# Rhabdomyosarcoma with Skin Metastasis: Report of a Case

**Shahla Ansari[1], Saeed Yousefian[1*], Ghasem Miri-Aliabad[1], and Tayeb Ramim[2]**

[1] *Department of Pediatric Hematology Oncology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran*

[2] *Sina Trauma and Surgery Research Center, Tehran University of Medical Sciences, Tehran, Iran*

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**Abstract-** Rhabdomyosarcomas are the most common soft tissue sarcoma in adult and children that accompany with skeletal muscle differentiation. Skin metastasis of rhabdomyosarcomas is unusual and has only been sporadically reported in literature. In this paper we present a case of skin metastasis of rhabdomyosarcoma in an 8-year-old girl that has treated with chemotherapy.



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**Keywords:** Chemotherapy; Rhabdomyosarcoma; Skin metastasis; Childhood cancer; Diagnosis

## Introduction

Rhabdomyosarcoma is originated from embryonic precursors of muscles mesenchyme. It is located in the group of "small round cell tumors" in terms of histology. The myogenic origin of this tumor is determined by immunohistochemical (IHC) studies on positive myogenin, muscle specific actin, desmin and myoglobin (1). This tumor includes 3.5% of total tumors that occur in children (2). The tumor originated from head and neck, urogenital system and limbs in children and adults (3). This tumor is classified in four histology types, *i.e.* the embryonic form (60%), botryoid (6%), alveolar (20%) and pleomorphic (1%) (4). Invasion take places through lymphatic to regional lymph nodes and through the blood vessels which commonly affect the lung, bone, bone marrow and liver (2).

Skin metastasis is unusual in rhabdomyosarcoma. In most cases of skin metastases, invasion or infiltration occurs into the skin where the tumor originated (5). Here, we introduce a patient who suffered from rhabdomyosarcoma with skin metastasis. It was embryonic in terms of histology in the right forearm and despite patient was treated by chemotherapy, skin invasion happened on the same hand.

## Case Report

The patient was an 8 years old female patient who presented with progressive swelling in the right forearm (Figure 1).

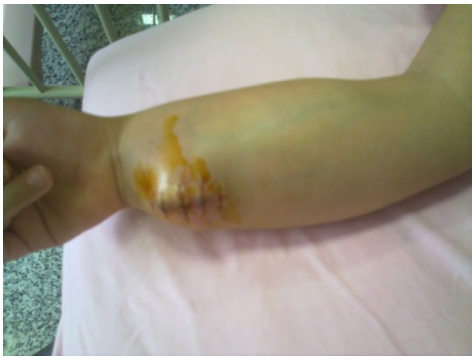

**Figure 1.** View of lesions on initial visit

MRI showed a heterogeneous mass in the anterior forearm which spread towards bone membrane without bone tissue involvement. The embryonal rhabdomyosarcoma was suggested after biopsy and confirm positive in terms of myogenin, desmin, and ki67 in IHC. At the same time, CT scan of the chest and abdomen, bone marrow aspiration and biopsy and bone scan were normal. The patient was treated with radiotherapy and COG D9803 protocol.

Seven months after starting this protocol, the swelling occurred on chemotherapy in the same area. MRI confirmed relapsed tumor. Given the tumor recurrence on the previous protocol, the patient protocol was changed to (Ifosfamide 1600 mg/m$^2$ for 5 days and VP16 100 mg/m$^2$ for 5 days). About 2 months after receiving this protocol, multiple papular and nodular

**Corresponding Author:** S. Yousefian
Department of Pediatric Hematology Oncology, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
Tel: +98 21 23046411, Fax: +98 21 22220063, E-mail address: S_Yousefian@med.mui.ac.ir

lesions were appeared in the right forearm (Figure 2 and 3). The skin of lesions biopsy suggested “small round cell tumor” and IHC confirmed rhabdomyosarcoma.

At the same time, the CT scan of the chest and abdomen confirmed extensive liver and lung metastases. The bone marrow aspiration was also confirmed the metastases.

Eventually, the patient died due to progressive disease, widespread metastases and multiple organ failure.

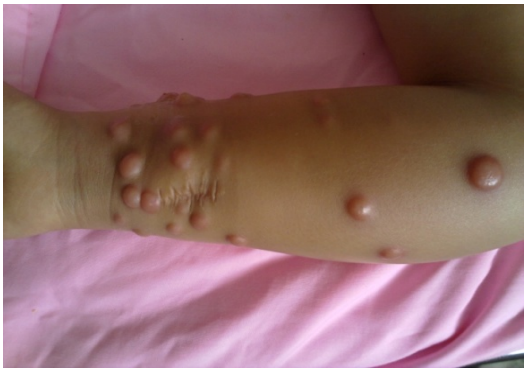

**Figure 2.** View of lesions at the onset of skin lesions

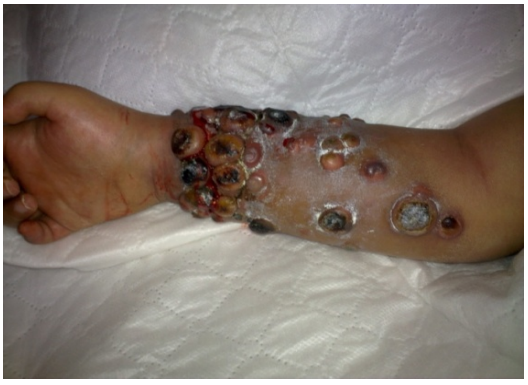

**Figure 3.** View of lesions at progression stage

## Discussion

Skin metastasis is reported in unusual rhabdomyosarcoma sporadically (5). The skin rhabdomyosarcoma has received much attention due to its unusual morphology, rapid metastatic spread and its fatal nature (6). However, the skin metastases are very rare which indicates an advanced phase of illness and bad prognosis (7). The lesions are usually as large and firm as cutaneous and subcutaneous nodules with blue berry-muffin appearance (8).

Scatena *et al.* studied 28 cases of rhabdomyosarcoma with cutaneous metastases (1). The most common location of involvement was in head and neck. Their results showed that the most common pathology form was alveolar that 9 cases were fatal (1). Redrigues *et al.* investigated infant rhabdomyosarcoma with skin metastases. Among 4 patients, one suffered from embryonal pathology and 3 patients suffered from alveolar pathology which 2 cases were fatal (9). Wesche *et al*. studied 14 cases of rhabdomyosarcoma with skin metastases (10). They found that the pathology type of young children was embryonal and older children were alveolar, respectively (10).

In our patient positive tumor markers including myoglobin and desmin and the negativity other markers led to diagnosis of cutaneous metastasis caused by rhabdomyosarcoma.

Most of studies have reported alveolar type skin metastasis. However, in this case, the pathology of primary lesion was embryonal. The location of metastasis was at initial location of lesion, *i.e.* in the right forearm. According to previous studies and our experiences, it is recommended than when rhabdomyosarcoma with suspected skin lesions (at the primary site of lesion or any other place) is diagnosed, it is necessary to perform skin lesion biopsy regarding the existence of metastasis, even though the skin is of rare places for metastasis in rhabdomyosarcoma patients.

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