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Case Report

The Physio-Psychological Release of Associative Chronic Pain; Brain Enjoy by Favorite Smell

Mototaka Nakama-Kitamura*

Department of Integrated Psychological Science, Kwansei Gakuin University, Japan

***Corresponding author:** Mototaka Nakama-Kitamura, Department of Integrated Psychological Science, Kwansei Gakuin University, Japan

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Case 1: A Case of Severe Osteoarthritic Pain in the Lumbar Spine Disappeared by Preferred Smell

Abstract

The patient is an 80s male with no history of back pain. In late autumn, after a about one-hour walk outdoor, the subject sat down on a chair in his room and immediately felt intense pain extending from left hip to the end of the leg. Thereafter, whenever he moved into a sitting position, he had to do slowly, after two to three minutes in a fixed robot-like posture due to severe pain in the lower back. Fortunately, he experienced no pain when at rest and no intermittent claudication. He tried to change his daily behaviors so that he would not acquire the associative learning with severe pain. At the same time, he performed rehabilitation and olfactory stimulation with his favorite smell, bee honey. Five to six months later, pain reduced to no longer interfered with daily life. During that time, no oral or topical analgesics or anti-inflammatory drugs were administered. Now, more than three years later, he feels some stiffness in his legs and hips when waking up, but hardly notices once he starts moving.

Keywords: Chronic pain; Conditioning; Olfactory stimulation; Pain release

Introduction

While writing this book, for good or not, I suffered from severe back pain. I had previously confirmed by animal experiments that good smells are effective in treating pain by a psychological associative learning, and I had just been wanting to test the effects in humans [5-7]. Conventional anti-analgesic drugs and morphine and its derivatives. Gratefully, I had a chance to for the unexpectedly well-timed opportunity to experience severe back pain.

As introduced in The Definition of Pain (Introduction p.1, 2), pain is defined in the latest revision as “an unpleasant sensory and emotional experience associated with or resembling that associated with, actual or potential tissue damage”.

The first half of the definition explains that pain occurs when a painful stimulus is perceived by the upper central nervous system and is furthermore emotionally unpleasant, triggering an emotional experience (a temporary, abrupt emotional response such as anger, fear, or sadness triggered relatively quickly). The second half of the definition explains that pain can occur due to a strong association with unpleasant and emotional experiences despite the absence of painful stimuli.

Recently, research on human pain perception mechanisms has made further progress using functional MRI and other techniques. However, many aspects remain unknown. Pain is a primitive, complex, and sophisticated sensation that occurs in upper central nervous system processes involved in perception, emotion, and cognition. Currently, pain is thought to develop into a complex chronic condition through the addition of persistent psychological anxiety and fear in the limbic system and cerebrum.

These processes are similar to learned helplessness (depressive) behavior as presented by a psychologist (Seligman, 1972) who experimented with dogs. He showed that when a dog is unable to escape pain or stress for an extended period of time, it becomes depressed and begins to simply sniff, snort, and cower when

confronted with an electrical stimulus, instead of attempting to free. Dogs subjected to stress and suppression that is difficult to resist or avoid learn that there is no point in doing anything and give up on trying to escape [8]. This is a straightforward example of how inescapable pain and suffering can induce depression.

The patient (the author) keep in mind to y in daily life to move in a way that would not to be conditioning, and in daily life in a way that I would prevent associating movements with severe pain, and used pleasant olfactory stimuli to prevent associative conditioning. Smells were also used.

Subject and Methods

Subject: male in age of 80s with no history of back pain. In autumn 2019 (October 11), he walking around for about 40 minutes along the river with chilly wind, carrying a backpack weighing roughly 5 kg. He returned home, and sat down in the chair in his study room, a pain shot down from his waist to the top of left leg, that was so severe he stopped breathing. It was the first time he had experienced such a pain. He held the same position for a while, waiting for the pain to subside, and when he tried to slowly rise to his feet, a severe pain shot from the top of his left leg up to his waist. The pain was especially intense when moving from a standing position to sitting.

