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International Journal of Current Research
Vol. 9, Issue, 06, pp.52150-52154, June, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

DERMATO FIBROSARCOMA PROTUBERANS: AN EXPERIENCE OF 10 CASES & REVIEW OF LITERATURE

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ARTICLE INFO

Article History:
Received 23rd March, 2017
Received in revised form
20th April, 2017
Accepted 26th May, 2017
Published online 20th June, 2017

Key words:
DFSP, Wide surgical excision,
MMS, Imatinib,
Radiotherapy.

ABSTRACT

Dermato fibrosarcoma protuberans (DFSP) is considered to be a very rare, low-grade sarcoma of fibroblast origin from the Dermis of the skin. Controversy exists regarding its tissue origin. In present prospective study 10 patients in age group of 32-70 years, 07 females and 03 males all except 01 belonging to Hindu religion formed base of the data. Clinical examination, FNAC and histological study fetched the diagnosis. Majority of patients were having disease for the first time (n=07) and commonest site involved was shoulder, in 01 patient old scar was the site and in another 01 patient neck was the site of the disease. All the patients were subjected to wide local excision and in 02 patients radiotherapy was also given. Maximum follow up of our patients was 03 years (n=04). We conclude that DFSP is locally recurrent tumor having low metastatic potential. Wide surgical excision with 3 to 5 cm wide margins and MMS are surgical options, whereas, Imatinib and Radiotherapy is given in specific indications. Sorafenib trials are under way as good tumor regression response in few studies has been noticed.

Citation: ***Dr. Sanjay Kumar Bhasin, Dr. Sunita Kumari, Dr. Ankit Gupta and Dr. Gopal Sharma***, 2017. "Dermatofibrosacoma protuberans: an experience of 10 cases & review of literature", *International Journal of Current Research*, 9, (06), 52150-52154.

INTRODUCTION

Dermato fibrosarcoma protuberans (DFSP) is considered to be a very rare, low-grade sarcoma of fibroblast origin from the Dermis of the skin (spindle cell variant) with an incidence rate of 4.2 to 4.5 cases per million persons per year in the United States (Criscione, 2007 and Rouhani, 2008). Furthermore, it constitutes about 2-6% of soft tissue sarcomas and rarely metastasize (Nabeel Najein, 2010). Controversy exists regarding its origin as tissue culture studies suggest a histiocytic origin (Ozello, 1976), identification of the intermediate filaments by immunofluorescent and immunoperoxidase staining suggests a fibroblastic lineage (Alguacil, 1968), and electron microscopy demonstrates features compatibility with a neural cells origin (Hasimoto, 1974). Usually adults in thirtee's are affected but congenital and elderly variants also exist. Initial misdiagnosis, prolonged time to accurate diagnosis, and large tumor size at the time of diagnosis is common. DFSP are highly irregular in shapes and with frequent finger-like extensions resulting in incomplete removal leading to subsequent recurrence. The local recurrence rate for DFSP in studies ranges from 0% to 60%, whereas the rate of development of regional or distant metastatic disease is only 1% and 4% to 5%, respectively (Haycox, 1997).

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Although DFSP has been described in all races, it is difficult to draw specific conclusions on its incidence, however; incidence in black individuals was observed to be approximately twice that of whites (Ozello, 1976). The literature reveals an equal sex distribution, with a slight male predominance in some series' (Criscione, 1973) and slight female predominance in others (Pack, 1951). DFSP is preferentially located on the trunk (40%-50%), 30%-40% located in the proximal portion of the limbs (more often on the arms than the legs); and in 10%-15% of cases, it affects the head and neck, generally the scalp, cheek, and supraclavicular area (Tan, 2004 and Sanmartín, 2007). Wide surgical excision with 3 to 5 cm-wide margins was the recommended treatment, before introduction of MMS but wide excision may leave residual tumor in a single or multiple foci (Ratner, 1997). Imatinib, a newer drug that inhibits the platelet-derived growth factor receptor tyrosine kinase has been effective in treating DFSP in some patients despite CD117 negativity (Fernandez-Flores, 2007). Radiotherapy with a cure rate of ≥85 percent has been used as an adjuvant therapy after wide surgical excision or in those patients who have inoperable macroscopic disease with local recurrence rate falling to 5% (Ballo, 1998).

