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Role of Percutaneous Radiofrequency Rhizotomy for Atypical Facial Pain Syndrome

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ABSTRACT

Background: Atypical facial Pain is a debilitating condition characterized by stabbing, burning and dysesthetic sensation. With a variety of underlying causes neurosurgeons has struggled to find its effective treatments. Surgical options available for the treatment of atypical fascial pain are radiofrequency Rhizotomy, glycerol Rhizotomy and balloon compression. Radiofrequency Rhizotomy is currently use in Pakistan. Studies have shown that it is less costly with minimal complication rate as compared with the other surgical interventions. But up till now, no study has been conducted in Pakistan to assess its efficacy. **Objective:** The objective of this study was to determine the effectiveness of RFR for atypical facial pain syndrome in terms of complete pain relief. **Study Design:** It is a descriptive case series. **Period of study:** One year from 01-12-2016 to 30-11-2017. **Place of Study:** Department of Neurosurgery Lahore General Hospital (LGH) Lahore. **Methods:** The objective of this study was to determine the effectiveness of RFR for Atypical Facial Pain syndrome in terms of complete pain relief. It is a descriptive case Series. Research was conducted at Department of Neurosurgery, Lahore General Hospital Lahore. Duration of study was 1 year. This study involved 38 patients of both genders aged between 35 to 75 years diagnosed case of Atypical fascial pain syndrome for more than 12 months. All the patients were assessed per operatively according to functional pain score. **Results:** The mean age of the patients was 49.47±11.92 years and there were 15 (39.5%) male and 23 (60.5%) female patients in the study group. Most of the patients were aged between 30-40 years (28.9%). The duration of pain ranged from 7 months to 15 months with a mean of 10.74±2.34 months. The functional pain score before the treatment ranged from 2 to 5 with a mean of 3.84±1.00 while the function pain score after treatment ranged from 0-3 with a mean of 1.50±.73. The frequency of patients with pain relief was 47.4%. **Conclusion:** Pain relief was observed in 18 (47.4%) patients, 6 weeks after treatment. The frequency of pain relief was insignificantly lower with increasing duration and severity of pain at admission.

Keywords: Atypical facial pain, percutaneous radiofrequency Rhizotomy, pain relief, Functional pain score.

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INTRODUCTION

Neuropathic facial pain is a debilitating condition characterized by stabbing, burning and dysesthetic sensation. With a wide range of causes and types including deafferentation, post herpetic trigeminal neuralgia, atypical and idiopathic, both physician and neurosurgeons have struggled to find the effective treatments that address the broad spectrum of facial pain.[1,2] Most common among the spectrum is trigeminal neuralgia with unilateral current like facial pain in the distribution of trigeminal nerve.[3,4] Effective medical and surgical treatment is present for primary trigeminal neuralgia but limited data exists for the treatment of atypical fascial pain syndrome which include Atypical facial pain and Secondary trigeminal neuralgia.[5,6] Atypical fascial pain usually present with persistent, deep, poorly localized pain with no neurological deficit and is quite uncommon (0. 001%). Secondary trigeminal neuralgia can occur due to multiple sclerosis, malignancies and viral infection.[5,6] Females are more affected than males. Atypical facial pain adversely affects the quality of life. Unfortunately, atypical pain is difficult to treat. Pain is resistant to multiple drugs. Medical treatment can be effective in controlling the pain at least in the initial stage. For unknown reasons however, medical treatment is either not effective at all from the very begging or fail after few years. Surgery then becomes the only available therapeutic option to treat atypical fascial pain syndrome. Surgical options available for the treatment of atypical facial pain syndrome are RFR, glycerol Rhizotomy and balloon compression. RFR is currently use is Pakistan. International studies have shown that it is less costly with minimal complication rate compared with other surgical interventions. So current study will help to assess the outcome of RFR in Pakistan against the standard outcome achieved elsewhere.

The use of RFR percutaneously works by thermally damaging C and delta fibers. Recurrence rate is 9% to 28%. Complications include loss of corneal reflex in 7%, paresthesia's in 10% and anesthesia dolorosa in up to 4%. [9-11]

METHODOLOGY

Study Design: It is a descriptive case series.
Place of Study: Neurosurgery Department Lahore General Hospital (LGH) Lahore.
Duration of Study: One year from 01-12-2016 to 30-11-2017.