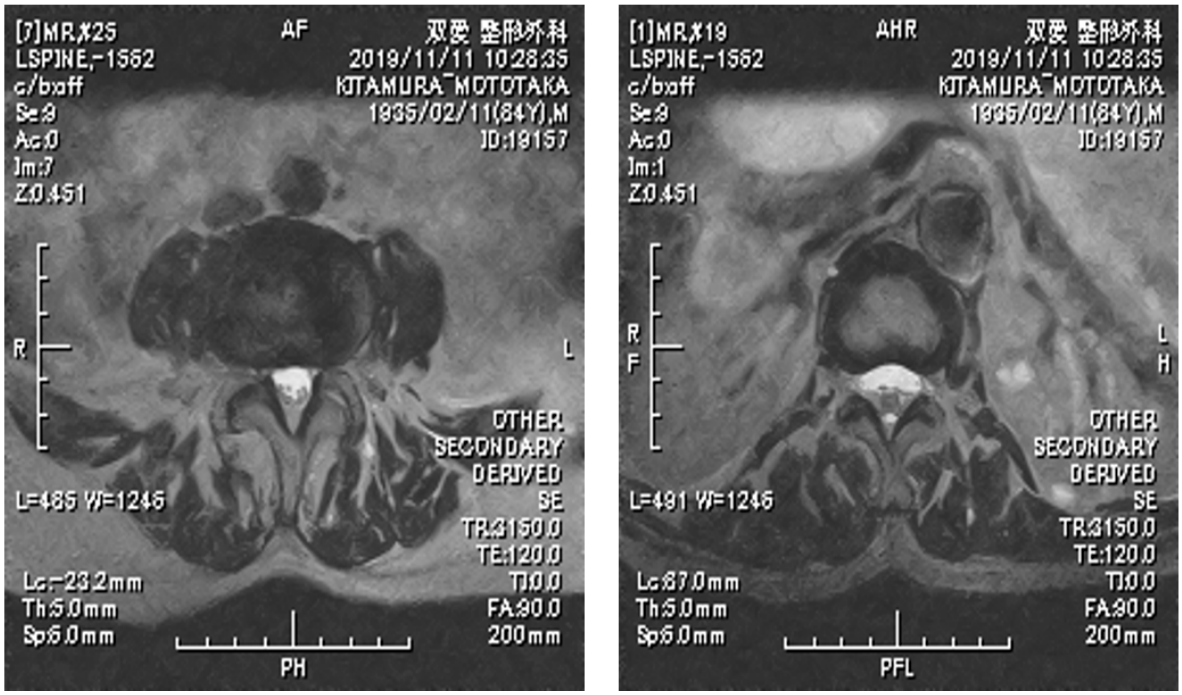
He received treatment for two weeks at a nearby orthopaedic clinic but was not well with the usual prescription of painkillers, then visited an orthopaedic hospital. After explaining his symptoms, he had CT and MRI scans, and was diagnosed that pain would be age-related osteoarthritis of the lumbar spine including spinal canal stenosis (MRI image).

Findings and MRI images

MRI scan (lower thoracic-lumbar spine)

(1) Sagittal section (Name: K. M.)

(2) Transverse section (Name: K. M pain)



Expedient assessment method

Pain was assessed using (1) the widely used conventional method and (2) partially modified versions of the NRS and FRS methods (Figure 2).

