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Case Report

Psilocybin-Assisted Psychotherapy for Chronic Somatoform Pain Disorder: A Case Report

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Abstract

Psychedelic substances have experienced a resurgence of clinical interest in recent years, particularly for their promising effects in the treatment of psychiatric disorders such as depression and anxiety. While evidence regarding their role in chronic pain management remains limited, emerging studies suggest potential therapeutic benefits. This case report describes a patient with persistent somatoform pain disorder and recurrent depressive disorder who underwent four sessions of psilocybin-assisted psychotherapy. The intervention was associated with a reduction in the negative impact of pain on daily life, increased pain acceptance, improved quality of life, and reduction in depressive symptoms. These findings contribute to the growing body of literature suggesting that psychedelics, when combined with psychotherapy, may offer a novel and holistic approach to the treatment of chronic pain. Further controlled studies are needed to explore the safety, efficacy, and underlying mechanisms.

Keywords: psilocybin; psychedelic-assisted psychotherapy; chronic pain; somatoform pain disorder; depression; case report

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1. Introduction

Chronic pain is a global health issue, affecting an estimated 20–30% of the world's population [1]. It is often accompanied by high rates of co-occurring psychiatric conditions, especially anxiety and depression [2]. Chronic pain not only reduces individuals' quality of life and functional abilities but also leads to substantial societal costs through increased healthcare utilization and losses in productivity [3]. Conventional treatments such as anti-inflammatory drugs, opioids, and antidepressants are often of limited efficacy and have substantial side effects [3], including risk of tolerance and dependency, as well as opioid-induced hyperalgesia [4]. Therefore, the need for alternative treatments is necessary.

Research on psychedelics started in the middle of the 20th century, before being restricted by legislation, in a cultural context of mistrust and ignorance of these substances. However, in the early 2000s, there has been a resurgence of interest in these substances, such as psilocybin, lysergic acid diethylamide (LSD) and N,N-dimethyltryptamine (DMT).

These are currently being studied for psychiatric disorders such as treatment-resistant depression, end-of-life anxiety, and addictive disorders with emerging positive evidence [5–8]. Psychedelics' therapeutic action is thought to result from neurobiological and psychological effects that may also be relevant to chronic pain [9].

At the neurobiological level, psychedelics act primarily as agonists at the 5-HT2A receptor, which induces neuroplastic changes like synaptogenesis and dendritic growth [10]. These processes are accompanied by changes in functional connectivity within large-scale brain networks, including the default mode network, salience network, and thalamocortical pathways, all of which are implicated in pain chronification and depressive rumination [10,11]. Through these mechanisms, psychedelics may increase neural flexibility and enable cognitive reappraisal of pain. Preclinical studies also indicate anti-inflammatory effects, with reductions in pro-inflammatory cytokines such as TNF-α and IL-6, which are known to play a role in central sensitization and chronic pain states [12,13]. Additionally, animal models show that a single psilocybin administration can reduce pain-related behaviors for an extended period [13].

Limited clinical evidence provides converging support for these mechanisms. Qualitative research has shown that individuals self-medicating with psychedelics for chronic pain report pain relief with full psychedelic doses, often describing increased acceptance, empowerment, and hope compared to conventional therapy [14,15]. The importance of psychological insight and the reconfiguration of pain perception in mediating therapeutic effects was further highlighted in a Phase Ib study on unilateral neuralgiform headache [16]. In addition, a case series of three patients who used micro-doses of psilocybin showed a relief of their neuropathic chronic pain as well as an increase in their functional mobility [17]. In a recent study, healthy volunteers who received a low dose of LSD showed higher tolerance to pain without experiencing any hallucinogenic effects [18]. Combined, these studies highlight how psychedelics modulate pain through both affective and cognitive dimensions, rather than direct analgesic effects. These findings suggest that psychedelics may address neurobiological and psychological aspects of chronic pain, especially in patients with comorbid depression.

