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Tactile Hypoesthesia Associated with Myofascial Trigger Points in Patients with Persistent Post-Mastectomy Pain —A Close Observation Study in A Case Series—

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Summary : Purpose: Numbness is frequently seen at or near the operated site in patients with persistent post-mastectomy pain (PPMP). Numbness including tactile hypoesthesia can be also seen in patients with myofascial pain. The purpose of this study was to observe relation between such tactile hypoesthesia and myofascial trigger points in patients with PPMP.

Methods: We studied five female patients from 43 to 74 years old who consulted at our pain clinic for treatment of PPMP. The areas of tactile hypoesthesia and anesthesia, myofascial trigger points, as well as diffuse tenderness, were marked on the skin surface with delineating such areas and putting X mark on the site of myofascial trigger points using aqueous markers and recorded in photographs at every visit.

Results: Tactile hypoesthesia and anesthesia were observed in five and four patients, respectively. Myofascial trigger points were identified in all the five patients and were located within, in the vicinity or near the same dermatomal levels of the hypoesthesia. A series of trigger point injections reduced NRS scores by more than 50% in all patients. The size of the area of tactile hypoesthesia was significantly reduced in association with the decrease of NRS scores in four patients.

Conclusions: Our findings indicate that tactile hypoesthesia is closely associated with myofascial pain, and myofascial pain is one potential pathophysiological cause of prolongation and exacerbation of PPMP. Our results also indicate that treating them with trigger point injections are useful for alleviating PPMP.

Key words : tactile hypoesthesia, persistent post-mastectomy pain, myofascial trigger point, trigger point injection

Introduction

Numbness is frequently seen at or near the operated site in patients with persistent post-mastectomy pain (PPMP).[1,2] Such sensory abnormality is usually attributed to nerve damage during surgery.[2,3] Tactile hypoesthesia which is included in numbness can be seen in patients with myofascial pain,[4,5] and the myofascial pain itself is suggested as one potential cause of PPMP.[6] In this case series, we studied myofascial pain-related hypoesthesia and its relation to myofascial trigger points as well as changes in sensory abnormalities during treatment of myofascial pain. Aims of this study are to investigate 1) the topographical relation between sites of myofascial trigger points and area of tactile hypoesthesia, and 2) effects of myofascial trigger point injections on changes in the size of tactile hypoesthesia, and on degree of pain intensity, in patients with PPMP.

Methods and Patients

We studied five female patients, from 43 to 74 years old, who consulted at our pain clinic for treatment of persistent pain after breast cancer surgery, and whose pains were refractory to NSAIDs and/or pregabalin. Details of cancer stages and treatments were summarized in Table 1. After getting approval by our IRB, the written informed consent was obtained from all the patients for publication of their cases and photographs.

Pain degree and observed tactile sensory abnormalities and myofascial trigger points

We recorded the intensity of pain with numerical rating scales (NRS) at every visit. The areas of tactile hypoesthesia, anesthesia, allodynia and diffuse

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Table 1. Cancer treatments and observed tactile sensory abnormalities, muscular/subcutaneous signs and shoulder range of motion

Case	Age	Type of Operation (Elapsed Time from Surgery to 1st Visit)	Cancer Stage	Adjuvant Therapy	Tactile Sensory Abnormalities			Muscular/Subcutaneous Signs		Shoulder ROM
					Hypoesthesia	Anesthesia	Allodynia	Location of MTrP relative to hypoesthetic area	Diffuse Tenderness	
1	73	Bt+Ax (10yrs2mo)	T2N0M0	Chem/Rad	+	+	–	within and remote site	–	Abduction and extension ristricted
2	46	Bp+Ax (3yrs8mo)	T1N0M0	Rad/Horm	+	+	+	within the area	–	N
3	65	Bt+Ax (2yrs4mo)	T2N1M0	Chem/Rad	+	+	–	at the vicinity	+	Abduction ristricted
4	43	Bp+Ax (1yr1mo)	T1N0M0	Chem/Rad	+	–	–	at the vicinity	–	N
5	46	Bt+Ax (1yr3mo)	T3N2M0	Chem/Rad/Horm	+	+	–	at the vicinity and remote site	+	Abduction ristricted

Bp: partial mastectomy, Bt: total mastectomy, Ax: resection of axillary lymph nodes, Chem: chemotherapy, Rad: radiation therapy, Horm: hormonal therapy, MTrP: myofascial trigger point, ROM: range of motion, N: within normal range

subcutaneous tenderness, if they existed, were delineated on the skin surface using an aqueous marker at every visit. Myofascial trigger points were marked with an "**X**" on the skin surface. These areas of tactile sensory abnormalities, diffuse tenderness and myofascial trigger points were recorded in photographs (Figure 1).

