

Introduction

Few situations are as complex and demanding as the end of life care for children and their families. In developed countries high level palliative care is now a standard. Sustained effort was focused on this area and in the US the Institute of Medicine of The National Academy of Science conducted an extensive survey of the issue (1). This landmark report identified significant areas where improvement was needed and in particular the need for more research and the development of new models of care in this area. The World Health Organization has also published two expert reports on palliative care (2, 3) but very few research reports have come from countries with limited resources.

The treatment of childhood cancer is one of the great success stories of modern medicine. The high success rate is the result of well designed clinical trials in childhood cancer and the efforts of health care workers in tertiary care centers. Nonetheless in the best of circumstances about 25% of children diagnosed with cancer eventually die of their disease. Thus the development of palliative care programs along with community outreach and education must be a priority for tertiary care centers. These programs need to be geared to the total care of patients whose disease is not responsive to curative treatment. In this setting control of pain and other symptoms as well as psychological, social and spiritual support are of paramount importance.

The problems surrounding end of life care are a major concern for practitioners caring for children with cancer all over the world. The issue however acquires an added dimension of complexity in countries where resources are limited and end of life care often is seen to compete with curative care for cancer patients. This is further compounded by the absence of community based organizations that are instrumental in supporting patients and families at the end of life, thus complementing the tertiary center in providing adequate care, while relieving the pressure from and sparing the resources of, the often overloaded centers. An additional obstacle to adequate palliative care is, in many countries, the absence of a legal framework that supports parent, patient and physician decision making at the end of life (4).

The Children's Cancer Center of Lebanon at the American University of Beirut Medical Center was founded in 2002 as an affiliate of the St Jude Children's Research Hospital. Since its founding, the Center has provided care to over 400 children with cancer and a large number of children with hematological disorders. All newly diagnosed cases were treated on modern protocol based therapy and a few patients treated elsewhere were accepted for care. We have developed a multidisciplinary team approach for handling end of life care, relying primarily on the tertiary care center staff, volunteers and facilities. In the discussion below we will address common problems experienced in the end of life care of children with cancer and illustrate the issues with examples from our clinical practice.

Problems experienced at the end of life in pediatric cancer patients

Case Presentation 1

Zein, a 4 year old boy diagnosed with metastatic neuroblastoma. Certain features of his disease defined him to be at high risk for recurrence and this was discussed with the family early on. He

underwent high dose chemotherapy and hematopoietic stem cell transplant successfully but was found to have a bone marrow recurrence 6 months later. At that time the parents met with the attending physician, psychologist, primary nurse and one of the volunteers at the Center to whom they were close. After they were informed of the results, the option of second line therapy was discussed and family opted for no therapy as there was possibility of a cure and the child was symptom free. Two months later he developed pain and was started on oral morphine sulfate and then fentanyl patches. As the pain worsened and he developed raccoon eyes he was hospitalized for IV morphine. At this time a second meeting was held with family in which they asked that a central line be placed and that palliative chemotherapy be started after they reviewed all potential toxicity. He received one cycle of chemotherapy and had a prompt response of bony pain and a clearing of the discoloration around his eyes. He then went on 4 more cycles of chemotherapy as an outpatient and remained pain free for 5 months with no significant toxicity due to chemotherapy and no hospitalizations. At the time of this writing he was still alive and active but plans were being made with the family to face the eventual disease recurrence.

Discussion

Once a child is diagnosed with cancer in most centers efforts are made to support the family and provide hope for an eventual cure, which is the case for the majority of patients. It is however important to keep in mind that palliative care is an integral part of the care plan for every patient with different degrees of emphasis according to the clinical scenario. For example we believe in earlier and more active intervention in patients with diseases that have a high risk treatment failure such as brain stem gliomas and neuroblastoma with poor risk features. Clear and frank discussions with the family early on for allow better planning to address problems as they arise. Regardless of initial risk features the course of a particular child and the response to therapy is often difficult to predict (5). The path of patient to death after treatment failure is also unpredictable and this needs to be taken into account when care plans are formulated and in discussions with families. It is important to know that recent data shows that parents first recognize that a child has no realistic chance of cure 3 months after the pediatric oncologist. Earlier recognition would perhaps be associated with better integration of palliative care and allow more time for families to plan (6). Furthermore, parents recognize two goals as part of the end of life therapy of their children: life extending therapy and maximizing quality of life (5). Studies have shown that parents maintain these dual goals concurrently and thus they should be integrated in any plan for end of life palliative care. This was clearly what Zein's parents had in mind when they opted for palliative chemotherapy after they studied the potential risks and benefits of the proposed regimen.