In Switzerland, since 2014, patients with certain chronic conditions for which effective treatment options are limited may access psychedelic-assisted psychotherapy under "Compassionate Use" provisions. Each individual treatment must receive authorization from the Swiss Federal Office of Public Health (FOPH) on a case-by-case basis.

In this article, we report the case of a patient suffering from long-standing, treatment-resistant low back pain of mixed origin, including a neuropathic component, associated with recurrent depressive disorder. The patient received psychedelic-assisted psychotherapy at the specialized program at Geneva University Hospitals [19], which was associated with notable clinical improvement.

2. Detailed Case Description

A 55-year-old female patient was referred with a history of persistent somatoform pain disorder, presenting as chronic low back pain of mixed origin with a neuropathic component. The symptoms emerged shortly after a body-lift surgery and had persisted for more than ten years. The pain was described as compressive, burning, and occasionally electric in nature, beginning in the right buttock and radiating cranially along the spine to the sacral and lumbar regions, predominantly on the right side. The average pain intensity was rated at 4/10, with exacerbations reaching (8–9)/10. Pain was alleviated by dorsal decubitus and worsened by sitting or mobilization.

In the context of chronic pain, the patient developed a recurrent depressive disorder. There was no family history of somatic complaints. She had received multiple lines of

conventional and adjuvant treatment without significant or lasting benefit. These included standard analgesics at effective and appropriately administered doses, as well as more targeted therapies (see Figure 1), combined with a range of non-pharmacological interventions: physiotherapy, psychomotor therapy, structured physical exercise, integrative life cycle therapy, a multidisciplinary program for chronic low back pain, ten sessions of transcranial magnetic stimulation, and hypnosis. Figure 1 summarizes the pharmacological strategies attempted, ranging from conventional analgesics (paracetamol, NSAIDs, opioids) and adjuvant agents (muscle relaxants, pregabalin) to neural therapy with procaine, topical capsaicin application, and intravenous infusions of lidocaine and ketamine. Despite these successive approaches, none provided meaningful or lasting improvement.

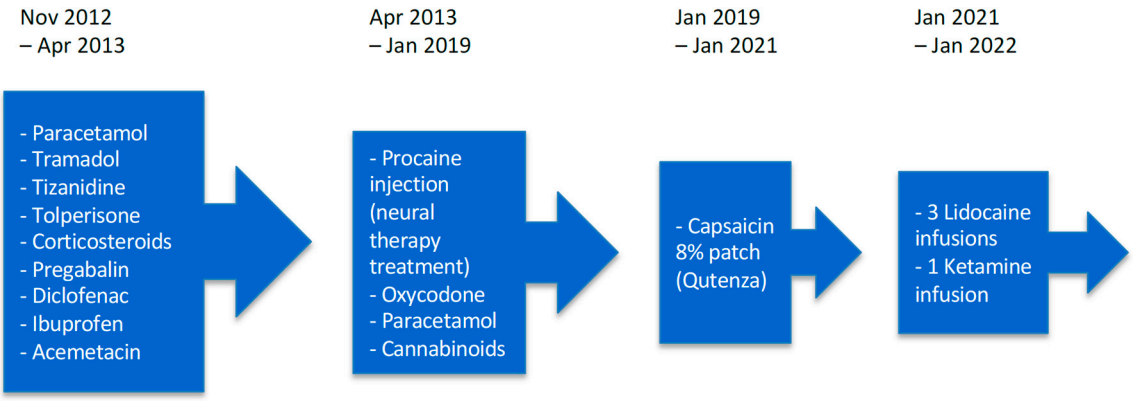

Figure 1. Treatment timeline diagram.

In addition to her depressive symptoms, she presented with fluctuating anxiety marked by ruminations, sleep disturbance, and physical symptoms like chest tightness. Her psychiatric history included recurrent depressive episodes, one of which required hospitalization. She also had a history of adverse childhood experiences and worked in a stressful environment. Notably, growing up with an emotionally abusive, alcoholic father contributed to her psychological vulnerability. Despite continuous psychotherapy, she still struggled with low self-esteem, anxious rumination, and unresolved interpersonal trauma, all of which added to her psychological burden before psychedelic treatment.

