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Case Report

Influence of Health Literacy on Cancer Prognosis; A Case Report of Childhood Fibrosarcoma

Isabela Magesa[1,2*], Seth Jotham[1,2], Salvatory Makweta Mlaga[3,4]

[1]Department of Surgery, Faculty of Medicine, Saint Francis University College of Health and Allied Sciences, P.O. Box 175, Ifakara, Morogoro, Tanzania.
[2]Department of Surgery, Saint Francis Referral Hospital, P.O. Box 73, Ifakara, Morogoro, Tanzania.
[3]Department of Anatomy and pathology, St. Francis University College of Health and Allied Sciences.
[4]Department of laboratory services, Good Samaritan Cancer Hospital, P.O. Box 177, Ifakara, Morogoro, Tanzania.

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Abstract: ***Background****:* Cancer is an emerging global public health threat in low- and middle-income countries, and poor health literacy has resulted into poor outcomes due to late diagnosis and care. Fibrosarcoma is among the rare - highly malignant tumor with poor prognosis when diagnosed late. Its survival rate is estimated to be around 20% in Low- and middle-income countries (LMICs) as compared to more than 80% in high-income countries. ***Case presentation:*** Herein we report a case of 14-years-old boy with a relapsing mass in his left hand. It was initially thought to be benign and it was resected, but later confirmed by tissue histopathological examination to be an infantile fibrosarcoma. Limb salvage surgery was not possible only to end up with forearm amputation. ***Discussion:*** Health literacy of healthcare workers and community at large has an influence on outcome of cancer treatments, it reduces incidences of late diagnoses as primary physicians will have an increased suspicion for malignancies whenever they encounter such a mass especially in children. Most of fibrosarcoma are deemed unresectable at diagnosis hence necessitating a multimodal approach including preoperative cytoreductive therapy and surgery. ***Conclusion:*** Fibrosarcoma has good prognosis when diagnosed early. To prevent unfavorable cancer-related outcomes and to have good oncological outcomes; health literacy on soft tissue sarcomas should be promoted especially at the community level as it is the case in other types of cancers.

Keywords: Health literacy, Soft tissue malignancy, Fibrosarcoma, Amputation.

INTRODUCTION

Cancer is an emerging global public health threat in low- and middle-income countries (LMICs), They are generally diagnosed late, and poor health literacy being the major cause, as health literacy plays a pivotal role in cancer prevention, care and prognosis with important implications for patient experience and outcomes [1]. Health literacy has been defined as "the combination of personal competencies and situational resources needed for people to access, understand, appraise and use information and services to make decision about the health. It includes the capacity to communicate, assert and act upon these decisions" [2].

Majority of studies reported positive association between health literacy and clinical cancer-related outcomes suggesting that higher levels of health literacy are associated with greater likelihood of experiencing favorable outcomes [3]. The results show that inadequate health literacy is associated with lower uptake of screening and preventive behaviours [4], longer lag time in symptoms identification and medical help seeking [5, 6], less knowledge of cancer, its prevention and treatment [7], lower perceived quality of life and less compliance with post-screening and treatment follow-up [6]. Presence of few cancer centers, financial burden, and stigma have also been reported as barriers to cancer care in Tanzania [8]. Implications of these associations are significant both for patients and the healthcare system at large.

In 2022 WHO estimated 20 million new cancer cases, 9.7 million deaths worldwide and predicted 1.1 million people in Africa will be dying from cancers annually in 2030. Over 35 million new cancer cases are predicted in 2050. An estimated 250,000 children worldwide are diagnosed with cancer every year and the

***Corresponding Author:** Isabela Magesa
Department of Surgery, Faculty of Medicine, Saint Francis University College of Health and Allied Sciences, P.O. Box 175, Ifakara, Morogoro, Tanzania Email: bellahopebonnie28@gmail.com

majority of diagnoses occur in low- and middle-income countries (LMICs) [9]. Lancet report on cancer in sub-Saharan Africa reported more than 26,000 deaths from cancer in Tanzania in 2022, from which over 90% of cancer patients report to the hospital when the disease is at advanced stages.

Despite this fact, cancer is not recognized as a high-priority health problem in most of low- and middle-income countries, where children are dying from malaria and malnutrition, women die in childbirth and young adults are dying of AIDS. While people with cancer-many dying slowly in their homes-attract less attention [10]. Health literacy is a growing research area, but only few literatures deal with health literacy in childhood which is a fundamental to physical, emotional and cognitive development and the evolvement of health-related behaviours. Greater effectiveness is expected from health promotion activities during early childhood instead of changing the minds of adults [11].

Herein we present a case report of a child who ended up into a forearm amputation due to a late diagnosed infantile fibrosarcoma of a left hand and ended up into fore arm amputation. The morbidity this child got will bring light to a community and primary physicians to be suspicious of malignancies whenever they encounter a mass, and make an appropriate decision.

