

Patient with Kaposi's Sarcoma: Teaching students medicine management therapy

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Introduction

Interprofessional education (IPE) is a cornerstone in advancing health professional education, with the aim of improving the overall quality of healthcare.¹ The World Health Organization (WHO) states: "Interprofessional education occurs when two or more professions learn about, from and with each other

to enable effective collaboration and improve health outcomes".² IPE enables students to function within the broader health workforce team, with the aim of transferring this skill into their future practice environment, by having a shared goal to improve the quality of care and patient outcomes.

Teamwork and interprofessional collaboration are critical to patient safety; however, many allied health graduates often feel ill-prepared to participate in a collaborative practice setting. There are many barriers to the systematic integration of interprofessional education and collaboration in pharmacy undergraduate training programmes in South Africa. Not many South African pharmacy schools are linked to a medical school or have regular access to teaching hospitals.

In the School of Pharmacy at the University of the Western Cape, members of staff in Clinical Pharmacy are required to precept pharmacy students during their clinical placements across Cape Town health facilities. Following a patient-centred approach directed at medicine-related needs, academic pharmacists work with patients, their physicians and families towards a safe and effective medication therapy plan, which is modelled on the principles of teamwork and collaboration with students from other health disciplines.

With a case vignette, I highlight the role of faculty in the practice environment working within a team in the provision of quality care.

Case Scenario

The following patient was presented to the healthcare team consisting of nurses, doctors and pharmacists during their routine early morning rounds at a health care facility.

Patient presentation

Nosipho* is a 34 year-old female who presented to the district hospital with complaints of severe headache and dizziness over the previous few weeks. Her past medical history revealed that she was known to be living with the human immunodeficiency virus (HIV), with a CD 4

helper cell lymphocyte (CD4) count of 240 cells per microlitre, but not on antiretroviral treatment. She reported no other chronic medical conditions and also denied using alcohol, tobacco or recreational drugs. Upon investigation she was found to be severely anaemic with a haemoglobin of 4.4 g/L and was given one unit of red blood cells. Oral corticosteroid therapy with prednisone was initiated for the treatment of possible haemolysis. She was transferred to a tertiary institution for further management.

During admission to the tertiary institution, blood investigations as well as her clinical presentation confirmed the diagnosis of haemolytic anaemia. She had a low haemoglobin (4.9 g/L), as well as a low red blood cell count ($2.74 \times 10^{12}/L$). Her lactic acid dehydrogenase (LDH) level was increased (901 u/L) and the COOMBS test was positive, confirming the diagnosis of haemolytic anaemia. Iron levels were normal (14.7 umol/L).

Close inspection of her skin and soft palate during the ward round raised the suspicion of potential Kaposi Sarcoma (KS). She presented with several purple coloured lesions on the skin as well as a non-itchy patch on the soft palate of the mouth.

Kaposi Sarcoma (KS)

Kaposi Sarcoma is a vascular tumour, which arises in multifocal sites. The skin is most commonly involved, though virtually any organ can be involved. The skin lesions of KS most often develop on the legs or face, but they can also appear in other areas. Lesions on the legs or in the groin area can sometimes block the flow of fluid out of the legs. This can lead to painful swelling in the legs and feet. KS lesions can also develop on mucous membranes (the linings of certain parts inside the body) such as inside the mouth and throat and on the outside of the eye and inner part of the eyelids. The lesions are usually not painful or itchy.^{3,4}

Kaposi Sarcoma is caused by infection with the human Herpes virus 8 and disease progression involves a process of viral oncogenesis within a context of deregulated cytokines and immunosuppression. It is the most common malignancy in HIV-infected patients in Africa and has an incidence of 5 per 100 000 individuals being at risk of developing it.⁵

The most important treatment for KS targets any immune deficiency that exists as well as any related infections. It has been noted that antiretroviral therapy alone improves the outcome of HIV-associated KS. In South Africa, addition of chemotherapy to antiretroviral therapy (ART) has been shown to achieve higher KS response over 12 months as compared to ART alone. The most common chemotherapy includes paclitaxel or doxorubicin, bleomycin and vinblastine or vincristine. Surgical removal is also an option; however, more lesions often appear at the site of incision.^{6,7}