Psychotropic medications included various agents trialed over the years, such as zolpidem, duloxetine, quetiapine XR, flurazepam, lorazepam, and vortioxetine. The patient also engaged in long-term psychotherapy. All psychotropic medications had been discontinued for at least three years prior to psilocybin-assisted therapy, except for occasional use of zolpidem (Stilnox CR ret 12.5 mg). She was no longer taking any analgesic medication as previous pharmacological therapies had failed to produce meaningful benefit.

Each psychedelic session was part of a structured therapeutic protocol. Preparatory meetings focused on building a strong therapeutic alliance, setting patient intentions, and discussing practical aspects like music selection and anxiety management techniques. A psychiatrist performed pre- and post-session evaluations to ensure patients' well-being and mental state before administering psychedelic drugs and was in the vicinity throughout the treatment. During the sessions, the patient wore eyeshades and listened to music, with a nurse present for reassurance and safety monitoring. No additional specific psychotherapeutic techniques were used during the psychedelic sessions. The following day, an integration session was conducted to help the patient reflect on her experience, connect it to her therapeutic goals, and apply her insights to daily life. The patient's regular psychotherapy with her primary therapist continued throughout the period of PAP. This approach aligns with published descriptions of the Geneva PAP model [19]. The patient received four psychedelic treatment sessions at 3-month intervals. Psilocybin was ad-

ministered in oral doses of 20 mg during the first two sessions, 25 mg during the third session, and 20 mg during the fourth. The treatment was administered in the form of capsules containing 5 mg of psilocybin dihydrate—certified for compassionate use from ReseaChem GmbH, Burgdorf, Switzerland. Treatment took place in an outpatient setting, conducted by a multidisciplinary team of psychiatrists and psychiatric nurses experienced in the use of psychedelic-assisted psychotherapy. Each session lasted approximately seven hours. During this time, the patient lay in a calm, neutral room and listened to music—either chosen by herself or provided by the team (including electronic "psychedelic" music or meditative soundscapes). Post-session asthenia was noted, but no serious adverse effects occurred.

The first session was described by the patient as generally pleasant, although accompanied by a feeling of sadness and episodes of more intense emotional distress. She reported a visceral sensation "as if something had come out of (her) belly," followed by a sense of freedom and lightness. Her chronic pain persisted throughout the session but was perceived as more manageable; she reported an increased ability to channel it, which contributed to a sense of self-confidence.

The second session was marked by a feeling of anger and a darker emotional tone. The patient described a powerful internal vision of a mountain with her deceased father's soul at its summit, during which she felt she was able to forgive him for abuse suffered throughout her childhood and early adult life. This emotional release was followed by a profound sense of peace. She subsequently described an increased acceptance of her physical pain, accompanied by a sense of openness, lightness, and inner calm.

At the beginning of the third session with the highest dose of 25 mg psilocybin, the patient again reported a moment of spiritual connection and a sense of pleasantness. However, the session became more challenging as the pain became more prominent and triggered thoughts of death—though without any suicidal ideation. Her pain was rated the highest in this session. She reported feeling anger, fatigue, and fear of being overwhelmed. These were accompanied by sadness and anxiety, but also by a sense of progression: she reported that she could recognize new perspectives and imagine becoming more grounded in the present moment.

Due to the high pain sensation during the third session, the patient requested a lower dose of 20 mg psilocybin for the fourth and final session. During this session she reported feeling less pain during the experience including pain free moments, stating that she was able to "ease" it. Instead, she experienced an emotion of well-being. In the middle of the session, a difficult memory emerged involving an encounter with her father. However, she felt she had truly made peace with him—something she had not managed during his lifetime. She also emphasized the importance of nurturing her relationship with nature, which she recognized as a key source of personal resilience.

