how are you today? I am sorry to tell you it may take a little longer this afternoon before the treatment is ready, there is training underway in the aseptic suite". I greeted him good afternoon and supplied him some pre-medications before the chemotherapy.

"No worry love, I don't mind waiting." Mr. E. replied serenely - he was always calm and contented.

At that moment, I noted he was holding a novel with a handmade bookmark, and I asked

"This is a very unique bookmark, very thoughtful of you! May I ask who the little one on the picture is?"

"This is my grandson-he is three years old now." Mr. E. replied in delight. A proud grandfather indeed, you could feel the joy rolling on his face. *"Actually I could not say enough thank you the personalised care the cancer team has provided in the past few years. I still remember the time when I learned from the doctor that I got a condition called MDS in 2008. My haematologist told me I may only live for another six months. And the only treatment available during that time was transfusions and supportive care. I am too old for bone marrow transplant. I could not help but feeling despaired - not because I was afraid of dying, but it was a shock for my family. I was holding my grandson, who was only three months old. Then I asked myself how much time may be left with my beloved family? Would there be days I could see my grandson to start walking and talking? If I passed away in a few months' time, he may not remember me when he grown up....."*

Just about the same time, a turning point came along. Australian Leukaemia and Lymphoma Group (ALLG) was recruiting patients with newly diagnosed Myelodysplastic Syndrome (MDS) for a new clinical trial. The treatment involved daily oral Thalidomide and a 7-day course of daily subcutaneous injection of 5-Azacitidine 75mg/m², with treatment cycle repeated every 28 days. It is a phase I/II trial looking at the safety and efficacy of combining the two novel agents in patients with de novo or secondary MDS.

"I decided to participate in that new trial - at least this is a hope for me and my family", said Mr. E. "Three years later and here I am! Every day when I wake up in the morning, it is a blessing! This extra time is precious, though sometimes I do feel a bit tired...which is probably the side effect from my chemotherapy. I manage to fit in a lot and spend more special moments with my family. I enjoy having a stroll with my wife in the park every day. Now my grandson can run really fast like happy feet, jumping and yelling granddad, granddad..... he truly brings lots of fun to us. What a miracle!"

Pharmaceutical Care for Patients with Cancer

Diagnosis of a life threatening disease can be devastating. Majority of patients experience a significant emotional distress and feeling of uncertainty about treatment, side effects and likely impact on family and the future. At the point of diagnosis, patients always have to deal with an enormous amount of complex information. Sometimes, a life changing decision has to be made at this juncture as well.

What is MDS?

Myelodysplastic syndromes represent a heterogeneous group of clonal haematopoietic stem cell disorders characterized by ineffective haemopoiesis, cytopenias and dysplasia in one or more myeloid lineages. The major clinical problems in these disorders are morbidities caused by peripheral blood cytopenias and the potential for MDS to transform into acute myeloid leukaemia (AML).

The challenge of managing MDS is majority of patients are of advanced age (median age of presentation is 65 to 70 years old). In view of the complications from aggressive chemotherapy and allogeneic transplants, many patients are unable to tolerate intensive treatment.

[Adopted from National Comprehensive Cancer Network (NCCN)]

Most patients cope better when they accept the truth and learn more about their conditions. Pharmacists can play an invaluable role on patient education, counselling, providing supportive treatment or just being a good listener helping them through difficult times. With an increased understanding about anti-cancer therapy involved, some patients may feel empowered as they could take in control of what to expect from the treatment.

Apart from surgery and radiation therapy, treatment of cancer may involve a course of complex chemotherapy regimens. Many patients are prescribed with supportive medications concomitantly to address the high toxicity profile in most cancer chemotherapy. These may include anti-emetics, anti-infective medications, analgesics, vitamin supplements, G-CSF etc. Owing to the complexity and length of the treatment, patients often have regular visits to the hospital. It enables pharmacists to develop an ongoing relationship with individuals and their carers over the course of therapy.

The role of oncology/haematology pharmacists are not only confined in cytotoxic admixing and protocol screening. Pharmacists are in ideal position to promote quality use of medicines and evidence based prescribing. In collaboration with other health professionals pharmacists should assume professional responsibility in pursuing optimal pharmaceutical care plan for individual patients.

The pharmaceutical care plan usually includes:

- Therapeutic goals of chemotherapy – Adjuvant, neo-adjuvant, curative or palliative.
- A monitoring plan for relevant laboratory measurements e.g. a baseline CBC, electrolytes, RFTs, LFTs, for certain chemotherapy gated heart pool scan (GHPS), Diffusion Lung Capacity

for Carbon Monoxide (DLCO), and nadir count.

- Rationale of supportive care measures to prevent potential and expected side effects from specific chemotherapeutic regimens.
- Assessment of patient's medications compliance
- Identify and make recommendations on specific medication related problems, e.g. polypharmacy, drug-drug interactions, drug-disease interactions.

Pharmacist's contributions in clinical trials

Anti-cancer drug development is a fast growing area. In liaison with the principle investigators, clinical trial nurses and data managers, pharmacists are responsible in assuring the smooth running of all clinical trials and strict adherence to trial protocol, legislative requirement and good clinical practice. Pharmacists overseeing conduction of clinical trials should be familiar with the code of practice for clinical trials e.g. standards set forth in Good Clinical Practice (GCP) and ensure confidentiality in any aspect of the studies. Our role is not confined to clerical duties such as maintenance and profiling inventory record of all trial medications. Occasionally, pharmacists could also involve in assessment and review of patient's progress, and alerting the principal investigator of any adverse events and document any information for future assessment.



Epigenetics & Azacitadine

Epigenetics refers to the heritable changes in gene expression without DNA sequence alteration. Epigenetic modifications primarily involves DNA methylations and histone modifications, both of which are potentially reversible. DNA methylation is mediated by an enzyme DNA methyltransferase (DNMT). It has been postulated that cancer was a result of aberrant methylation leading to activation of promoter gene and inactivation of tumor suppressor gene. In MDS, silencing of CDKN28, a tumor suppressor gene, occurs due to its high frequency of methylation.

Azacitadine is a DNMT inhibitor, which at low dose induces cell differentiation and demethylation. 75-100mg/m² IV or SQ for 7 days repeated every 4 weeks. Treatment is recommended for at least 4 cycles and may be continued as long as patients continue to benefit.

Mr. E. is doing well and in complete remission after 24-mths of study period; his CBC is within normal range where he does not require further blood transfusion and growth factor support. One of the most rewarding experiences working in the cancer care area is to see patients could survive in a life threatening illness. Seeing Mr. E is enjoying good health and quality time with his family, the cure or clinical improvement may have come from the therapeutic intervention, but the comfort and strength come from a team support, genuine understanding, respect for them as a person.

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