CASE PRESENTATION

A 14-years-old male from a peasant community in Mtimbira village, Ifakara-Tanzania, presented with the chief complaint of draining blood from a mass in his left hand. A mass was noticed 4 years ago as a painless small nodule on dorsum of his left hand and had been enlarging steadily over time. It was then resected 2 years ago in another hospital and 3 months after excisional surgery, the painless mass proliferated and grew faster than before with no history of drastic weight loss. 5 months prior to this admission, biopsy was taken from a mass for histopathology but due to financial constrains he lost follow-up. Recently a mass became shiny, ulcerated and easily bled on touch thus forced them to seek for medical care.

Physical examination revealed an ulcerated, fixed and firm mass with unclear marginal of about 23 by 20 by 8 cm occupying the whole dorsum of left hand extending just above the left wrist joint to the metacarpo-pharyngeal joints. The overlying skin was shiny, smooth and had an ulcer of 10cm by 8cm which was non-tender and bled easily on touch (Figure 1). Flexion of the left metacarpo-pharyngeal joints were limited. No palpable axillary lymph nodes.

Figure 1: The gross image of the ulcerated- bleeding tumor on the dorsum of the left hand

At presentation, compression dressings done to control bleeding, baseline laboratory investigations were also done (Results in Table 1), plain x-ray of left fore-arm showed a soft tissue swelling but no periosteal reaction of the bones (Figure 2), then histopathology results traced and revealed spindle cells with herring bone pattern in hypercellular areas and nodular pattern in hypocellular oval cells surrounded by spindle cells in herring bone pattern. The tumor cells had pleomorphic, vesicular nuclei with fragmented chromatin associated with abnormal mitoses and eosinophilic scant cytoplasm and necrosis was rare (Figure 3), which support the diagnosis of fibrosarcoma Intermediate grade. An abdominal ultrasound reviled moderate hydronephrosis of right kidney.

Table 1; Results of laboratory investigations done

PARAMETER	RESULTS OBTAINED	REFERRENCE RANGE
WBCs count	6.3×10^9/L	4.0 to 11.0×10^9/L
Haemoglobin level	11.4 g/dl dropped to 9.0 g/dl in the ward, Blood group O+	8.0 – 17.0 g/dl
Serum uric acid	202.0 umol/L	214.0 – 488.0 umol/L
Serum aspartate aminotransferase	39.1 U/l	0.0 – 35.0 U/l
Serum creatinine	0.6 mg/dl	0.6 – 1.2 mg/dl

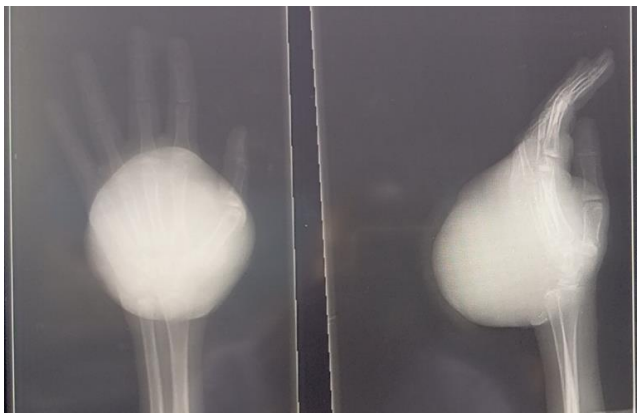
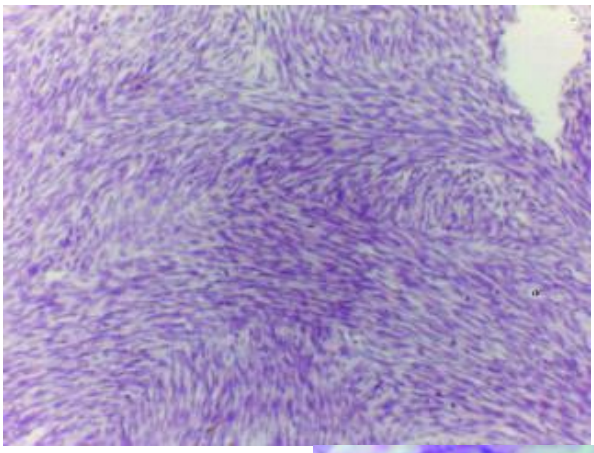


Figure 2; AP and lateral x-ray films of a left fore-arm and hand showing a round shaped radio-opaque lesion that extends from the distal left radius and ulnar bones to all of the proximal phalanges with no periosteal reactions.