Operational Definition: Atypical facial pain syndrome is defined as pain in the face that is continuous, persistent (more than 9 month) poorly localized with no neurological deficit (preserved facial sensation and corneal reflex) patient with pain for at least 12 months were included.

Effectiveness: It was assessed by functional pain scale. Complete pain relief was labeled with 0 to1 score on functional pain scale at six weeks follow up. Range 0-5 (pain increase as score increase).

It is a descriptive case series. Research was conducted at department of neurosurgery Lahore General Hospital (LGH) Lahore. Duration of study was one year from 01.12.2016 to 30.11.2017

Sample Size: Simple size was 38 cases of both gender and age in between 35-75 years. Patients were selected by non-probability consecutive sampling.

Inclusion Criteria:

- Either sex
- Age 35-75 years
- Pt. with H/O Atypical facial pain syndrome according to operational definition.
- Atypical facial pain syndrome for at least 12 months.

Exclusion Criteria:

- Typical TGN.
- Pts. having previous surgery or intervention for any neurological problems determined by history
- Evidence of facial trauma on clinical examination, supported by history.

Data Analysis: 40 patients of atypical facial pain syndrome fulfilling inclusion criteria were enrolled. Written and informed consent was taken. Merits and demerits of procedure were explained before taking consent. Demographic information i.e name, age, sex and outcome measures like pain relief and effectiveness were used. All pts underwent radiofrequency Rhizotomy under light intravenous sedation. Curved needle for V1 and V3 and straight needle for V2 was passed 2.5 cm lateral to angle of mouth directed upward through foramen ovale under image intensifier and then lesioning of V1, V2 and V3 TGN was made after confirmation by stimulation. Patients were followed for six weeks to determine the effectiveness according to operational definition determined by complete pain relief. Age groups and sex were treated as effect modifier and data was stratified subsequently. All the collected data was entered into SPSS version 17. Numerical variables; age, duration of pain, pre and post-treatment functional pain score has been presented by mean ±SD. Categorical variable i-e gender and complete pain relief at 6 weeks have been presented by frequency and percentage. Data has been stratified for age, gender, duration of pain and pre-treatment functional pain score to address effect modifiers. Post-stratification chi-square test has been applied taking p value ≤.05 as significant.

RESULTS

The age of the patients ranged from 30 years to 70 years with a mean of 49.47±11.92 years. There were 15 (39.5%) male and 23 (60.5%) female patients in the study group as. Most of the patients were aged between 30-40 years (28.9%), followed by 41-50 years (26.3%), 61-70 years (23.7%) and 51-60 years (21.1%). The duration of pain ranged from 7 months to 15 months with a mean of 10.74±2.34 months as shown in Table 1.

Table 1: Descriptive Statistics for Duration of Pain (Months)

	n	Minimum	Maximum	Mean	Std. Deviation
Duration of Pain (Months)	38	7	15	10.74	2.344

The functional pain score before the treatment ranged from 2 to 5 with a mean of 3.84±1.00 as shown in Table 2 while the function pain score after treatment ranged from 0-3 with a mean of 1.50±.73 as shown in Table 3.

Table 2: Descriptive Statistics for Functional Pain Score (Pre-Treatment)

	n	Minimum	Maximum	Mean	Std. Deviation
Functional Pain Score (Pre-Treatment)	38	2	5	3.84	1.001

Table 3: Descriptive Statistics for Functional Pain Score (Post-Treatment)

	n	Minimum	Maximum	Mean	Std. Deviation
Functional Pain Score (Post-Treatment)	38	0	3	1.50	.726

The frequency of patients with pain relief was 18 (47.4%) as shown in Table 4.

Table 4: Frequency Table for Pain Relief

Pain Relief	Frequency	Percent
Yes	18	47.4
No	20	52.6
Total	38	100.0

When stratified, there was no significant difference in the frequency of pain relief across various age groups; 30-40 years vs. 41-50 years vs. 51-60 years vs. 61-70 years (45.5% vs. 50.0% vs. 50.0% vs. 44.4%; p=.992), genders; male vs. female (46.7% vs. 47.8%; p=.944), duration of pain groups; 7-9 months vs. 10-12 months vs. 13-15 months (53.3% vs. 46.2% vs. 40.0%; p=.803) and pre-treatment functional pain score; 2 vs. 3 vs. 4 vs. 5 (75.0% vs. 60.0% vs. 50.0% vs. 25.0%; p=.230).