RESULTS

From amongst 10 patients in the study, 03 were males & 07 were females in the age group of 32-70 years.

Table 1. Epidemiological Parameters

S.No	Sex	Age	Religion	Socioeconomic Status	Urban/Rural
1	Female	55	Hindu	Lower Middle Class	Urban
2	Female	65	Hindu	Lower Middle Class	Urban
3	Female	70	Hindu	Lower Middle Class	Urban
4	Male	45	Hindu	Lower Class	Urban
5	Male	64	Hindu	Lower Middle Class	Rural
6	Female	32	Hindu	Middle Class	Urban
7	Female	34	Hindu	Lower Middle Class	Rural
8	Male	42	Hindu	Lower Middle Class	Urban
9	Female	40	Sikh	Middle Class	Urban
10	Female	36	Hindu	Lower Middle Class	Rural

Table 2. Clinical Parameters and Treatment Modalities

S.No	Site	Pri/Recc	Treatment	Follow Up
1	Left shoulder	Pri	Wide Local Excision	1.5year
2	Left Shoulder	Recc	Wide Local Excision plus RT	Lost after 6 Months
3	Prepubic Scar	Pri	Wide Local Excision	2.5 years
4	Left Lower Chest Back	Pri	Wide Local Excision	Recurred after 1 year, left for higher centre
5	Left Neck	Pri	Wide Local Excision	1 year
6	Left Lower Chest Back	Recc	Wide Local Excision plus RT	Recurred 06 months, left for higher centre
7	Trunk	Pri	Wide Local Excision	3 years
8	Right Shoulder	Pri	Wide Local Excision	2 year
9	Left Shoulder	Pri	Wide Local Excision	2 years
10	Left Shoulder	Recc	Wide Local Excision	1 year

(Pri: Primary disease i.e first timer; Recc: Recurrent Disease)

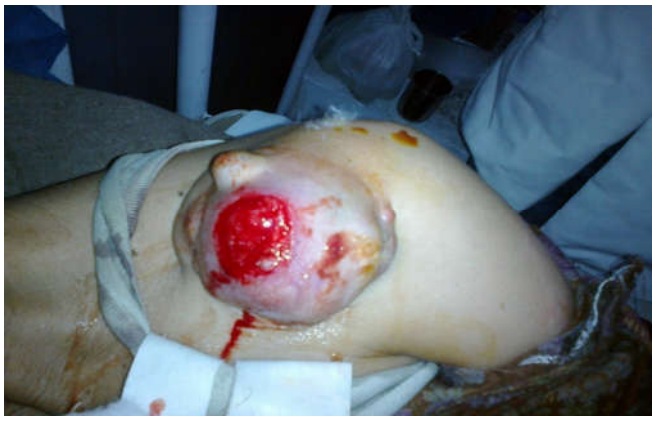

Fig. 1. DFSP Left Shoulder

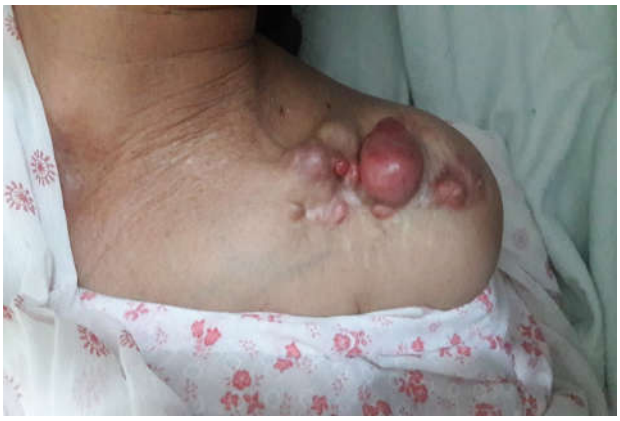

Fig. 2. DFSP Left Shoulder (Recurrent)

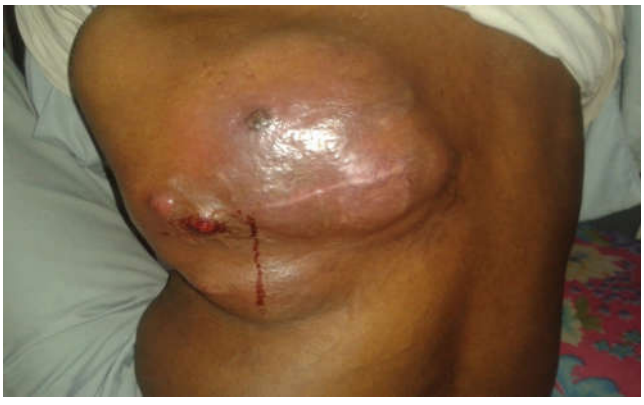

Fig. 3. DFSP Left Back of Chest (Recurrent)