Case Presentation 2

Reem was 14 year old girl with osteogenic sarcoma of the right distal femur. She received chemotherapy and underwent limb salvage surgery. At the time of surgery a poor tumor response was found, that is a bad prognostic factor. The patient and family were informed of this and arrangements were made for the addition of new chemotherapeutic agents to her regimen. Six months after the end of chemotherapy she was found to have a solitary lung metastatic nodule. This was surgically removed but three months later two more nodules were detected. They were surgically removed and salvage chemotherapy was started. After 3 cycles of chemotherapy she

was found to have multiple lung nodules and a large mass that was unresectable. After discussions with the patient and family a decision was made to stop chemotherapy and to care for the patient at home. She became progressively dyspneic and oxygen was started at home. The parents were told that should the need arise or if they did not feel comfortable at home that they could come to the hospital at anytime. Oral morphine and later fentanyl patches were also started. She complained of fatigue, shortness of breath and pain. Home visits were made by one of the center's physicians and she continued to come to the center to attend special school classes and to receive blood transfusions. Six days before her death the family called and said that they could not cope with the situation at home and the increasing pain and dyspnea. She was admitted to the hospital started on p.r.n. IV morphine every 3 hours. The house staff were concerned about using high doses of opioid for several reasons. After discussions with the house staff and family the patient was started on a continuous morphine drip. An initial CBC and electrolyte panel was obtained as well as a chest CT to look for pneumonia or a pleural effusion. No further laboratory studies were obtained. Her pain and dyspnea were controlled and she died peacefully with the family around her 5 days later.

Discussion

This case illustrates several of the problems faced in the care of children who have failed cancer therapy. In a study by Wolfe and colleagues conducted a landmark study of the symptoms experienced by children at the end of life and their treatment (7). The most common symptoms causing suffering were as in our patients fatigue, dyspnea and pain. In addition patients experienced loss of appetite, nausea vomiting and constipation. An important finding of this study was that these symptoms were often not treated successfully. In our patient fatigue it was most likely due to hypoxia and anemia. Other factors such as insomnia may also have contributed. We opted to manage her fatigue by maintaining an adequate hemoglobin and oxygenation. In this setting it is also important to review the patient's drug therapy to identify any drugs or drug interactions that contribute to fatigue.

Pain management was also a significant problem in this patient. There are several obstacles to pain management at the end of life. Our patient was initially well managed with oral round the clock oral morphine and later a fentanyl patch. Upon admission to the hospital she was seen by the general pediatric team and p.r.n. morphine started. This way of administering morphine or other opioids is ineffective in this setting. Under dosing of opioids is often the result of ignorance of pain management protocols and the irrational fear of addiction among practitioners. An additional obstacle to pain management at end of life is the fear of many practitioners that opioids may hasten the death of patients. While there is little evidence that appropriate opioid use at the end of life hastens death (1, 8, 9), this issue has gained added urgency as the debate rages around euthanasia. At a recent conference in Lebanon the view that starting a morphine drip could be considered "passive euthanasia" was voiced. This was opposed by Father Charbel Chlela a Maronite Catholic theologian on the grounds that the good derived from relieving pain at the end of life far outweighs any unintended bad results. This view was supported by a Moslem Qadi and a large number of oncologists but opposed by a legal representative of the Lebanese government. Thus, further debate is needed to establish a legal framework that will cover what is current practice in many centers in Lebanon (4). In this context it is important to note that practitioners taking care of children with life threatening

conditions should receive special training about the use of medications for the relief of pain in the end of life setting. The reader is referred to several excellent reviews on this issue (5, 11, 12).

The management of dyspnea at the end of life can be a challenge. In our case the cause was obviously the pulmonary metastasis and the uncomfortable feeling was relieved by systemic opioids. We however considered a superimposed pneumonia which could be treated with antibiotics or a pleural effusion that could be drained. Other causes of dyspnea at the end of life include cardiac failure and pulmonary toxicity due to chemotherapy. In a patient with dyspnea all of these possible causes need to be critically evaluated and managed.

Two other important issues are raised in this case; the first is the issue of daily activities and schooling and the second is the location of care for a dying patient is. Quality of life is very important for children and their families at the end of life. We have created a school within the Center that is staffed by volunteer teachers. The school is well attended and several children like the case above insisted on continued attendance despite a very poor prognosis. Concerning location of care studies in the US estimate that about half of children with cancer die at home (7). There have been studies that claim that this may have beneficial effects on family functioning but the situation is far from clear. Where all resources are available is not clear what leads certain families to chose end of life care at home or in the hospital or to allow hospice care for the dying child. Given our limited resources for home care we have opted to give families a choice of being at home or in the hospital at the end of life. With time more families have chosen to stay home and recently many of the children have died at home. We have made it always clear that, as in the case presented above, the Center's door is always open to the family and patient and the staff is available for consultation and advice. We are currently preparing to survey the families of children who died in order to improve our services.

Conclusions The problems faced by the dying child and the family are complex and require a multidisciplinary team approach. Management of the dying child may be carried out in the home or hospital but significant resources are needed. Hospice care is not available in many parts of the developing world. In Lebanon hospice would be a welcome addition and complement care offered at our center and other pediatric oncology programs. This is important for optimization of care and better utilization of resources. Significant involvement of health care practitioners and the community as well as the development of the legal framework governing the delivery of care at the end of life are required. These and other issues are addressed in two recent reviews (5, 13).

References

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