DISCUSSION

Neuropathic facial pain can be a debilitating condition characterized by stabbing, burning and dysesthetic sensation.

With a large range of causes and types, including deafferentation, post herpetic, atypical, and idiopathic, both medicine and neurosurgery have struggled to find effective treatments that address this broad spectrum of facial pain.[1,2]
Medical treatment can be effective in controlling pain, at least in the initial stages. For unknown reasons however, medical treatment is either not effective at all from the very beginning or fails after a few years. Surgery then becomes the only available therapeutic option to treat atypical facial pain syndrome. Surgical options available for the treatment of atypical facial pain syndrome are radiofrequency rhizotomy, glycerol rhizotomy and balloon compression.[3-5]
Radiofrequency rhizotomy is currently in use in Pakistan. International studies have shown that it is less costly with minimal complication rate as compared with other surgical interventions. But no study has ever been undertaken in Pakistan to assess its efficacy. Trends for intervention are changing all over the world. So current study was done to help audit the current practices in Pakistan against the standard outcome achieved elsewhere as there was no local data available to determine the efficacy of percutaneous radiofrequency rhizotomy in terms of complete pain relief.
The mean age of the patients was 49.47±11.92 years. Fouad et al. (2011) observed mean age of 48 years among patients with atypical facial pain in Egypt.[7] There were 15 (39.5%) male and 23 (60.5%) female patients in the study group giving a male to female ratio of 2:3. A similar female predominance was also observed by Fouad et al. (124:188; 2:3).[7] However, Manoel et al. (2006) didn't observe any difference between genders (1:1) in Brazil.[8]
Most of the patients were aged between 30-40 years (28.9%), followed by 41-50 years (26.3%), 61-70 years (23.7%) and 51-60 years (21.1%). The duration of pain ranged from 7 months to 15 months with a mean of 10.74±2.34 months. The functional pain score before the treatment ranged from 2 to 5 with a mean of 3.84±1.00 while the function pain score after treatment ranged from 0-3 with a mean of 1.50±.73.
The frequency of patients with pain relief was 18 (47.4%). A similar effectiveness was observed by Fouad et al. (50%) in Egyptian population.[7] Manoel et al. however observed much lower frequency of pain relief (37.5%) in Brazilian population.[8] Much higher frequency of 92% was previously reported by Kanpolat et al. (2001) in Turkish population but after a much longer mean follow-up time of 68.1±66.4 months and with multiple procedures.
When stratified, there was no significant difference in the frequency of pain relief across various age groups; 30-40 years vs. 41-50 years vs. 51-60 years vs. 61-70 years (45.5% vs. 50.0% vs. 50.0% vs. 44.4%; p=.992), and genders; male vs. female (46.7% vs. 47.8%; p=.944). Thus, the procedure was equally effective for all ages and genders.
However, the frequency of pain relief was insignificantly lower with increasing duration of pain; 7-9 months vs. 10-12 months vs. 13-15 months (53.3% vs. 46.2% vs. 40.0%; p=.803) and pre-treatment functional pain score; 2 vs. 3 vs. 4 vs. 5 (75.0% vs. 60.0% vs. 50.0% vs. 25.0%; p=.230) which might suggest some association.
Thus, in the present study pain relief was observed in 18 (47.4%) patients 6 weeks after treatment. The frequency of pain relief was insignificantly lower with increasing duration (p=.803) and severity of pain at admission (p=.230) suggesting probable risk of treatment failure with increasing duration and severity of pain at presentation.

CONCLUSION

Pain relief was observed in 18 (47.4%) patients 6 weeks after treatment. The frequency of pain relief was insignificantly lower with increasing duration (p=.803) and severity of pain at admission (p=.230).

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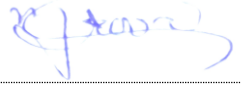
Dr. Muhammad Farooq Senior Registrar, Neurosurgery Lahore General Hospital, Lahore	Data Collection	
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