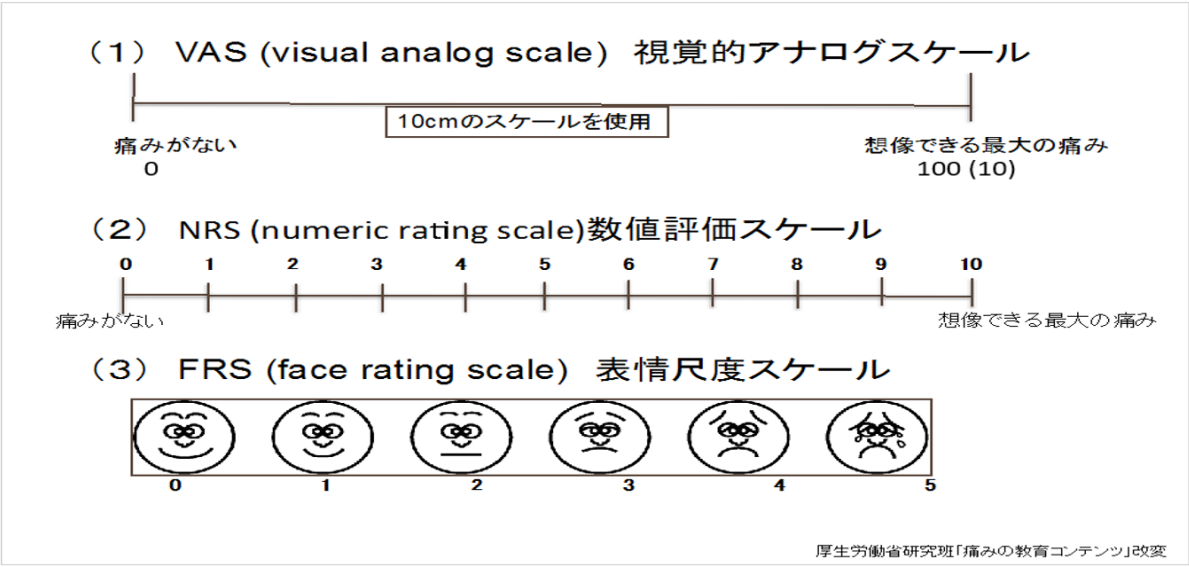


Figure 2: Psychological evaluation of pain [1,2].

Treatment

Physical therapy: The patient visited an orthopaedic clinic twice a week. The physical therapy included rehabilitation exercises for his legs and hips, as well as low frequency waves and heat therapies.

Olfactory stimulation: Honey smell inhalation.

Olfactory stimulants such as honey (cherry, mayflower, rosemary, illex integra, and lentil) were applied with soak into gauze and held inside a mask for inhalation [*]1. When severe pain was likely to occur, the aroma of honey was directly inhaled for about 5 minutes beforehand. In addition, an electrically heated scent diffuser was placed in his study and living room to emit fragrance. Every two days after the onset of pain, the patient recorded his level of pain when at rest, when at rest plus fragrance, when standing, when standing plus fragrance, when undergoing rehabilitation, and when walking on a ten-step scale (VAS). Based on the recordings, an average value was obtained for each month. These averages were represented along a Face Rating Scale (FRS) on a numeric rating scale (NRS) using a visual analog scale method.

Exercise: Tai Chi for 30 minutes a day, muscle working at the gymnastic for 1 hour.

Depression release: Stress release: Oil painting, a hobby for the lastustic 40 years.

A psychological analgesic technique using counter-irritation [3].

[*]1 It is also possible to fill a bowl or mug with hot water (60 to 70°C), add a few drops of natural essential oil, and inhale the steam through your nose or mouth. It is important to note that the odours must be natural odorants. The artificial fragrances used in cosmetics and other products are not effective. This was also confirmed by basic animal testing. Chanel and other processed perfumes were also ineffective, causing headaches after prolonged exposure to the strong odours.

The course of the pain

Although the thought was given to only using fragrances during the most painful standing and sitting movements, the idea of not using the medicine (smells) was unsettling, so odours were used continuously. Since these were self-sensory assessments and subjectivity was unavoidable, the results were taken as trends and statistical analyses of the numerical values were not performed.

During the first month, the pain was so intense when moving that the patient would groaning. It took as long as five minutes to change posture, particularly when transitioning from standing to sitting and vice versa (Figure 3). During this time, the patient underwent olfactory stimulation using fragrances and rehabilitation daily, and in the second month, the intense pain began to subside.

In order to prevent transition into chronic pain syndrome, the patient consciously avoided associating pain-inducing behaviors with the environment, and took care to avoid pain learning. At the same time, several types of honey were used to put the patient's mind free from stress. Furthermore, the counter-irritation technique ([*]3) was also effective when changing positions, particularly in sitting and standing.

