

A Dermatofibrosarcoma Case Report: Did Intravenous High Doses of Vitamin C Help in His Treatment?

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Abstract This is a case report of a young adult 25 years old diagnosed with Dermatofibrosarcoma protuberans (DFSP), a rare local malignant cutaneous soft-tissue sarcoma in his right forearm. This condition was treated with high dose intravenous Ascorbic Acid (vitamin C, 25,000 mg 2 times per week for 4 weeks) This therapeutic approach changed this tumor into a more benign form. High dose intravenous vitamin C has demonstrated anti-neoplastic activity in different tumors and stages. The Cytotoxic effect produced by vitamin C in an array of malignant cell lines has been associated with its pro-oxidant and toxic to oncogenic cells. We suggested a clinical trial with more patients to validate this therapeutic modality for this type of malignancy.

Keywords Dermatofibrosarcoma, Intravenous High Doses Ascorbic Acid (vit. C), Cytotoxic Effect

1. Introduction

Dermatofibrosarcoma protuberans (DFSP) is a rare locally malignant cutaneous soft-tissue sarcoma. As a soft tissue sarcoma, rises from transformed cells of mesenchymal (connective tissue) origin in the middle layer of the skin (dermis) forming a lump of tissues (protuberans), that may be purplish, flesh colored or reddish. This particular skin cancer often forms on the arms, legs head and neck region, trunk and usually grows slowly and hardly produces metastasis beyond the skin. Usually, it could appear as a bruise or scar [1,2]. It grows gradually and very slow, however tends to recur after excision. Nevertheless, the tumor rarely presents metastatic disease, but has a high recurrence rate [3]. The cause of DFSP is unknown but an injury to the affected skin may be a predisposing factor. Estimates of the overall occurrence of Dermo Fibro Sarcoma Protuberans in the United States are 0.8 to 4.5 cases per million persons per year. In the United States, the condition accounts between 1 and 6 percent of all soft tissue sarcomas and 18 percent of all cutaneous soft tissue sarcomas [4]. In general, Dermatofibrosarcoma protuberans is estimated to occur in 1 in 100,000 to 1 in 1 million people per year. All

age groups are susceptible to suffer the condition [1,4]. Trauma at the affected site has been reported in approximately 10-20% of patients [6]. Recent advances have shown that in approximately 90% of cases, dermatofibrosarcoma protuberans is associated with a rearrangement (translocation) of genetic material between chromosomes 17 and 22 which results in the fusion of two genes [8], [9]. Skin biopsy is needed to confirm the diagnosis, within a well laboratory, and well skilled professional pathologist. It may take more than one surgical procedure to achieve complete removal of the primary tumor. Recurrence after Mohs surgery is reported rare, usually around 1%. Treatment using conventional chemotherapy is reported to be ineffective [2,7,9]. In the literature intravenous vitamin C is proposed as a possible treatment management of malignant oncogenic tumors [10,11,12].

Case Report Information:

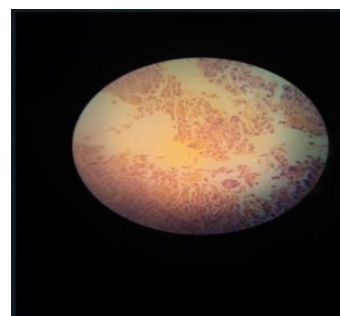


Figure 1

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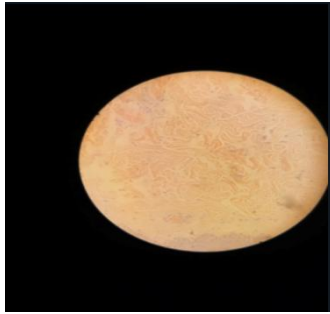


Figure 2

A male 25 years old, healthy individual (clinical laboratories CMP, CBC, U/A, within normal limits, chest plate normal, Glucose 6 Phosphate Dehydrogenase, normal), apart from a lesion removed by surgeon in his right forearm and posteriorly identify by biopsy as a dermatofibrosarcoma. Surgical extensive excision was performed three weeks after biopsy (see Figure 1, provided from first pathology report), favoring a dermatofibrosarcoma protuberans diagnosis on 07/27/2020. On 08/14/2020 same pathologist received a second soft tissue specimen, forearm right excision, after high dose intravenous vitamin C (25,000 mg 2 times per week, ascorbic acid), was administered from 7/29/2020 and continued until 8/31/2020. Second pathology report inform a residual and recurrent superficial and deep spindle cell-type proliferation, compatible with cellular variant of atypical fibrous histiocyteoma a more benign lesion. From the first pathology diagnoses, high dose intravenous vitamin C (HDIVC) 25,000 mg was administered approximately 2 times/week, (07/29/2020 to 08/31/2020) until second biopsy was performed on 08/14/2020 patient was stable. Second pathological report demonstrates an involution of the initial lesion with a cellular variant diagnosis, as previously mentioned of an atypical fibrous histiocyteoma, a more benign lesion with a better outcome from the first pathology (see Figure 2, provided from the second pathology report, same pathologist) in a short period of time. Patient do not report any side effect until HDVC administration.

2. Conclusions

Intravenous vitamin C has demonstrated anti-neoplastic activity in different tumors and stages [10,11]. Cytotoxic effect produced by vitamin C in an array of cell lines (mostly malignant) has been associated with its pro-oxidant activity and modification or destruction of such cells [12,14]. Vitamin C and its radical may help to potentiate the activation of transcription factor NF-kappa B, which has been associated with inhibition of cell growth [1,2,4]. Evidence supports the concept of using high-dose intravenous vitamin C (HDIVC) for extended periods, in doses high enough to achieve and maintain plasma levels above those which have been found to be preferentially cytotoxic to tumor cells [11,12,13]. In this particular case, HDIVC, in a very short time, show a tumoral cytological

transformation, from a dermatofibrosarcoma to a better and less aggressive cellular variant reported by pathologist as atypical fibrous histiocyteoma. Usually, this kind of lesion has a better outcome with rarely metastasize [1,2,4,9]. Administration of HDIVC need to further evaluate within this kind of pathology and considered as a possible complementary treatment that may help patients to avoid malignant proliferation.

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