Haemolytic anaemia

Haemolytic anaemia is a disorder where red blood cells are destroyed at a rate faster than that by which they can be produced in the bone marrow. The normal life span of red blood cells is 120 days. Autoimmune haemolytic anaemia is the most common extracorporeal haemolytic anaemia and it is due to autoantibodies directed against components of the erythrocyte membrane. Haemolysis can manifest as jaundice and patients often present with fatigue, dark urine and severe back pain. Possible causes of autoimmune haemolytic anaemia include medicines, lupus and HIV.⁸

Ideally, haemolytic anaemia should be managed in conjunction with a haematologist. Corticosteroids and treatment of any underlying disorder are the mainstay of therapy for patients with autoimmune haemolytic anaemia. Transfusion therapy is challenging and the most compatible red blood cells should be given. Refractory cases may require splenectomy, intravenous gamma globulin, plasmapheresis or cytotoxic agents.⁹

Clinical Dilemma

Reviewing Nosipho's case, the following treatments were required for the management of KS and haemolytic anaemia:

1. Initiation of first line ARVs, namely, tenofovir, emtricitabine and efavirenz. The necessary baseline investigations were performed.
2. Nosipho's most recent CD4 count was above 200 cells per microlitre, however due to the current KS she was regarded as World Health Organization clinical stage 4, and required daily cotrimoxazole to prevent acquiring opportunistic infections.
3. She was also referred to the oncology unit to start chemotherapy for the KS.
4. For the treatment of haemolytic anaemia, glucocorticosteroids (prednisone 60mg daily) were initiated.

The interprofessional health care team discussed the management of Nosipho's condition. As an academic pharmacist, practising in a real-life environment, I engaged with the medical team and discussed some concerns with the proposed treatment.

Firstly, we discussed the use of steroids in patients with KS as they pose a risk for increased KS-associated immune reconstitution inflammatory syndrome (IRIS) and mortality. In a case-control study, researchers reported that glucocorticosteroid use was identified as a risk factor for mortality with an adjusted odds ratio of 4.7.¹⁰ Therefore, the benefits and the risks had to be determined.

Secondly, Nosipho had a CD4 of above 200 cells per microlitre; however due to coinfections she was classified as WHO clinical stage 4 and would benefit from cotrimoxazole prophylaxis. On the other hand, co-trimoxazole has been implicated in cases of bone marrow suppression resulting in fatalities. In patients with Glucose-6-phosphate dehydrogenase (G6PD) deficiency, reports of haemolysis from cotrimoxazole therapy has been reported.

Patient Outcome

Nosipho's condition improved. Her haemoglobin improved to 9.4 g/L, after receiving an additional 3 units of red blood cells. She

received counselling and education on the management of HIV and was initiated on ARVs (first-line therapy). Initiation of cotrimoxazole, for the prevention of opportunistic infections, was recommended at the next follow-up visit. In a subsequent visit to the oncology unit, chemotherapy was initiated.

Undergraduate pharmacy and medical students participated in a stimulating discussion, directed not only at the medical conditions presented to them, but to learn about how medicine use decisions are made in patients with complex disease conditions.

Conclusions

The case vignette provided insight into the potential benefits of introducing interprofessional education into the undergraduate pharmacy training programme. An interprofessional team, along with students, created a meaningful learning environment in the management of a complex disease. Since this was not a "text book" patient, but a real-world patient case, students were required to engage in critical thinking, which led to a positive health outcome.

Key messages

1. A pharmacist is needed wherever medicine is used. As members of the interprofessional team pharmacists have a defined role in optimising medicine therapy management.
2. Higher education institutions should work towards incorporating interprofessional education, which extends beyond the classroom to include training in a clinical practice setting. Such an approach would strengthen pharmacy students' communication and teamwork skills.
3. Research into 'best practice' for implementation of interprofessional education in pharmacy schools is required.

* *Not the patient's real name*

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