ORIGINAL ARTICLE

MANAGEMENT OUTCOMES OF EXTRA ABDOMINAL FIBROMATOSIS AMONG ADULT PATIENTS TREATED AT A TERTIARY CARE HOSPITAL

Masood Umer, Javeria Saeed, Irfan Anwer, Nida Zahid, Younus Durrani*

Department of Surgery, Aga khan university hospital, Karachi, *Jinnah Post-graduate Medical College, Karachi-Pakistan

Background: Aggressive fibromatosis or desmoid fibromatosis is a soft tissue neoplasm which is non-metastatic in nature. Among all soft tissue tumours, it comprises of 3% cases and is more common in females as compared to males. Objective of our study was to evaluate the treatment outcomes of extra abdominal fibromatosis in patients who were treated in our setup and determine the recurrence patterns. **Methods:** It is retrospective cohort of 15 patients that were treated in section of Orthopaedics, department of surgery, Aga Khan University hospital, Karachi from January 1990 to December 2015. It included all adult patients of age >18 years with biopsy proven extra abdominal aggressive fibromatosis. Data was analysed on SPSS 22 version. **Results:** Out of 15 patients, there were 7 males (46.7%) and 8 females (53.3%). Median age was 22 years. Majority of patients [10 (66.6%)] had upper limb lesion. On initial biopsy we had 11 (73.3%) cases of primary fibromatosis while 2 (13.3%) were recurrent and 2 (13.3%) were spindle cell carcinoma. The median (IQR) follow-up time of the participants was 3 (2–3) months. Complications occurred in 8 (53.3%) patients. A significant difference was observed in the haemoglobin levels before and after surgery with a mean difference of 2.74 (p-value<0.001). Recurrence of disease occurred in 4 (26.7%) patients and all of these patients who had recurrence underwent 2nd surgery versus 1 of the participants who had second surgery without recurrence and this was a significant difference (p value <0.004). **Conclusion:** Extra abdominal fibromatosis is commonly found among younger age groups, affecting females more as compared to males. Less than half of the patients had recurrence of disease in our study and intra-operative and post-operative complications are common surgical outcomes and our study results are compatible with previously reported literature.

Keywords: Aggressive fibromatosis; Desmoid fibromatosis; Adult patients; Extra-abdominal

Citation: Umer M, Saeed J, Anwar I, Zahid N, Durrani Y. Management outcomes of extra abdominal fibromatosis among adult patients treated at a tertiary care hospital. J Ayub Med Coll Abbottabad 2019;31(4 Suppl 1):660–4.

INTRODUCTION

Aggressive fibromatosis (AF) or desmoid fibromatosis (DF) is an uncommon neoplasm which originates from mesenchymal tissues of body. Although non- metastatic but morbidity rate can be higher due to occurrence of post-operative complication and recurrent disease after surgery. According to the definition of WHO, desmoid fibromatosis is a transitional soft tissue lesion which is categorized histologically by the presence of clonal fibroblastic proliferation which can be seen in depth of soft tissues. These types of lesion have predisposition of infiltration in nearby soft tissues and local recurrence but they are unable to metastasize. According to reported literature, among all soft tissues tumour there are 3% cases of DF which accounts for incidence rate of 2.4–4.3 per million per year. In a sarcoma treating setup there can be 5–110% cases of such tumours. The cases of DF are divided in to two groups, the sporadic one that are 84–93% of cases and the other is smaller no of cases group which is associated with Familial Adenomatous Polyposis (FAP), making incidence of 10–20% of desmoid fibromatosis.[1,2]

Patients presented with AF have age group of 15–60 years and its occurrence proportion are higher in females (66–70%) than in males (34–30%). There are two types of cases of AF, extra abdominal and intra-abdominal. Most of the patients are presented with extra-abdominal fibromatosis with sign and symptoms of lump and pain. Common sites for extra abdominal fibromatosis are trunk in 43% of cases limb girdle or limb 50% of cases, least number of cases (7%) are reported for head and neck region. The intra-abdominal fibromatosis cases are mostly linked with FAP and these tumours may be present in gastrointestinal tract.[2] There are number of treatment choices available for treatment of desmoids fibromatosis, these include surgical excision, radio/chemotherapy and hormone therapy with NSAIDs. All these treatment modalities have their own risks and benefits to patients. Surgical excision alone has shown good results while in

case of recurrent disease radiotherapy is the best treatment option considering hormone therapy with NSAIDs also an option in few cases of progressive disease Some groups have also set guidelines for treatment of AF; these include the National Comprehensive Cancer Network, and the British Sarcoma group.[3]