After that, five months has passed, and in the sixth month since onset, which is considered the chronic phase, the patient had recovered to the condition of point of light pain excepting when changing positions or activities in the daily life.

Olfactory habituation was not experienced much. The honey scent of rosemary was particularly effective. The effect was long-lasting because honey is non-volatile. Five years have passed since the accident. Currently, the patient feels slight discomfort in his lower back when getting out of bed, but it diminishes or completely disappears when he starts to move and forgets it during the day. There are no abnormalities in his daily behaviors. However, when he walks for a long period of time in an unstable posture along a highly uneven mountain path or on a gravel path along a river side, he feels a strong discomfort in his legs and hips the next morning. When he uses his eyes and sniffs odours before going to bed at night, he yawns, feels sleepy, and quickly falls asleep.

[*]3 Counter-irritation is a psychological technique to divert attention away from pain. For example, to divert attention from pain A, one can intentionally pinch other parts of their body to inflict pain B. The calculation is (A - B = C), that is, B shares the pain of A, and A becomes smaller. By changing the intensity of B as needed (for example, by pinching the right fingertip with the left finger), the original pain A can be reduced. It is comforting to know that there is a way to mitigate pain, such as when suffering from a topical skin incision. Later, the patient even effortlessly underwent a tooth extraction without anaesthesia.

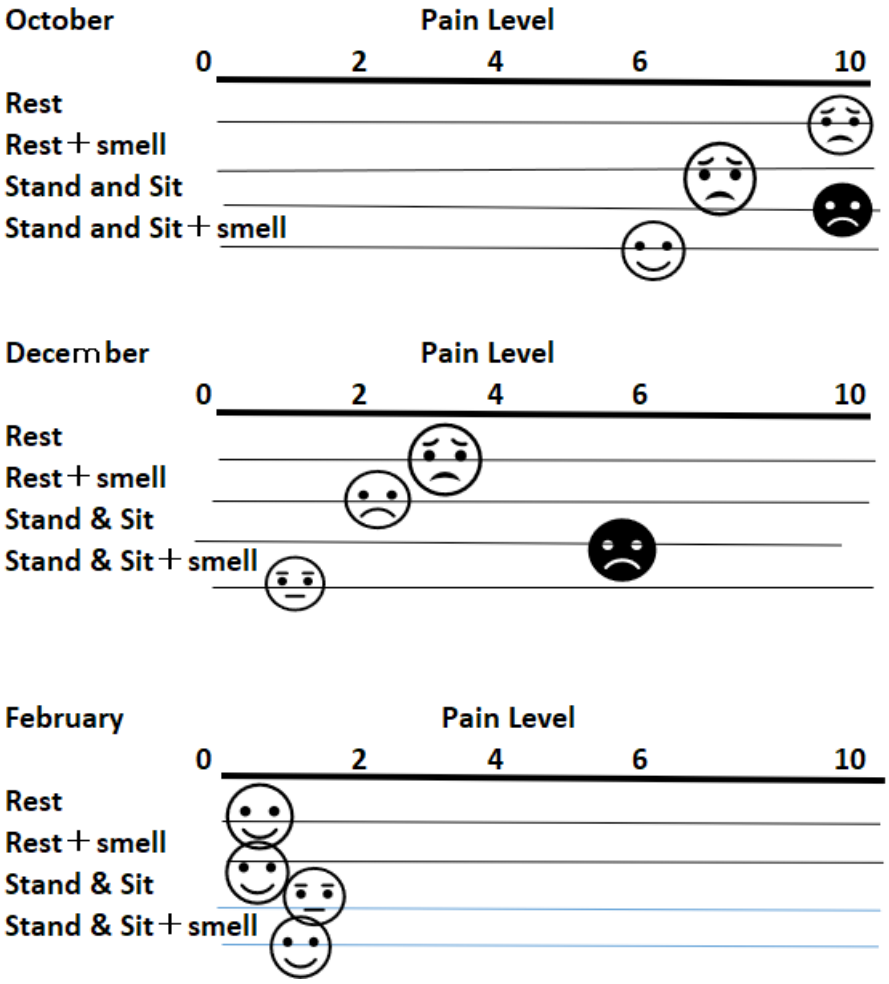


Figure 3: 1 month later, pain level. October; condition, Rehabilitation; walking after 1 month.

