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Case Report
Excellent Long Survival of a Female Patient with Osteosarcoma (1998-2019)

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Abstract

30 years old, unmarried girl with above knee amputation of right lower limbs since 1998 as radical treatment for Osteosarcoma of upper tibia with no systemic or local recurrence after oncological treatment until now.

Key words: Osteosarcoma, Malignant tumors , Radiotherapy , Chemotherapy .

Introduction

History of present illness

The condition started before 21 years when she felt pain & swelling in her right foot,on examination, we suspect bone tumor as by x ray there was periosteal reaction ,in the 2nd metatarsal bone with destruction of the cortex, operation was done (Excisional biopsy) to excise 2nd metatarsal bone as a whole with tumor sent for Histopathology which revel Osteosarcoma , so we decided to do an amputation of the right foot (above ankle) but the relative refused to do an amputation.

After 9 months she came to an orthopedic surgeon with another lesion in same side of the limb but in the upper third of right tibia with lytic lesion & destruction of the cortex so bone metastases suspected & another biopsy done & same result of Osteosarcoma proved, so we decided it do above knee amputation after complete survey if there was another metastases which was negative, so amputation done & sent for histopathology & also the result was **Osteosarcoma** after that the surgeon sent her to oncologist doctor for chemotherapy & she received 6 course of chemotherapy (ADM 50mg/m^2& cisplatin 50mg/m^2 & every 3 weeks) followed

closely by him for recurrence but till now there are no sign of metastases locally or distally.

Background

Osteosarcoma is the most common primary malignant bone tumor [1, 2]. It is an ancient disease that is still incompletely understood. Osteosarcoma is thought to arise from primitive mesenchymal bone-forming cells, and its histologic hallmark is the production of malignant osteoid. Other cell populations may also be present, as these types of cells may also arise from pleuripotential mesenchymal cells, but any area of malignant bone in the lesion establishes the diagnosis as Osteosarcoma.

Osteosarcoma is a lethal form of musculoskeletal cancer that most commonly causes death of patients from pulmonary metastatic disease. [3, 4] . Most osteosarcomas arise as solitary lesions within the fastest growing areas of the long bones of children. The affected areas are the distal femur, the proximal tibia, and the proximal humerus, but virtually any bone can be affected.

Pathophysiology

Osteosarcoma is a bone tumor and can occur in any bone, usually in the extremities of long bones near metaphyseal growth plates. The most common sites are as follow[14]:

- Femur (42%, 75% of which are in the distal femur)
- Tibia (19%, 80 % ,of which are in the proximal tibia)
- Humerus (10%, 90% of which are in the proximal Humerus)
- Skull and jaw (8%)
- Pelvis (8%)

A number of variants of Osteosarcoma exist, including conventional types (osteoblastic, chondroblastic, and fibroblastic), telangiectatic ,multifocal, parosteal, and periosteal. This article only addresses conventional Osteosarcoma (often referred to simply as Osteosarcoma).

The cause of bone tumors is unknown.[3,4,5,6,7] They often arise in areas of rapid growth. Possible causes include: Inherited genetic mutations ,Radiation& Trauma

But in most cases no specific cause is found.

Cancers that start in the bones are referred to as primary bone tumors .Cancers that start in another part of the body (such as the breast ,lungs, or colon) are not considered bone tumors

The most common cancers that spread to the bone are cancer of the: Breast, Kidney ,Lung ,Prostate, Thyroid , these forms of cancer usually affect older people.

Epidemiology

In the United States, the incidence of Osteosarcoma is 400 cases per year (4.8 per million population < 20 years). The overall 5-year survival rate for patients diagnosed between 1974 and 1994 was 63% (59% for males, 70% for females) .

The incidence is slightly higher in blacks than in whites. Data from the National Cancer Institute (NCI) **S**urveillance, **E**pidemiology, and **E**nd **R**esults (SEER)Pediatric Monograph 1975-1995, are as follows: [8]

Blacks - 5.2 cases per million per year (< 20 years)

Whites - 4.6 cases per million per year

The incidence of Osteosarcoma is slightly higher in males than in females. In males, it is 5.2 per million per year; in females, it is 4.5 per million per year .

Osteosarcoma is very rare in young children (0.5 cases per million per year in children < 5 years). However, the incidence increases steadily with age, rising more dramatically in adolescence in correspondence with the adolescent growth spurt, as follows: [8]

- Age 5 - 9 years -- 2.6 (black) or 2.1 (white) cases per million per year
- Age 10-14 years -- 8.3 (black) or 7 (white) cases per million per year
- Age 15-19 years -- 8.9 (black) or 8.2 (white) cases per million per year

Prognosis

The present understanding of outcome and prognosis for osteosarcoma is driven by certain serum markers, clinical staging, and histologic response to chemotherapeutic agents. [9]

According to SEER data for 1973-2004, the overall relative 5-year survival rates were as follows [8] :

- Age < 25 years - 61.6% (females, 65.8%; males, 58.4%)
- Age 25-59 years - 58.7% (females, 64%; males, 54.6%)
- Age 60-85+ years - 24.2% (females, 27.0%; males, 19.9%), with a drastic drop with advancing age (from ~50% for patients in their 50s to 17% for those in their middle-to-late 60s and to 10.8% for those aged 80 years or older)

Patients with an elevated ALP (Alkaline Phosphatase) at diagnosis are more likely to have pulmonary metastases. In patients without metastases, those with an elevated LDH are less likely to do well than are those with a normal LDH (Lactate Dehydrogenase).

