

## **Childhood Cancer – from Nihilism to Optimism**

Sampada (Photograph) is a happy woman today. 32 years ago she was diagnosed as Acute Lymphoblastic Leukemia (ALL, a type of blood cancer) at Tata Memorial Hospital. Her parents shuddered with disbelief upon hearing of her 20% chances of long term survival. Nevertheless, they accepted the challenge and went ahead with the gruelling chemotherapy sessions for 2 ½ years. She finally triumphed and is a survivor today with a family and two children. Happy rewards like Sampada egged us on during those times to undertake the difficult journey of treating childhood cancer which frequently left us mentally and emotionally bankrupt. Much has changed since then. Today more often than not, we see grim, lifeless faces of children with cancer entering our clinic and few months of therapy later, bundles of joy walk out in full excitement and join the mainstream of Society.

The story of Pediatric Oncology is one of the true success stories of modern medicine. It is a journey from Nihilism to Optimism. A disease which was invariably fatal 30 years ago now enjoys a long -term survival of 70-80% and most survivors are cured.

To most of us, the word ‘Cancer’ stands largely for a lump or ulcer in the mouth, airway, food pipe, breast or genital tract, occurring always in adults. Although, these cancers form the bulk of 8 lacs cases of cancer occurring in the country annually, a small 5% (approx. 40,000) of them occur in children. In USA, Cancer is second to accidents as a cause of mortality in children beyond first year of life. With increasing control of infectious diseases, eradication of malnutrition and the rapid strides of the Pediatric Surgeons in correcting congenital anomalies, more children are likely to be affected by cancer in India. Cancer will gradually but definitely assume an important place as a cause of childhood mortality. The common cancers occurring in children are leukemia (blood cancer) commonly referred to as liquid tumors and cancer of lymphnodes (lymphoma), central nervous system (Brain tumor), sympathetic nervous system (neuroblastoma), Kidney (Wilm’s tumor) bones/muscles (sarcoma) commonly referred to as solid tumors.

Many parents question and wonder as to what went wrong in the care of the child which led to their child developing cancer. Past many years of research in this area has identified that subtle changes (mutations) in the structure of genetic codes (DNA) of cells in the body leads to Cancer. However, the players behind these changes are far from clear. Exposure to radiation, strong electromagnetic fields, certain genetic aberrations (e.g Down Syndrome) and congenital or acquired immune system deficiency may increase the risk of Childhood Cancers.

The most satisfying aspect in this journey is the advances in treatment of Childhood Cancers. Most Childhood Cancers require disciplined integrated treatment with multidisciplinary approach involving Pediatric Medical Oncologist, Pediatric Surgical Oncologist, Pediatric Radiation Oncologist, Diagnostic specialist (Pathologist, Radiologist, Molecular Biologist) and efficient supportive care system. All the experts put aside the pride of their expertise and work together keeping well being of the child as

the central issue. First chance is the best chance and giving optimum treatment at outset is the most important factor in deciding the outcome of these cancers.

The treatment rests largely on 3 main pillars. Chemotherapy, Surgery and Radiotherapy which are mostly used in combination, depending on the type and stage of the cancer. Early diagnosis will pick up early stage disease which requires simple treatment and yields high success rate.

Childhood cancer cells divide rapidly and therefore grow very fast. However, this very property makes them exquisitely sensitive to chemotherapy which is the most important pillar of treatment. Most of Chemotherapy drugs are injectable, only few are oral. These drugs invariably cause damage to many rapidly dividing normal cells in the body such as hair follicles, inner lining of mouth, intestines and blood forming cells causing hair loss, diarrhea, mouth ulcers and infections. However, these are temporary short lived problems which can be effectively tackled by supportive care such as blood components replacement, use of growth factors to stimulate blood cell production and antibiotics. In addition we are slowly moving towards the magic treatment in oncology “The targeted Therapies”. These novel small molecules work like magic bullets targeting the cancer cells with unmatched accuracy and sparing the normal cells. Hence they are highly efficacious with least side effects. One such drug, Imanitib Mesylate is able to control chronic Myeloid Leukemia ( a type of blood cancer ) in children very effectively. Many more such molecules are on the horizon which will revolutionize the way cancer is being treated.

Surgery is utilized to resect the tumor with an aim to preserve organs and their functions avoiding any major morbidity.

Radiation Therapy (RT) entails use of X-rays or gamma rays generated from Cobalt or Linear accelerator machines to destroy the tumor. Earlier radiotherapy machines were not accurate and damaged the organs in the vicinity of tumor leading to short and long term adverse effects. Modern day machines offer unparalleled precision in targeting the tumor. With the help of better machines as well as techniques such as conformal RT and Intensity Modulated RT (IMRT), it is possible to focus only on tumor and spare the surrounding organs.

Any advance in health care system is only as valuable as it is available and accessible to those who need it. Only 15-20% children with cancer are in the net for treatment in India mainly due to lack of diagnosis and access to treatment which is financially and socially very taxing to parents. Organized treatment programs carried out by experienced Pediatric Oncologists in well equipped, well-staffed Pediatric Cancer Unit (PCU) yield good results. Such dedicated PCU are very few and exist only in big cities. There is a great paucity of trained Pediatric Oncologists in the country, as there is no formal training program, which will attract young Pediatricians to this super-specialty. The family dislocation for cancer treatment to a new city, cost of to and fro travel, added financial burden of treatment, loss of livelihood of the parents and problem of care of other siblings make the compliance to treatment a real challenge.

Active participation of Pediatricians in shared care of these patients is our best bet to expand the net for delivery of care to all children with cancer. Financial input is also critical for the sustenance of Pediatric Cancer facility. Parents, Volunteers and Health professionals should come together to create “Alliance of the Stakeholders” for sensitizing society, influencing health policy decision makers and help mobilizing the resources at National and International level. With these active steps, we hope that we should soon be able to achieve our goal of treating and curing all children with Cancer with concerted efforts. The journey from Nihilism to Optimism would then be complete.

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