The European Organization of research and treatment of soft tissue and bone sarcoma suggests that earlier in 2000, patients with AF were offered surgical resection with negative margins as a gold standard treatment. A case series of 100 patients of DF has shown that positive margins cannot be considered as well-established predictive risk factor of local recurrence in case of DF. It is reported that recurrence of disease is observed in patients with negative margins and no recurrence in patients of DF with positive margins hence proving that role of resections margins as a predictor of local recurrence in DF is inconclusive. Patients presented with symptomatic recurrent diseases, if offered surgery, may result in significant complications. Radiation therapy in 28 fractions with a dose of 5600 cGy , has resulted in sufficient local control in advanced diseased state.[4,5] Systemic treatment is also a choice of treatment to impede the progression of fibromatosis and its accompanying symptoms like pain. Treatment with NSAIDs in combination with anti- oestrogen drugs is the preferred treatment regimen in systemic treatment of disease. In hormonal therapy, Tamoxifen is the best choice. If the treatment with NSAIDs and Tamoxifen fails, then it is followed by systemic chemotherapy .[1,6]

Our present study aims to determine the effect of treatment in patients with aggressive fibromatosis treated in our setu*p* and evaluate the recurrence of the disease among patients.

MATERIAL AND METHODS

It is a retrospective cohort study conducted on 15 patients presenting to section of Orthopaedics, department of surgery of a tertiary care hospital of Karachi. We included all the cases that were treated from January 1990 to December 2015 in our study. The inclusion criterion of our study was, all adult patients of age >18 years with biopsy proven extra abdominal aggressive fibromatosis. All paediatric patients and those with other border line benign /malignant conditions were excluded from the study.

The data of the patients was retrieved via medical records therefore Ethical exemption was taken from the ERC of the hospital. A structured proforma was used for data collection. The data was collected for the following variables; demographics including: age, gender. Moreover, information was also taken on tumour site, reconstruction, histopathology, multidisciplinary teams involved, recurrence, complications, follow u*p* (in months), and disease-free survival (recurrence or no recurrence).

We performed analysis using SPSS-version 22.0. Descriptive statistics were computed for categorical variables by computing their frequencies and percentages, assessed by chi-square where expected frequency in each cell was > 5 and fisher's exact test where any one cell had frequency <5. The distribution of quantitative variables was computed by their means and standard deviations/ median (IQR) depending about the normality of the data and assessed by independent t test / Mann Whitney test. Paired t test was used to assess the difference in pre- and post-operative haemoglobin levels.

RESULTS

The total numbers of participants enrolled in the study were 15 extra abdominal aggressive fibromatosis patients. The table-1 shows the clinical/surgical parameters of the patients with extra abdominal aggressive fibromatosis. There were about 7 (46.7%) males and 8 (53.3%) females. The median age of the participants was 22 (20–40) years. Majority of the patients had lesion in upper limb, 10 (66.6%) that included arm, shoulder, neck, chest wall, back etc., while 5 (33.3%) had it in the lower limb that included hip, thigh etc. Majority of the patients had left laterality (73.3%).

The median follow-u*p* time of the participants was 3 (1) months and about 26.7% of the patients had recurrence of the disease. Approximately 33.3% underwent 2nd surgery. Moreover, 8 (53%) of patients developed the following complications after surgery, i.e., 4 infections, 2 nerve injury c6 c7 + sciatic nerve, 1 shock, 1 vascular injury and 1 surgical empyema. A significant difference was observed in the haemoglobin levels before and after surgery with a mean difference of 2.74 (1.36) (p value =<0.001), however only 4 out of 15 participants had blood transfusion during surgery.