Discussion

Comparative Studies

1-Survival in high-grade osteosarcoma: improvement over 21 years at a single institution.(10)

With a median follow-up of 12 years (5-25 years), 754 patients (51.7%) are alive, of whom 613 continuously disease free. Survival at 5, 10, and 15 years is 57%, 52%, and 51%, respectively. Patients candidates for clinical trials have a survival rate of 68%, 64%, and 61%, respectively. Survival for the other patients is 30%, 25%, and 24%, respectively. Trend (joinpoint statistical analysis at real 5-year follow-up) shows a yearly statistically significant improvement of 1.31% (95% confidence interval 0.5% to 2.1%) from 51% for patients treated in 1982 to 68% for those treated in 2002..

2-Trends and variability in survival among patients with osteosarcoma: a 7-year update (11)

A prognostic score was developed, which was based on the number of the following unfavorable characteristics: age younger than 10 years, male sex, tumor diameter more than 15 cm, cell type osteoblastic or chondroblastic, duration of symptoms 2 months or less, and involvement of the femur or humerus. Patients with five or six of these unfavorable characteristics had a very poor survival; in contrast, patients with only one or two characteristics had a good outcome.

3-Survival, prognosis, and therapeutic response in osteogenic sarcoma. The Memorial Hospital experience (12)

Survival was 77% and 73% at 5 and 10 years, respectively, with continuously disease-free survival being 70% and 69%.

The risk of local recurrence was almost fivefold higher in tumors of the femur than in tumors of other locations (relative risk, 4.6) and, within the femur, was more than threefold higher in the proximal femur than in the distal femur (relative risk, 3.4).. The rate of failure was almost fivefold as high in those with an incomplete response to chemotherapy compared with those with a complete response to chemotherapy (relative risk, 4.9; 95% confidence interval, 2.2 to 11). Even in those patients with minimal or no necrosis in the primary tumor, ultimately 62% and 54% were disease-free at 5 and 10 years, respectively.

4-Survival Data for 648 Patients with Osteosarcoma Treated at One Institution(13)

Survival rate was markedly affected by patient age. The survival rate for the patients younger than 20 years was78%, whereas the survival rate for patients from 20 to 40years was 70%

Conclusion

Osteosarcoma case was registered for the patient at 9 years old in 1998 & she is alive for 21 years became a 30 -years-old in 2019 in Babil province from (18686) cases of a malignant tumors during the period from (1990 -2019) 10052 (53.79%):women 8634 (46.20%) males,with ratio 1.15: 1 for women: men

After a referral from respected doctor, who was found a positive biopsy for malignant tumor (Osteosarcoma) in her right foot and make an amputation operation and then the tumor recurrent below the knee and underwent an amputation above knee joint then treated by 6 courses chemotherapy (Cisplatin + Aderiamycin) every 3 weeks and she responded well to the treatment and the tumor did metastasized to other organs of the body through regular check-up since 1998 until now (2019).

Conflict of Interests.
There are non-conflicts of interest

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12-Survival, prognosis, and therapeutic response in osteogenic sarcoma. The memorial hospital experience

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13-Survival Data for 648 Patients with Osteosarcoma Treated at One Institution. Mankin, Henry J MD*; Hornicek, Francis J MD, PHD*; Rosenberg, Andrew E MD†; Harmon, David C MD‡; Gebhardt, Mark C MD*Clinical Orthopaedics & Related Research: December 2004 - Volume 429 - Issue - pp 286-291 .From the Departments of Orthopaedic Oncology,Medical Oncology, and,Pathology, Massachusetts General Hospital, Harvard Medical School, Boston, MA

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الخلاصـــة

سجلت حالة المريضة و عمرها 9 سنة عام 1998 وأصبحت عمرها 30 سنة عام 2019 في محافظة بابل منطقة حي الإمام (ع) من 18686 حالة ورم خبيث خلال الفترة ما بيـن (1990 – 2018) كانت كما يلي :-

10052 (53.79%): إنـــــاث.

8634 (46.20%): ذكـــــور.

أي بنسبة 1,15 : 1 للنساء : الرجال .

وبعد إحالتها من الأخ اختصاص العظام المحترم بعد إصابتها بورم خبيث بعظم الطرف الأسفل الأيمن (Osteosarcoma) واجري لها عملية بتر القدم اليمنى ثم عاد الورم في الساق الأيمن ثم بترت ثم عاد الورم أسفل الركبة وأجريت لها عملية فوق مفصل الركبة وتم معالجتها من قبل الدكتور اختصاص العلاج بالأشعة العميقة وبالعلاج الكيمياوي ست كورسات (سزبلاتين + ادريمايسن) كل 3 أسابيع و زودت بطرف صناعي واستجابت للعلاج ولم ينتشر الورم إلى أعضاء الجسم الأخرى من خلال الفحوصات الدورية منذ عام 1998 حتى الآن (2019).

داعين الله تعالى متمنين للمريضة دوام الصحة والعافية.