

Chronic myeloid leukaemia in Africa

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Chronic myeloid leukaemia (CML) is a myeloproliferative disorder of granulocytes. According to the latest WHO classification of tumours of the haematopoietic and lymphoid tissues, CML is typically Philadelphia chromosome positive (Ph⁺)¹. Ph chromosome negative CML is known as Atypical CML (aCML) and is said to be only 1-2 cases per 100 cases of CML². The role of Ph chromosome in CML poses problems in two areas for CML patients in Africa. The diagnosis of and treatment for CML relies on tests for (cytogenetic analysis, FISH analysis, RT-PCR or Southern blot methods) and drugs targeted at the proteins coded by the Ph chromosome (tyrosine kinase inhibitors). These are costly undertakings. However, all is not lost, thanks to the Glivec International Patient Assistance Programme (GIPAP) which is run by the MAX Foundation and is supported by Novartis, the manufacturers of Glivec (imatinib mesylate/imatinib) or Gleevec (in the USA).

Novartis has ensured that Glivec is available to those who have medical schemes in Africa. Those who do not have such medical aid, can access the drug for free through GIPAP as long as they can have access to proper diagnostic and follow up testing for Ph chromosome. A month's supply of a typical first generation tyrosine kinase inhibitor (TKI) can cost about 3700-3900 USD³. Cheaper TKI generics exist but the available evidence suggests that disease response on these is suboptimal⁴. TKIs have demonstrated that the possibility of cure for CML only arises if the patient has taken them for at least two years and has had optimal response during that time, patients must therefore take them for a long time which requires considerable financial resources. As such, it is worthwhile to ensure that our CML patients, including those without medical aid and who can benefit from GIPAP, have access to Ph chromo-

some testing. A Ph chromosome test could cost about 170 USD and it should ideally be done at diagnosis and then every six months while the patient is on treatment. Currently conventional cytogenetic analysis is ideal but FISH analysis is also acceptable. Countries that have the capability to do Ph chromosome testing in Africa include South Africa, Egypt and Tunisia. This means that clinicians from the rest of Africa must send their specimens to such countries for testing. This scenario adds additional issues of establishing contact with foreign laboratories, transportation costs and packaging. Most big private hospitals or private laboratories in various African countries have some kind of arrangement whereby they send specimens to other countries wherever necessary. One laboratory service with accessible contact details is PathCare in South Africa and for the Ph chromosome test they require the specimen to be one container of 3 mL of peripheral blood in heparin (green top tube) and it should be kept cool during transportation⁵. Specimens must be air freighted because they should be analysed within 48 hrs. International express delivery services are available such as the one provided by DHL⁶. Biosafety concerns during transportation may mean that one should use special packaging⁷ and the courier service would be able to provide guidance on this. These procedures may raise the total cost of the Ph chromosome test to around 350 USD.

An option which can bring down the cost of specimen transportation and reduce logistical complications, is FISH analysis of peripheral blood smears⁸. This means that a dry and fixed peripheral blood smear slide can be sent by ordinary mail to a foreign laboratory for FISH analysis for the Ph chromosome.

Currently there appear to be 1036 patients on GIPAP

in 38 countries in Africa⁹. In Malawi we are looking after one patient on the GIPAP programme in our practice and this may be the only patient that is on GIPAP in the country. By April 2007, there were 28 countries in Africa on the GIPAP programme with 1049 active patients¹⁰. Sudan had the highest number of patients (333) followed by South Africa (321); Nigeria (83); Kenya (74); Ethiopia (44); Morocco (30); Senegal (26); Cameroon (21); Uganda (18); Cote d'Ivoire (17); Togo (14); Burkina Faso (11); Tanzania (10); Mali and Zimbabwe (8 each); Mauritius (6); Benin (4); Madagascar, Republic of Congo and Zambia (3 each); Seychelles (2); and Ghana, Mozambique, Niger, Botswana, Lesotho, Namibia, Swaziland (1 each). Malawi was one of the countries that had no patient on GIPAP at that time. All the other CML patients in Malawi, if on therapy, are either on hydroxyurea or busulphan. These drugs, together with interferon-alpha (which is still too expensive for most African patients) were extensively used to treat CML prior to the IRIS

(International Randomized IFN vs. ST1571) study which established the usefulness of TKIs in CML. To a certain extent hydroxyurea or busulphan is still used as a bridging therapy to TKIs or in patients who have failed second line TKIs or can not be put on TKIs. With available evidence suggesting that the time to remission is crucial in CML in terms of control of the disease, it appears improper to keep CML patients on other medication hoping to change them to a TKI after they fail these alternative medications.

As the science and medicine of CML moves on to mechanisms of resistance to TKIs and use of second generation TKIs, the least we can do for our patients in Africa is to ensure that they are given a chance to benefit from the "magic bullets" against CML.

Footnotes

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