The table-2 shows the demographics and clinical/surgical parameters among patients with and without recurrence of the disease. Out of a total of 15 participants about 4 patients had recurrence of disease and 11 did not. The median age was higher among patients who had recurrence as compared to those who did not but it was not significantly different (p-value=0.549). A higher proportion of females (75%) had recurrence while

45.5% of females had no recurrence. About 75% of the participants with recurrence had previous surgery which was significantly higher as compared to those who had no recurrence (0%) (*p* value <0.009). Moreover, about 100% of patients who had recurrence underwent 2nd surgery versus 9.1% of participants who had no recurrence (*p* value <0.004). The median follow-up time was more or less similar in both the groups.

The complications were more or less similar in both the groups (i.e., with and without recurrence). Similarly, the other variables that included (biopsy findings, histopathology, and blood loss) had no significant association with recurrence of the disease.

Table-1: Clinical/surgical parameters of patients with extra abdominal aggressive fibromatosis

Variables	n (%)
Total	15
Laterality	
Right	2 (13.3)
Left	11 (73.3)
Bilateral	2(13.3)
Previous Surgery	
Yes	3 (20)
No	12 (80)
Biopsy findings	
Fibromatosis	11 (73.3)
Recurrent Fibromatosis	2 (13.3)
Spindle cell carcinoma	2 (13.3)
Other teams involved	
Cardiothoracic	2 (13.3)
Plastic surgery and vascular surgery	1 (6.7)
Vascular	1 (6.7)
Vascular and plastic for nerve gap repair	1 (6.7)
None	10 (66.7)
Final Histopathology	
Aggressive fibromatosis	3 (20)
Fibromatosis	14 (80)
Follow-up (months)	
Median (IQR)	3 (2–3)
Recurrence	
Yes	4 (26.7)
No	11 (73.3)
2nd Surgery	
Yes	5 (33.3)
No	10 (66.7)
Complication	
Yes	8 (53.3)
No	7 (46.7)
Preoperative (in mmHg)	
Mean (SD)	13.17 (1.369)
Post-operative (in mmHg)	
Mean (SD)	10.43 (1.550)
Blood Loss(ml)	753.33
Mean (SD)	(607.82)
Surgery duration (min)	
Mean (SD)	222.67 (69.63)
Length of hospital stay	
Mean (SD)	5.93 (3.011)
Period between 2 surgeries	
Median (IQR)	6 (6–10.25)

Table-2: Demographic and clinical/surgical parameters among patients with and without recurrence of disease

Variables	Recurrence (n %)		*p*-value
	Yes (n=4)	No (n=11)	
Age (in years)			
Median (IQR)	28 (18)	21 (21)	0.549
Gender			
Male	1 (25)	6 (54.5)	
Female	3 (75)	5 (45.5)	0.56
Site of lesion			
Upper limb	3 (75)	7 (63.6)	
Lower Limb	1 (25)	4 (36.4)	0.675
Laterality			
Right	1 (25)	1 (9.1)	
Left	3 (75)	8 (72.7)	
Bilateral	0 (0)	2 (18.2)	0.298
Previous Surgery			
Yes	3 (75)	0 (0)	
No	1 (25)	11 (100)	<0.009*
Biopsy findings			
Fibromatosis			
Recurrent Fibromatosis	2 (50)	9 (81.8)	
Spindle cell carcinoma	2 (50)	0 (0)	
	0 (0)	2 (18.2)	0.09
Final Histopathology			
Aggressive fibromatosis	1 (25)	2(18.2)	
Fibromatosis	3 (75)	9 (81.8)	0.736
Follow-up (months)			0.839
Median (IQR)	6.5 (9)	6 (6)	
2nd Surgery			
Yes	4 (100)	1 (9.1)	
No	0 (0)	10 (90.9)	0.004*
Complications			
Yes	2 (50)	7 (63.5)	
No	2 (50)	4 (36.5)	>0.99
Preoperative (in mmHg)	12.48	13.43	
Mean (SD)	(0.645)	(1.495)	0.248
Post-operative (in mmHg)		10.66	
Mean (SD)	9.8 (2.072)	(1.362)	0.359
Blood Loss(ml)	587.5	813.64	
Mean (SD)	(370.529)	(679.003)	0.544
Surgery duration (min)		227.27	
Mean (SD)	210 (20)	(81.13)	0.525
Length of hospital stay			
Mean (SD)	7 (3.162)	5.55 (3.012)	0.46
Period between 2 surgeries			
Median (IQR)	36 (144)	25 (67)	0.395