Discussion

Lumbar spondylosis causes chronic pain of the lower back bones deform due to aging, a heavy workload, and genetic predisposition. The pain is characterized by appearing stronger at the onset of movement and lessening as the patient continues to move.

It has also been shown that inactivity of the fascia, which connects the gaps between muscles and organs, can cause nociceptive chronic pain, and that even when suffering from low back pain, a reasonable amount of exercise will be necessary.

Acetaminophen preparations are commonly used in treating lumbar spondylosis. This drug act on the thermoregulatory centers of the brain to reduce fever and pain. Unlike other sensations, pain sensation differs by each person, and the magnitude of an injury is not necessarily depending on the intensity of a pain. Pain is an electric signal. When a physical stimulus or a pain-producing substance stimulates nociceptors, they generate an electric current that is transmitted through nerve fibers to the brain, where the signal spreads to various areas of the brain. When the pain is prolonged, depression and other psychological abnormality will be induced.

We have demonstrated by the associative conditioning of pain in mice that persistent pain induces psychological abnormality in mice [4-7]. Learned pain continued prolonged time, three months over.

In psychology, the term behavior has a broad meaning, and it often includes neural circuits in the brain, endocrinology, knowledge, values, and behavioral changes in response to stimuli. Experiments on learning using mice have shown that such behavioral changes can persist for six months or longer, and this has also been confirmed by researchers at different universities conducting

independent experiments. This learning of pain is closely related with chronic pain in humans.

Conclusion

We presented here a case of typical severe pain in the legs and lower back caused by lumbar spondylosis, which was relieved by inhibiting the generation of associative learning and olfactory stimulus of preferred smell, with no conventional analgesics [4-7].

Case Report 2: A Case in whom Severe Pain with Herpes Zoster Disappeared by Preferred Olfactory Stimulation

Abstract

85-years-old male. From time to time, he felt tingling pain all over the skin, as if he had been pricked by needle. After 1-2 weeks, a palm-sized redness appeared on the skin on the outer part of the left thigh, and he felt itching and pain. There was a long weekend, so he had to wait four days after noticing shingles it, he visited and diagnosed that "peak of the herpes zoster" (Photo 1). He was instructed to take an antiviral drug (Amenamevir tablets, twice a day, morning and evening) and apply an anti-inflammatory agent (Azunol ointment) (Photo 2).

When the pain and itchiness were intense, he put an odorant in the mask for comfort. The pain was almost equally to itchiness, and it was not stressful, partly due to the effects of the odorant. Shingles is said to migrate to chronic, but in this case, the symptoms subsided during the acute pain stage.

Preface

Shingles is caused by activation of the varicella zoster virus (VZV), the same virus with that of chickenpox (National Cancer Center Japan). In Japan, one out of every six or seven people experience shingles, and senior person seems to suffer frequently. According to reports, after one's first chickenpox infection in a young child, the shingles virus remains in the nerve cells along sensory neurons, such as the trigeminal nerve in the face, the spinal cord, and the sciatic nerve, and it activates when the body's immune system weakens due to age, fatigue, stress, or other factors. The activated shingles virus appears along the nerve up to the skin, where viral particles increase and cause blisters.

The symptoms of shingles include red blisters on the skin and mucous membranes, as well as neuralgia. At first, the pain is neuropathic, but later, it begins to contain nociceptive pain. The symptoms are most commonly seen on the chest, abdomen, and back (intercostal nerve area), and less commonly on the face (trigeminal nerve area), but they can appear anywhere on the body.

Subject and Methods

Subject: An 86-year-old male (M. K.)

Findings and MRI images: Shingles

Simple pain assessment method: Same as in Case I.