A



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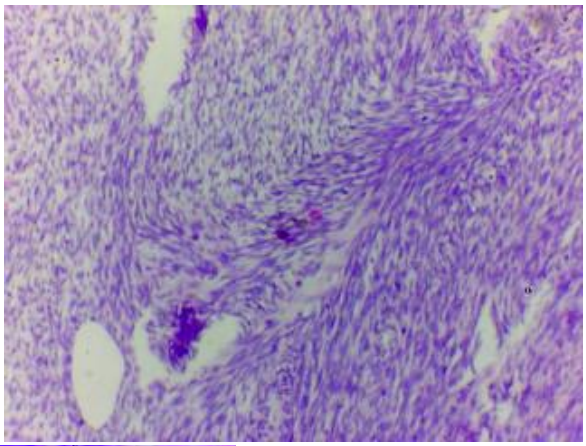

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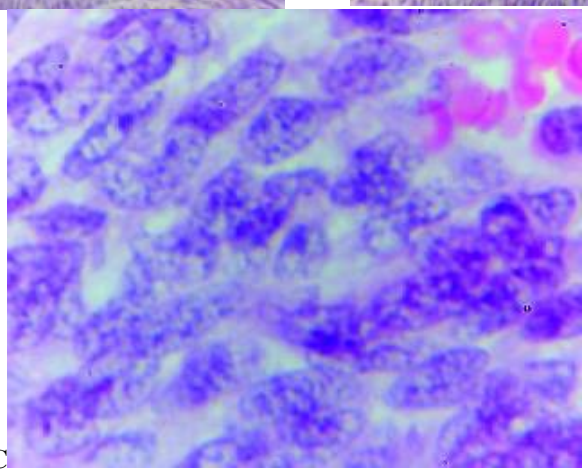

Figure 3: Histopathology of the tumor, hematoxylin-eosin x10, highlighting;
A: Fascicular pattern with focal whirling
B: Solid sheets of spindle cells and herringbone pattern
C: Atypical spindle shaped nuclei with multiple nucleoli

He was transfused three units of blood, then counseled and scheduled for an emergency tumor resection, limb salvage surgery failed hence, left forearm amputation done. In the ward he received antibiotics, hematenics, analgesics and physiotherapy. Six days later he was discharged through surgical clinic and advice to return for follow-up visits.

DISCUSSION

Infantile fibrosarcoma is a rare early childhood malignancy. It includes approximately 10% of all sarcomas in children. It usually presents in the first five years of life, most of them under three years and about 40 percent under three months. It is rarely appearing at older ages between 10 to 15 years old [12]. In the presented case the patient was ten years old when diagnosed and the tumor started 4 years earlier.

Nearly 50% of infantile fibrosarcoma cases occur in the extremities [13], most of them are painless and mobile, they have slow growth hence both physicians and patients confuse them with benign tumors and appropriate investigations such as biopsies are missed [14]. With regard to our case, tumor was excised without histopathological analysis which then recurred and later diagnosed as a fibrosarcoma. Primary physicians should be suspicious of malignancies whenever they encounter a mass especially in children and histopathology should be mandatory. Due to high-grade cell mitosis as outgrowth of tumor blood supply, necrotic centers forms which rupture the skin and drain fluid and pus with an increased risk of infection [15], as was the case with our patient.

Depending on the tumor size, lymph node involvement, and metastasis, fibrosarcoma is divided into the following stages - IA (low-grade, 5 cm or smaller); IB (low-grade, larger than 5 cm), IIA (mid-grade, somewhat faster grow/spread; or high-grade, has faster grow/spread and are 5 cm or smaller); IIB (mid-grade/high-grade are larger than 5 cm); III (high-grade, larger than 5 cm, and lymph node involvement); and IV (any grade, any size, lymph node involvement, and metastasized) [14].

Childhood treatments are dependent on the extent of the disease including size and location which determines the approach to management being whether limb salvage surgery, rotationplasty or amputation with radiation and chemotherapy. Recurrence does occur with a higher rate in salvage compared to amputation, whereas a six-years follow-up study noted a recurrence of 8% in salvage and 3% in amputees but even with salvage surgery; achieving a clear margin is a challenge [15], Most of the primary tumors are deemed unresectable at diagnosis in 48–62% of cases, necessitating a multimodal approach with preoperative cytoreductive therapy and local therapy, conservative surgery being among the options [13].

For our case, limb salvage was not possible because of delay in making diagnosis. This highlights the importance of improving health literacy of the community as well as primary physicians so as to reduce late diagnosis, improve quality of life, cancer care and management.

In Africa, childhood cancer survival rate is around 20%, compared to more than 80% in high-income countries where their early diagnosis improves chances of survival. WHO stressed that significant improvements can be made in the lives of children with cancer by identifying the disease early and avoiding delays in care [16]. A presented young boy presents a population in low- and middle-income countries especially in rural areas where health literacy is hindered by a lot of factors, as in our case a patient lost follow-up for 5 months after biopsy due to financial constraints and due to poor health literacy, they didn't seek early medical care since they probably didn't understand the severity of a disease till a tumor started to bleed.

CONCLUSION

Although it is not possible to make a valid conclusion with a single presentation, this case report highlights some of unfavorable cancer-related outcomes due to poor health literacy. There is therefore a need for more studies related to soft tissue sarcoma health literacy especially in our kind of settings, as the low- and middle-income population might be the most vulnerable to succumb to the grievous outcomes.

Ethical Considerations

This case report was approved by the Institutional Research Board (IRB) of St. Francis Referral Hospital and St. Francis University College of Health and Allied Sciences.

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Competing Interests: Authors have declared that no competing interests exist.

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