*Significant at *p* value< 0.05

DISCUSSION

Our study results indicate that younger individuals were affected more with extra-abdominal fibromatosis with a median age of about 22 which is consistent with a finding from USA that suggest that

the mean age of the participants with extra-abdominal fibromatosis is usually between 25–30 years.[7]

Moreover, our study results also suggests that a higher number of females were inflicted by extra-abdominal fibromatosis as compared to males which was consistent with the finding from a study that also reports that women are more commonly affected than men.[7,8]

The usual site of lesion among our participants was upper limb that included arm, shoulder, neck, chest wall, back etc., while few had it in the lower limb that included hip, thigh etc. with. It is consistent with findings reported by a study conducted in Washington that suggest that these lesions can occur almost anywhere in the body but they have a higher tendency to occur in upper limb (upper arm, chest wall/paraspinal, and head/neck. However, other less common locations include the thigh, knee and buttock/hip.[9,11]

Further-more, about 26% of the participants in our study had recurrence after surgery. A study suggests that the rate of local recurrence of extra-abdominal fibromatosis varies from 19–77%.[11]

The mean length of stay of hospital of our patients was about 6 days and the complications that the patients developed after surgery were as follows; 4 infections, 2 nerve injury c6 c7 + sciatic nerve, 1 shock, 1 vascular injury and 1 surgical empyema. Wound infections were managed with antibiotics and plastic surgery team was involved for wound coverage as well and for surgical empyema cardiothoracic team was taken on board and they managed with chest tube and started antibiotics. For vascular injury, vascular team did a venous graft which was successful. Patients with sciatic nerve injury were given AFO post operatively and the one with brachial plexus injury had bipolar transfer and tendon transfer while later on he was advised physiotherapy. There was no operative death among our participants. Our study results were consistent with the findings from Minnesota that suggested median hospitalization of 6 days (1–124 days). The complications occurred in 6 patients (11%) which were as follows; pneumonia in 2 patients and wound infection, bleeding, chyle leak, and axillary vein thrombosis in 1 patient each. None of their participants had operative death.[12]

Moreover, mean haemoglobin levels after surgery were significantly decreased as compared to before surgery which indicated that there was a significant blood loss during surgery.

We also observed that those participants who had recurrence of tumour underwent a 2nd surgery. A study from Boston also reported that local recurrence of tumour occurred in 39 patients and about 23% of them required an additional surgery.[13] Similarly findings of another study also indicates that reoperation was associated with a significant risk of local recurrence.[14] This finding might reflect the increased complexity of the condition of these patients, as proven by the fact that a significant number of reoperations occurred in patients whose initial resection was for complex tumour. Another possible explanation for the increased rate of recurrence in the reoperation group is the difficulty in differentiating both scar tissue and post radiation change from desmoid tumour on gross and microscopic examination at the time of reoperation.

There were several limitations and strengths of our study; Firstly, we had very small sample size (n=15) therefore, we could-not report mean survival time. However, it is a rare disease and for our study we could enrol only 15 participants for about a time period of 15 years. Secondly, we did not inquire about any adjuvant therapies given to the patient which plays an essential role in the prognosis of the disease. However, the strength of our study was that to the best of our knowledge this is the first study from Pakistan reporting different demographic, clinical and surgical factors related to Extra-abdominal Fibromatosis.

CONCLUSIONS

The conclusion of our study is that Extra abdominal fibromatosis is commonly found among younger age groups, affecting females more as compared to males. The usual site of lesion is upper limb. Recurrence of tumor is observed in less than half of the patients and they undergo reoperation reflecting the increased complexity of the condition of these patients. Moreover, complications such as infection and nerve injury are also not uncommon after surgery.