3. Results

The Brief Pain Inventory score (BPI) is a widely used tool for evaluating both the intensity of pain and its impact on daily functioning in patients with chronic pain conditions [20]. This score measures several dimensions, including pain severity at different times of day, its interference with daily activities such as work, mood, and social relationships, and the effectiveness of pain-relieving interventions. Depressive symptoms were assessed using the Beck Depression Inventory-II, a validated self-report questionnaire for identifying the severity of depression [21]. A BDI-II score of $\geq$21 (out of 63) is considered indicative of clinically relevant depressive symptomatology.

Table 1 and Figure 2 summarize the patient's BPI and BDI-II scores throughout the treatment and follow-up. Overall, her BPI scores showed partial but fluctuating improve-

ment, dropping from 39 at baseline to 20 at nine months. Of note, her BPI score temporarily rose to 32 after the third session, which she described as the most challenging. This session was marked by pain intensification, fatigue, anger, and existential thoughts during a stressful time at work. In contrast, her BDI-II scores showed a steady improvement, falling from 24 at baseline to 7 after the fourth session and remaining below the pathological threshold at the 3- and 9-month follow-ups.

Table 1. Evolution of BPI and BDI-II scores across treatment and follow-up.

Time Point	BPI Score	BDI-II Score
Baseline	39	24
After 1st session	25	15
After 2nd session	23	15
After 3rd session	32	14
After 4th session	24	7
3-month follow-up	23	9
9-month follow-up	20	8

BPI: Brief Pain Inventory, BDI-II: Becks Depression Inventory-II.

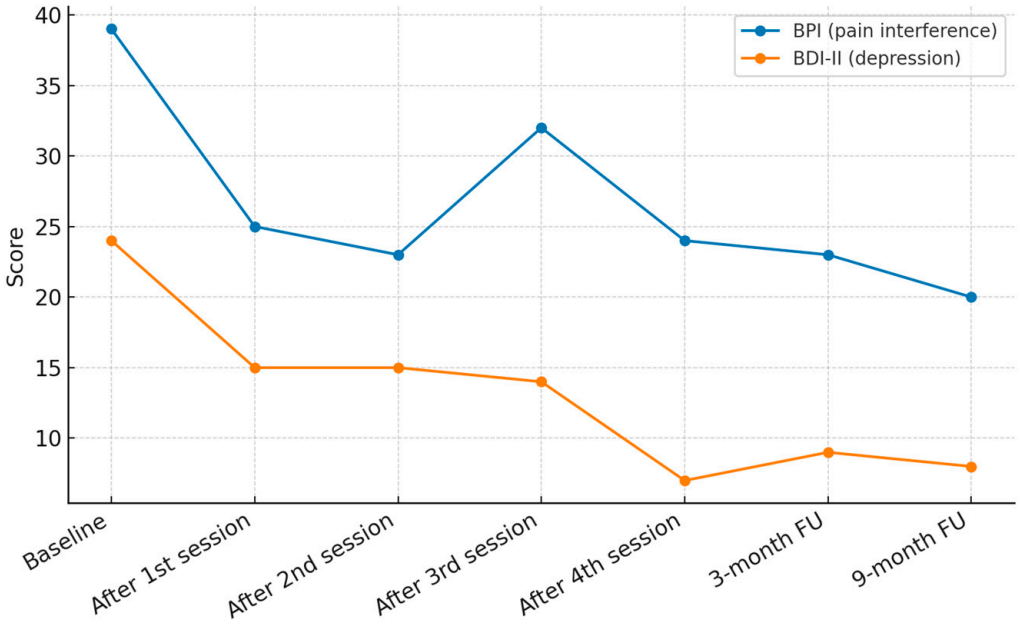

Figure 2. Evolution of BPI and BDI-II scores across sessions.

Analysis of her BPI subscores (Table 2) reveals that the most significant improvements were in sleep and enjoyment of life. Both decreased from high baseline interference (6–7) to minimal interference (1–2) at nine months. While improvements in mood and social relations were sustained, benefits to general activity and walking were partial and less consistent.