Fig. 4. DFSP Old Scar

08 belonged to lower middle class and 02 to middle class. All except one belonged to Hindu religion and 07 belonged to urban set up (Table 1). Majority of patients were had disease for the first time (n=07) and commonest site involved was shoulder, in 01 patient old scar was the site and in another 01 patient neck was the site of the disease. All the patients were subjected to wide local excision and in 02 patients radiotherapy was also given. 04 patients lost follow after 6 months to 1.6 year and 01 patient of first time recurrence preferred to go to another higher centre and 01 patient after second time recurrence after 06 months preferred to go outside the state. 04 patients are still under long term follow up (2-3 years) without any recurrence (Table 2).

DISCUSSION

Dermato fibrosarcoma protuberance (DFSP) is a relatively unusual, locally aggressive and recurrent cutaneous tumor, but with low risk of metastasis (Sanmartín, 2007 and Ratner, 1997). Sherwell (1890) & Taylor put forth first descriptions of

this entity independently (Sherwell, 1890). The tumor was designated as as a progressive and recurrent dermatofibroma in 1924 by Darier and Ferrand (Darier, 1924). Hoffman (Hoffman, 1925), coined the term DFSP a year later, in view of tendency of the tumor to develop protruding nodules. Most of the early reports advocates tendency of DFSP for recurrence after surgical excision.

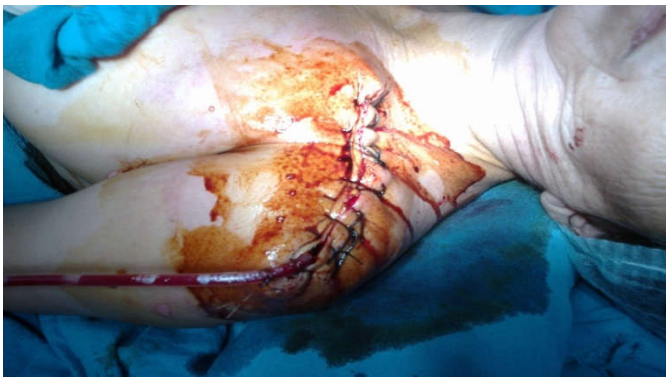

Fig. 5. Wide Excision

Taylor and Helwig (1962) (20) in a review of 115 cases, described the histologic characteristics of the neoplasia as fibroblastic growth appearing as a low-grade sarcoma with little or no pleomorphism, and low mitotic rate. Several variants described histologically are pigmented (Bednar tumor), myxoid, granular cell, atrophic DFSP, DFSP with fibrosarcomatous areas (DFSP-FS), DFSP with areas of giant cell fibroblastoma (GCF), DFSP/DFSP-FS with foci of myoid/myofibroblastic differentiation, and sclerosing/sclerotic DFSP (Beatiz Llombart, 2013). Cytogenetic analysis of DFSP dates back to 1990, with initial descriptions showing the presence of a recurrent t(17;22)(q22;q13) translocation or of supernumerary ring chromosomes containing material from chromosomal regions 17q22 and 22q13 accompanied by simple chromosome trisomies (Bridge, 1990 and Mandahl, 1990). In 1993, immunoreactivity for CD34 in DFSP was described for the first time (Tan, 2004; Sanmartín, 2007; Ratner, 1997), and continues to be the main immunohistochemical marker for diagnosis of the DFSP, particularly when associated with the absence of immunostaining for factor XIIIa. Nevertheless, 10% of DFSP are negative for CD34, and 25% of DFSP can be positive for factor XIIIa (Altman, 1993 and Kutzner, 1993).