AUTHORS' CONTRIBUTION

MU: Proposed the study & critically reviewed the manuscript. JS: Manuscript writing, data management, literature search. IA: Formulated the study plan, prepared study protocol and collected data. NZ: Analysed and entered data. UD: Data collection.

Acknowledgements: Not applicable.

Consent for publication: The consent for publication was covered in ERC approval from.

Competing interests: The authors declare that they have no competing interests.

REFERENCES

1. Otero S, Moskovic E, Strauss D, Benson C, Miah A, Thway K, *et al*. Desmoid-type fibromatosis. Clin Radiol 2015;70(9):1038–45.
2. Eastley N, McCulloch T, Esler C, Hennig I, Fairbairn J, Gronchi A, *et al*. Extra-abdominal desmoid fibromatosis: a

review of management, current guidance and unanswered questions. Eur J Surg Oncol 2016;42(7):1071–83.
3. Eastley NC, Hennig IM, Esler CP, Ashford RU. Nationwide trends in the current management of desmoid (aggressive) fibromatosis. Clin Oncol (R Coll Radiol) 2015;27(6):362–8.
4. Kasper B, Baumgarten C, Bonvalot S, Haas R, Haller F, Hohenberger P, *et al*. Management of sporadic desmoid-type fibromatosis: a European consensus approach based on patients' and professionals' expertise–a sarcoma patients EuroNet and European Organisation for Research and Treatment of Cancer/Soft Tissue and Bone Sarcoma Grou*p* initiative. Eur J Cancer 2015;51(2):127–36.
5. Cates JM, Stricker TP. Surgical resection margins in desmoid-type fibromatosis: a critical reassessment. Am J Surg Pathol 2014;38(12):1707–14.
6. Sri-Ram K, Haddo O, Dannawi Z, Tirabosco R, Cannon S, Briggs T, *et al*. The outcome of extra-abdominal fibromatosis treated at a tertiary referral centre. Eur J Surg Oncol 2012;38(8):700–5.
7. Walker EA, Petscavage JM, Brian PL, Logie CI, Montini KM, Murphey MD. Imaging features of superficial and dee*p* fibromatoses in the adult population. Sarcoma 2012;2012:215810.
8. Bonvalot S, Ternès N, Fiore M, Bitsakou G, Colombo C, Honoré C, *et al*. Spontaneous regression of primary abdominal wall desmoid tumors: more common than previously thought. Ann Surg Oncol 2013;20(13):4096–102.
9. Murphey MD, Ruble CM, Tyszko SM, Zbojniewicz AM, Potter BK, Miettinen M. From the archives of the AFIP: Musculoskeletal fibromatoses: radiologic-pathologic correlation. Radiographics 2009;29(7):2143–83.
10. Kransdorf MJ, Murphey MD. Imaging of soft tissue tumors: Lippincott williams & wilkins; 2006.
11. Weiss SW, Goldblum JR. Enzinger and Weiss's Soft Tissue Tumors. 5TH ed. Elsevier; Philadelphia, USA: Perivascular tumors, 2008; p.751–67.
12. Abbas AE, Deschamps C, Cassivi SD, Nichols FC, Allen MS, Schleck CD, *et al*. Chest wall desmoid tumors: results of surgical intervention. Ann Thorac Surg 2004;78(4):1219–23.
13. Mankin HJ, Hornicek FJ, Springfield DS. Extra-abdominal desmoid tumors: a report of 234 cases. J Surg Oncol 2010;102(5):380–4.
14. Gronchi A, Casali PG, Mariani L, Lo Vullo S, Colecchia M, Lozza L, *et al*. Quality of surgery and outcome in extra-abdominal aggressive fibromatosis: a series of patients surgically treated at a single institution. J Clin Oncol 2003;21(7):1390–7.

Submitted: 21 February, 2019	*Revised: --*	*Accepted: 21 July, 2019*

Address for Correspondence:
Javeria Saeed, Department of Surgery, Aga khan university Hospital, Karachi-Pakistan
Email: Saeed_javeria@yahoo.com