

New era in the management of childhood cancer

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Chemotherapy, surgery and radiation therapy are the conventional approaches for cancers. Patients may need either one, two or all 3 forms of therapy for cancer control. But such approaches carry significant acute and long term side effects. Over the past decades, new modalities such as small molecule targeted therapy and immunotherapy started to emerge. For cancer with identifiable genetic target, using small molecules to block the aberrant expression of genes can achieve significant disease control or even cure in a number of relatively rare childhood cancers such as CML, or solid tumors such as subependymal giant cell ependymoma in tuberous sclerosis, gastrointestinal stromal tumor and anaplastic Ki-1 lymphoma. However, children cancers with treatable gene target accounts for a very small patients' proportion only. On the other hand, immunotherapy includes a spectrum of new strategies and they have different mechanisms. Such approaches include monoclonal antibody targeting at particular tumor specific antigens; immune check-point inhibitor by blocking the immune evasive mechanism of cancers; immune cellular therapy using chimeric antigen receptor T cells (CAR-T) to attack cancers with specific surface antigen; bispecific antibody to guide the T cells against cancers with specific surface antigen; and allogeneic KIR mismatched natural killer cells to eradicate residual cancer cells, etc.. All these fascinating advances provide us new hope with lesser therapy related side effect profile. However, they are usually very expensive and require high level of technological support so the chance of benefiting a large population is slim. In addition, one has to understand the basic mechanism of these approaches so rational utilization of these strategies can be adopted.