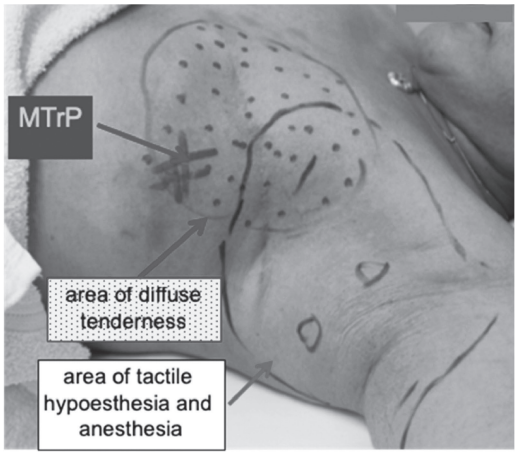

Figure 1. Tactile sensory abnormalities, tenderness and myofascial trigger points
The areas of tactile hypoesthesia, anesthesia and diffuse subcutaneous tenderness were delineated on the skin surface using aqueous markers. Myofascial trigger points (MTrP) were marked with "X" s on the skin surface.

Myofascial pain and trigger point injections

Myofascial pain was confirmed when myofascial trigger points were identified via physical examination according to Simons et al..[7] We treated myofascial pain once a week or every two weeks with trigger point injections of 3–5 mL of 1% lidocaine supplemented with or without 20–30 mg of triamsinolone.

Analyses of stored data

Using stored observation data, we investigated 1) the relation between the areas of tactile hypoesthesia and sites of myofascial trigger points, and 2) effects of a series of myofascial trigger point injections on the size of sensory abnormalities (i.e. hypoesthesia, allodynia and diffuse tenderness), and on NRS scores.

Results

Elapsed times to the first visit and pain state

The elapsed times after surgery to the first visit to our clinic varied from approximately one to 10 years. NRS scores of the pains at the first visit were six to nine. Among them, four patients had experienced intractable pain during the two months prior to visiting our clinic.

Tactile sensory abnormalities and myofascial trigger points

Observed tactile sensory abnormalities, muscular/subcutaneous signs and shoulder range of motion at the first visit were shown in Table 1. Tactile hypoesthesia and anesthesia were observed in five and four patients, respectively. One patient had tactile allodynia and the other two patients had diffuse tenderness. Myofascial trigger points were identified in all patients and were located within the area and/or in the vicinity of hypoesthesia (Figure 2A, B, C). In addition to these trigger points, two patients had latent myofascial trigger points in the scapular and/or paravertebral regions that were located near the same dermatomal levels of the area of hypoesthesia (Figure 2C).

Effect of trigger point injections

Details of treatment and their effects on NRS pain scores, sensory abnormalities, muscular signs and shoulder range of motion were summarized in Table 2. A series of trigger

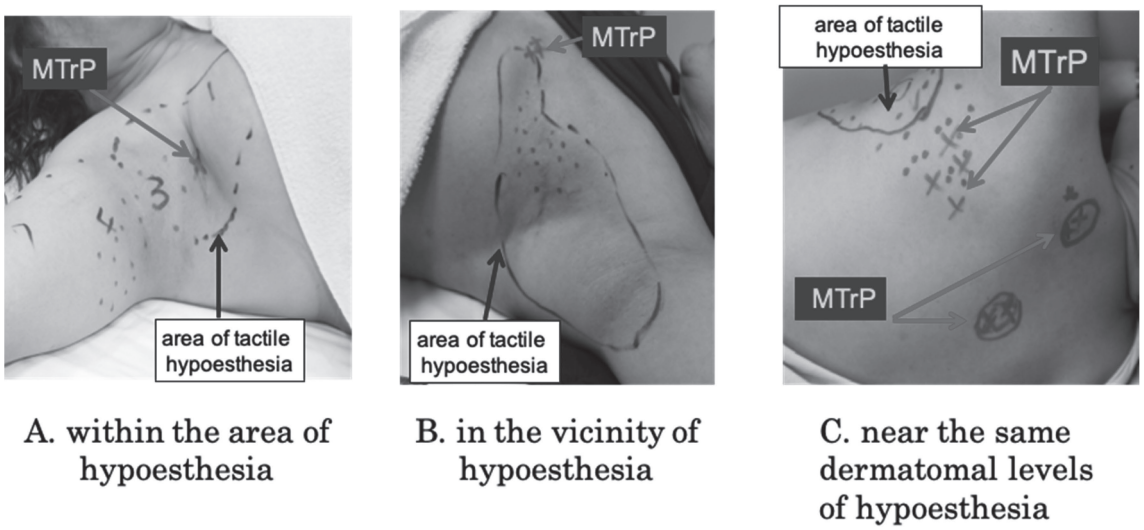

Figure 2. Location of myofascial trigger points
MTrP: myofascial trigger point

Table 2. Details of treatment and their effects on NRS pain scores, sensory abnormalities, muscular signs and shoulder range of motion

