Prevention and Treatment of Cancer in India

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Low- and middle-income countries continue to struggle with poverty, endemic infections (e.g. tuberculosis and malaria), nutritional deficiencies, etc. With changing lifestyle, industrialization/urbanization and improved life expectancy, these countries now face challenges of a rising incidence of non-communicable diseases, mainly cardiovascular diseases, cancer, diabetes mellitus, stroke and chronic respiratory diseases. India is passing through this epidemiological transition. Data from 29 population-based cancer registries (covering approx. 10% of the population) indicate that the overall incidence of cancer in India is low compared to that in high-income countries [1]. With diverse ethnicities, cultural backgrounds, food habits and economic conditions, the incidence and prevalence of cancer are also diverse in different geographic regions. The five most common cancers among males are lung, head and neck, prostate, stomach and large bowel. In women, these are breast, cervix, ovary, oral and stomach cancer.

Due to a lack of population-based screening programs or preventive health strategies, most patients present with advanced disease, thus leading to increased mortality and reduced survival. For cervical cancer, various screening options like cytology, visual-based screening and testing for high-risk HPV are available. Several cross-sectional studies have looked at the comparative efficacy of different screening tests. In this supplementary issue, Mishra et al. [this issue, pp. 1–7] review preventive strategies for

cervix cancer. Data from three large randomized trials (conducted in India) have shown the efficacy of screening once in a lifetime with HPV DNA, as well as that one-time screening with visual inspection with acetic acid (VIA) by trained nurses and four-time screening with VIA by trained primary health workers reduces mortality due to cervical cancers. Prevention of cervical cancers with two-dose HPV vaccination and early detection of precancerous cervical lesions of the eligible population through screening and their appropriate treatment with a single-visit ‘screen-and-treat’ approach appears promising for low- and middle-income countries, including India.

For advanced cervical cancer, concurrent chemoradiation (CCRT) is currently the standard approach and results in a 5-year overall survival rate of 66% and a disease-free survival of 58%. Potential approaches to improve the outcome could be the use of weekly paclitaxel and carboplatin for 4–6 weeks as dose-dense chemotherapy prior to CCRT, adjuvant chemotherapy after CCRT in patients with positive lymph nodes, larger tumor volume and those with stage III–IVA disease. For patients with early-stage disease (FIGO IA2–IIA), short-course chemotherapy prior to surgery is associated with improved outcome in many studies. Bevacizumab, an inhibitor of vascular endothelial growth factor, is associated with improved survival in patients with recurrent/metastatic cervical cancer. Whether bevacizumab and other similar novel agents targeting molecular pathways could be used

in front-line treatment along with cytotoxic chemotherapy is likely to be an area of research in future studies.

Many patients with oral cancer present with advanced disease and are either inoperable or not amenable for CCRT. Patil et al. [this issue, pp. 35–40] describe a novel approach of using metronomic therapy for such patients. Their initial experience indicates that metronomic scheduling of chemotherapy may render a subgroup of patients amenable for local treatment with improved progression-free survival and overall survival. Such an approach needs confirmation in a phase III trial.

Lung cancer is the most common cancer among men worldwide. The outcome of advanced non-small cell lung cancer has been dismal. The advent of EGFR tyrosine kinase inhibitors (TKIs) in the past decade has led to a paradigm shift in the management of advanced adenocarcinoma of the lung. The key to success for such therapy is in the precise identification of the sensitizing EGFR mutation. In the Indian population, the frequency of EGFR mutation has been reported to range from 23 to 50%. Malik et al. [this issue, pp. 26–34] review the Indian experience with EGFR TKIs and also if such therapy can be used as maintenance. Development of secondary resistance is currently a major cause of treatment failure in such patients.

Similar to non-hematological malignancies, a lower incidence of non-Hodgkin's lymphoma (NHL) has been recorded in India, both in men and women. Within India, the incidence is several-fold higher in urban cancer registries compared to rural India; the incidence being higher in metropolitan cities and Indian immigrants, suggest-

ing that urban lifestyle and economic progress may be linked to this higher incidence of NHL seen [this issue, pp. 18–25]. Compared to high-income countries, key differences in the presentation of NHL in India include: median age of 54 years (almost a decade less), higher male to female ratio, higher proportion of patients with B symptoms (40–60 vs. 20–30%), poor ECOG performance status ≥ 2 at diagnosis (50 vs. 20–30%), higher frequency of diffuse large B-cell NHL (60–70 vs. <40%), lower frequency of follicular NHL (<20 vs. 30–40%), and T-cell type in 10–20 vs. <10%. Currently, the outcome of patients with NHL in India is poor. Easy access to a treatment center (several regional and district-level centers), a centralized review of the histopathology subtype, novel treatment protocols, rigorous follow-up and training of staff are some of the possible strategies suggested to improve the outcome.

During the past three decades, in high-income countries, early detection has led to a constant decline in cancer-related mortality. In India, currently, while efforts are being made to start population-based screening under the National Cancer Control Program for three common cancers, e.g. cervical, breast and oral cancer, it is important to design simple, cultural-specific and sensitive strategies which may be acceptable to the target population.

References

- 1 National Cancer Registry Programme: Three year report of population based cancer registries: 2012–2014. Indian Council of Medical Research, 2016. www.ncrpindia.org (accessed July 1, 2016).