Although the qualitative nature of her pain remained unchanged and its intensity was still rated as 4/10, the patient reported experiencing less overall discomfort in her daily life. She described greater enjoyment in everyday activities and a marked reduction in how chronic pain negatively impacted her functioning. Importantly, she reported an increased acceptance of her pain, which contributed to an overall improvement in her quality of life.

Table 2. Evolution of BPI subscores (interference items).

Subscore	Baseline	After 1st	After 2nd	After 3rd	After 4th	3-mo FU	9-mo FU
General activity	6	5	4	6	4	5	5
Mood	7	4	4	5	4	4	4
Walking ability	4	3	2	4	2	3	2
Normal work	4	4	4	5	4	4	3
Relations with others	5	3	3	4	4	3	3
Sleep	6	3	3	4	3	2	1
Enjoyment of life	7	3	3	4	3	2	1

FU: follow-up.

4. Discussion

The relationship between depression and pain is complex and not yet fully understood, though the influence of depression on pain is well established. Some studies suggest a decrease in pain sensitivity in people suffering from depression, while others show an increase in the pain threshold perception, depending on comorbid anxiety, attentional focus and affective modulation pathways [22,23]. In this case, PAP appeared to alter pain perception. Despite the persistence of pain intensity, the patient reported increased acceptance, decreased interference with daily life, and a remission of depressive symptoms. These improvements occurred after years of unsuccessful conventional therapies and were persistent at follow-up at three and nine months, highlighting PAP's potential to catalyze psychological change.

Beyond the reduction in depressive symptoms, the patient reported meaningful improvements in daily functioning, including sleep, enjoyment of life, and social interactions. These gains suggest that PAP altered her subjective experience of pain less by reducing its intensity and more by decreasing its interference and fostering greater acceptance. This is an important distinction, as the patient's pain intensity itself remained stable at around 4/10 throughout the intervention. In this sense, the treatment should be viewed as a success in enhancing her quality of life, resilience, and emotional coping, rather than in reducing the pain signals themselves. From a clinical perspective, such improvements in functioning are highly relevant even without changes in pain intensity.

The neuropathic component of chronic pain also warrants consideration. Neuropathic pain is often resistant to standard pain medications and involves maladaptive changes in pain pathways [24]. Preclinical work suggests that psilocybin may be useful in treating this type of pain by modulating these processes through its 5-HT2A-mediated neuroplastic and anti-inflammatory effects [12].

A key observation was a temporary increase in the patient's pain during and after the third session, which she experienced as particularly challenging. Such transient exacerbations may reflect how the emotional and physical intensity of psychedelic experiences can temporarily amplify distress before leading to long-term integration. Importantly, both pain interference and depressive symptoms decreased afterwards. This pattern aligns with qualitative findings that emphasize pain acceptance and emotional release as key therapeutic processes [15,16]. It also highlights the need for psychological support during and between sessions.

This patient's response further aligns with clinical studies of psilocybin for major depressive disorder that have shown rapid and sustained reductions in BDI-II scores. For example, Carhart-Harris et al. (2021) found psilocybin to be as effective as escitalopram over six weeks, with greater improvements in well-being and emotional responsiveness [6].

Similarly, Gukasyan et al. (2022) reported significant and lasting BDI-II reductions up to 12 months after just two high-dose sessions [7]. In our patient, the BDI-II score dropped below the pathological threshold and remained stable, echoing these results and suggesting that psilocybin may induce durable remission of depressive symptoms even in complex pain populations.

Psilocybin has an advantageous therapeutic profile, with rapid onset of action, few side effects and low addictive potential [13]. Animal studies have demonstrated that a single dose of psilocybin leads to a prolonged reduction in pain [13]. A small number of case studies have demonstrated similar effects on pain: using macro-doses of psilocybe mushrooms for various pain conditions such as phantom limb pain [25], lupus-related pain [26], and chronic pain syndrome [27], as well as micro-dosing for chronic pain syndrome [17].