In present in 05 years we encountered 10 cases of DFSP, 03 were males & 07 were females in the age group of 32-70 years. 08 belonged to lower middle class and 02 to middle class. All except one belonged to Hindu religion and 07 belonged to urban set up. Majority of patients were having primary disease (n=07) and commonest site involved was shoulder, in 01 patient old scar was the site and in another 01 patient neck was the site of the disease. All the patients were subjected to wide local excision and in 02 patients radiotherapy was also given. Only 04 patients remained in follow up for 2 years or more, 04 patients followed up for 01 year and 01 patient of first time recurrence after 01 year preferred to go to another higher centre and 01 patient after second time recurrence after 1.5 year preferred to go outside the state. 01 patient after 02 years had lost follow up but again reappeared after 6 months with recurrent mass on left shoulder. Wide surgical excision with 5 cm margins was done followed by radiotherapy. Patient is under follow up since then without recurrence. Solitary neurofibroma, lipoma, fibrosarcoma and leiomyosarcoma are considered in the differential diagnosis whereas; histopathologically DFSP has to be differentiated from atypical fibroxanthoma, nodular pseudosarcomatous fascitis and fibrosarcoma (Hamid, 2013). In our experience, we subjected all the tumors except recurrent ones to FNAC and finally proved the diagnosis by histopathology after wide local excision. NCCN Dermatofibrosarcoma Protuberans Panel suggests that appropriate and confirmatory immunostaining be performed in all cases of suspected DFSP (Stanley, 2012). History of trauma as a possible factor in DFSP has been reported in 10-20% of cases (Sanmartín, 2007; Taylor, 1962) and also in surgical scars (Petoin, 1985), burns, vaccination scars (Petoin, 1988), etc but we could find only 01 case of DFSP in an old surgical scar. We subjected all our patients (both recurrent as well as first timer tumors) to wide local excision with margins ranging from 3-5 cms. 02 patient amongst 07 first timer tumors recurred and 01 recurrent tumor recurred second time even after completion of radiotherapy.

Two patients preferred treatment from outside the state. Another first time recurrence was subjected to wide surgical excision with 5 cm margins and later attached to radiotherapy department. No second time recurrence has been reported till 01 year follow up. The literature reveals that Mohs or Modified Mohs Surgery (MMS) (Abenoza, 1993; Cohen, 1994; Kahn, 2001; Du Bay, 2000; Pennington, 2005; Sondak, 1999 and Snow, 2004), and traditional wide excision, typically with 2- to 4-cm margins to investing fascia that are subsequently verified to be clear through traditional pathologic examination, are all methods to achieve complete histological assessment and are practiced world over (Stojadinovic, 2000 and Farma, 2010). Majority studies have documented recurrence within 03 years of surgery with half of them presenting within 01 year but recurrence after 05 years have also been reported (Ratner, 1997 and Ruiz-Tovar, 2006). Even recurrence with MMS has also been reported (Petoin, 1985 and Nouir, 2008). But in studies where undefined or conservative surgical margins were reported, the recurrence rate went up to 26-60% (Lemm, 2009), studies where more $\geq$ 2-3cm margin was taken it was 0 to 30% (Bowen, 2000 and Paradise, 2008); but in studies where margins were $\geq$5cm recurrence rate was <5% (Arnaud, 1997). We subjected two of our recurrent cases to radiotherapy, 01 is still under follow up but another patient got recurrence after 1.5 year and went outside the state for treatment. Although there are few references of role of radiotherapy in the management of DFSP yet radiotherapy in the dose of 50-60 Gy is effective in preventing local regrowth following margin positive resections (McLelland, 1988 and Sun, 2000). Imatinib, a tyrosine kinase inhibitor, has been approved to treat adult patients with unresectable, recurrent, and/or metastatic disease (Thomison, 2008 and Labonte, 2007). But due to non affordability of the patients we could not prescribe it to our patients. There are reports that in the event of failure of radiotherapy and Imatinib, another drug Sorafenib a small molecule B-raf and vascular endothelial growth factor (VEGF) receptor inhibitor has shown unprecedented response in regression of recurrent DFSP (Francois, 2013).

Conclusion

Dermatofibrosarcoma protuberans (DFSP) is considered to be a very rare, low-grade sarcoma of fibroblast origin from the Dermis of the skin. Controversy exists regarding its tissue origin; tumor is locally recurrent having low metastatic

potential. Wide surgical excision with 3 to 5 cm-wide margins and MMS are surgical options, whereas, Imatinib and Radiotherapy is given in specific indications. Initial trials of Sorafenib have shown good tumor regression response in few studies, large studies are awaited to establish it as potential drug to treat DFSP.

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