Case	Treatment		Change of NRS scores	Changes in The Areas of Tactile Sensory Abnormalities			Changes of MTrP	Shoulder ROM
	Number of Times of Trigger Point Injection*	Oral Medications**	NRS at 1st visit → minmum NRS at 3rd to 5th visit	Hypoesthesia	Anesthesia	Allodynia		
1	L+T: 4	pregabalin acetaminophen dihydrocodein	10→3	reduced	no change	NA	disappeared	improved remarkably
2	L+T: 4 L: 3	pregabalin acetaminophen dihydrocodein	9→3	reduced	no change	disappeared	tenderness reduced	NA
3	L+T: 3 L: 2	pregabalin nortriptiline tramadol acetaminophen	9→4	reduced	no change	NA	disappeared (MTrP at other site became apparent)	improved
4	L+T: 3	pregabalin nortriptiline	6→3	reduced	no change	NA	tenderness reduced	NA
5	L+T: 3 L: 4	pregabalin	9→5	slightly reduced	no change	NA	tenderness reduced	improved

L+T: 1% lidocaine (3–5 mL) with triamsinolone (20–30 mg), L: 1% lidocaine (3–5 mL) ** NSAIDs were used before consultation to pain clinic in all patients. NA: not applicable

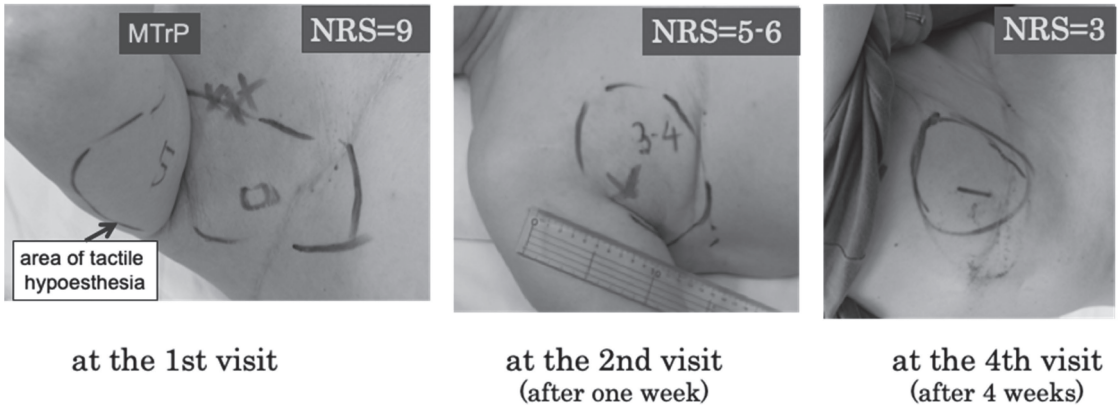

Fig 3. Effect of trigger point injections on the size of tactile hypoesthesia and NRS scores (case 1)
The size of hypoesthetic area reduced gradually with the decrease of pain intensity. Restricted range of motion of the right upper extremity was improved dramatically.

point injections reduced NRS scores by more than 50% in all patients. The size of the area of tactile hypoesthesia was significantly reduced in association with the decrease of NRS scores in four patients. In one patient, allodynia disappeared when the pain NRS score became three. However, we did not observe a significant reduction in the size of the area of diffuse tenderness in the two patients after the trigger point injection therapy.

Discussions

Myofascial trigger points and hypoesthetic area

Our present observation supports the previous finding that myofascial pain is one potential cause of PPMP.[6] Because treatment of the myofascial pain alleviated the PPMP, it seems important to identify the location of myofascial trigger points with precise palpation.[7] Since myofascial trigger points were usually located within, in the vicinity, or near the same levels of the area of hypoesthesia around a surgical wound scar(s), a delineated cutaneous area of hypoesthesia may be a useful guide to detect myofascial trigger points.

Functional tactile hypoesthesia associated with myofascial pain

In this case series, we showed that the reduction in the size of tactile hypoesthesia occurred after trigger points injections. This indicates that the hypoesthesia is functional, at least in part, and associated closely with myofascial pain. Further, our present observations showed that the hypoesthetic area tended to reduce in its size in parallel with decrease of NRS pain scores. One of the present authors (K.M.) has reported in 1999 that the size of functional tactile hypoesthesia is closely associated with the intensity of pain and it changes in parallel with the magnitude of the pain.[8] Our present observations were consistent with this described phenomenon.

Anesthesia, unchanged hypoesthesia and diffuse tenderness

Anesthesia and hypoesthesia that were not diminished with the treatment might indicate that these sensory abnormalities are due to injury of peripheral nerves during breast cancer surgery.[2,8] Diffuse tenderness which area sizes were not reduced with trigger point injections might indicate that they were caused by different mechanism from myofascial pain. Further studies are needed to clarify the pathophysiological mechanisms of diffuse tenderness in patients with PPMP.

Limitations

Although we showed evidence that myofascial pain is, at least in part, responsible for prolongation and exacerbation of PPMP, the number of patients studied in this case series was small. Further prospective larger scale studies are needed to confirm the results of the present study.

Conclusions

The findings in this case series support the notion that myofascial pain is one potential pathophysiological cause of prolongation and exacerbation of PPMP. We emphasize that diagnosing myofascial trigger points if they exist and treating them with trigger point injections are important for alleviating pain. The delineated cutaneous areas of tactile hypoesthesia located at or near surgical wound scars are a good indicator to detect the site of the myofascial trigger points because they are usually located within, in the vicinity or near the same dermatomal levels of such hypoesthetic areas.

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