Emerging studies emphasize the central role of psychological insight and recontextualization of pain in the therapeutic process. A qualitative study involving 11 participants reported shifts in patients' relationship with their chronic pain, characterized by increased hope, empowerment, and optimism [15]. Similarly, and an open-label Phase Ib study investigating the use of psilocybin in patients with unilateral neuralgiform headache found that psychological insight involving a reconfiguration of the relationship with their pain was instrumental in the observed therapeutic benefit [16].

The synergy between psilocybin and psychotherapy appears central. While the patient had previously engaged in long-term psychotherapy with only partial improvement, the addition of psilocybin appeared to facilitate a therapeutic breakthrough by potentially enhancing psychological flexibility and openness, allowing greater engagement with avoided affective material. However, this interpretation remains speculative and should be viewed cautiously, as the precise mechanisms are not fully established [15,16]. This was most clearly demonstrated by the resolution of emotionally salient material, including the trauma-related content involving her father.

A further consideration is the patient's pharmacological history. Despite a three-year washout period from all psychotropic treatments (except for intermittent zolpidem use), residual neuroadaptations from her prior exposure cannot be definitively ruled out.

This case is notable including four sessions with pharmaceutically produced psilocybin (20–25 mg) administered in a medical setting with integrated psychotherapy, yielding sustained benefits for at least nine months. In contrast, existing literature on psychedelic-assisted therapy for pain has often relied on dried psilocybin mushrooms, which can lead to less precise dosing. Examples include one report of three potentially high-dose sessions for chronic pain syndrome [27], individual cases for phantom limb pain [26] and lupus-related pain [26], and microdosing regimens [17]. Although the protocols vary, these reports consistently show benefits that converge on improved coping and quality of life. This is consistent with hypotheses that psychedelics may temporarily increase psychological flexibility and enable access to previously avoided affective material and improve pain processing [11,13].

5. Limitations

As a single case report, this study cannot be generalized to broader populations. Individual responses to psychedelics are known to vary based on a number of factors. The durability of therapeutic effects, optimal dosage, and role of the therapeutic setting remain to be established in randomized controlled trials [28]. While psilocybin has demonstrated a favorable safety profile in psychiatric research [10], questions remain regarding long-term risks such as hallucinogen persisting perception disorder, exacerbation of latent psychiatric conditions, and interaction with dopaminergic pathways in chronic use [29]. While no adverse effects were observed up to nine months, long-term safety beyond this

period is uncertain. Ongoing monitoring is essential, as potential risks may emerge later and require further study. In addition, placebo effects and expectancy bias cannot be excluded, particularly given the patient's motivation and prior therapeutic engagement. The therapeutic alliance with the clinical team may also have contributed to the perceived benefit, underscoring the complex interaction between pharmacological, psychological, and relational factors in PAP. Another limitation is the patient's past medication history. Prior use of serotonergic antidepressants, benzodiazepines, and atypical antipsychotics may have caused lasting receptor-level changes, especially at 5-HT2A and GABA-A sites, even though she had stopped these medications at least three years before PAP (with only occasional zolpidem use). These factors may have influenced her therapeutic response, either negatively, by desensitizing receptors, or positively, by promoting psychological openness after discontinuation [30–32].

6. Conclusions

This case supports the possibility that psychedelic-assisted psychotherapy may offer a novel, integrative treatment approach for chronic pain, particularly in cases marked by comorbid depression. By targeting both neurobiological and psychological dimensions of suffering, psilocybin may enable a shift in pain perception and coping. Controlled clinical trials are needed to confirm efficacy, dosing, and safety for broader clinical implementation. Future research should also include extended follow-up to clarify long-term safety, given the possibility of delayed adverse effects despite the favorable 9-month outcome in this case.

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Abbreviations

The following abbreviations are used in this manuscript:

LSD	Lysergic Acid Diethylamide
PAP	Psychedelic-Assisted Psychotherapy
NSAID	Non-Steroidal Anti-Inflammatory Drug
BPI	Brief Pain Inventory
BDI-II	Beck Depression Inventory-II
FU	Follow-up

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