Treatment: An antiviral drug (Amenamevir tablets *1) and Azunol ointment *2)

Odorant honey: Rosemary®, Mayflower®, Orange Fruit®, Aromatic substance: Benzoin (extracted from Japanese snowbell sap, a sweet aroma)

Figure 2.1: Day 4 of onset.

Figure 2.2: Day 14 of onset. Shingles on the outer left thigh (5×10 cm)

The Course of Pain and Itchiness

Treatment: When bothered by pain and itchiness, the patient placed an odorant inside a mask for relief pain. Two weeks later, the diagnosis was that the virus had been eliminated and the anti-inflammatory agent was stopped (Photo 2). The case of shingles itself was light, and the pain could be relieved by scratching,

along with the effects of the odorant. The use of analgesics was unnecessary.

*1 Directly inhibiting helicase-primase activity, which acts during the initial stage of viral proliferation (see item (1) regarding the proliferation process above), suppresses double-stranded DNA cleavage and RNA primer synthesis, thereby inhibiting herpesvirus propagation in the initial stage.

*2 This inhibits leukocyte migration and inflammation. It also inhibits the release of histamine and other substances from immune cells.

The course of the pain

Around October 2021, the patient experienced pain like needle pricks across his skin. One or two weeks later, a palm-sized rash appeared on the skin on his outer left thigh. The affected area was itchy and painful. There was a long weekend, so he had to wait four days after noticing it to visit a dermatologist. He was diagnosed with peak shingles (Photo 1).

The pain level and itching degree were 6 in the scale, and the degree of itchiness was roughly the same. Three weeks later, both the pain and itchiness were near zero. Although the patient kept in mind the objectivity when assessing the pain and itchiness, self-assessments are unavoidably influenced by subjectivity. However, the assessments seemed to reflect a trend.

Initially (during the peak), the skin rash was red, oval-shaped, and protruding, while blisters were observed, the rash disappeared as the blisters gradually burst and the skin turned white and peeled off. The pain and itchiness disappeared along with the changes in skin tissue.

Discussion

Shingles is caused by the same virus as chicken pox, and a breakout occurs when the latent virus in the body reactivates. Skin symptoms include the formation of erythema, blisters, inflammation, and scabs, which then heal.

Generally, it is also accompanied by nerve damage, which is usually latent in the dorsal root ganglia of the spinal cord, and in many cases, only the sensory nerves are affected. The pain may persist even after the skin symptoms have subsided, and pain that persists for more than three months after the shingles is often treated as post-herpetic neuralgia.

In terms of pain classification from shingles to post-herpetic neuralgia, the initial stage of shingles is nociceptive pain perceived as dermal inflammation pain. If it persists more than 3 to 6 months, then neuropathic pain becomes dominant.

In this case, the inflammation and pain disappeared 21 days after onset. It did not become chronic and was treated as acute nociceptive pain.

Conclusion

1. The skin symptoms of shingles disappeared roughly 20 days after onset of the rash by taking anti-viral medication and applying an anti-inflammatory agent.

2. Inhaling the honey smell as needed significantly relieved the pain and itchiness, and the patient had no pain and itchiness in daily life.

References

1. Nakama-Kitamura M, Kitamura Y (2011) A Novel conditioned nociceptive response in mice. Brain Res 1406: 8-17.

2. Nakama-Kitamura M, Kitamura Y (2012) The influence of fentanyl, fluvoxamine, and preferred olfactory stimuli on a novel conditioned nociceptive response in mice: a neuro–psycho–behavioral study. Pain Research 27: 153-164.

3. Nakama-Kitamura M (2014) The distinctive significance of analgesic drugs and olfactory stimulants on learned pain in mice. Brain Res 1588: 104-112.

4. Nakama-Kitamura M, Keiko K, Jinsho A, Norio A (2016) Attenuation of learned persistent pain by preferred olfactory or taste stimulus in mice. International for the Studies of Pain (IASP). September 24-25, Abstract No.3902. Yokohama, Japan.