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CASE REPORT

# Plica Neuropathica as a Presenting Rare Dermatologic Symptom of Schizophrenia

Waritsara Piyanonpong, Poonkiat Suchonwanit

Division of Dermatology, Department of Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Correspondence: Poonkiat Suchonwanit, Division of Dermatology, Department of Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, 270 Rama VI Road, Ratchathewi, Bangkok, 10400, Thailand, Tel +66-2-2011141, Fax +66-2-201-1211 Ext 4, Email poonkiat@hotmail.com

**Abstract:** Plica neuropathica (PN), also known as plica polonica, trichoma, matting, felting, or bird's nest hair, is a common but rarely reported hair disorder. It is characterized by the abrupt onset of irreversible hair entanglement, forming a densely matted hair mass. PN has been associated with the use of ionic or herbal shampoos, vigorous hair care practice, self-neglect, systemic infection, parasitic infestation, immunosuppressive drugs, and psychiatric conditions. However, literature supporting the coexistence of PN in psychiatric disorders is scarce. PN may be one of the presenting symptoms observed by physicians. In some cases of psychiatric illness, patients consult more readily with non-mental health professionals than psychologists or psychiatrists. To highlight this issue, we herein report a case of PN in a 32-year-old woman with a 1-month history of being unable to detangle her hair. The patient initially visited the dermatology department and was subsequently diagnosed with schizophrenia following psychiatric consultation. After establishing the fundamental diagnosis apparently underlying the PN, psychiatric treatment with antipsychotic medication and dermatological treatment of the hair condition were instituted. There was an improvement in both at the four-week follow-up. This case history highlights a rare presentation of schizophrenia.

**Keywords:** electrostatic force, hair care, matted hair, psychodermatology, self-neglect, trichology

## Introduction

Some psychiatric patients, particularly those with psychotic disorders, may not appreciate that they are ill or unusual in any manner, which makes evaluating medical conditions in individuals with coexisting physical and psychological disorders difficult. They may not seek medical attention despite experiencing abnormal symptoms, and doctors may encounter unfrank medical history given, which requires interpretation with physical and mental status examination.

Schizophrenia is a neuropsychiatric condition characterized by delusions, hallucinations, and other negative psychiatric symptoms including anhedonia and disorganized behavior.[1] Since, compared to the general population, patients with schizophrenia are at increased risk for other comorbidities, including dermatologic diseases, identifying skin disorders associated with schizophrenia may id physicians in addressing the burden of the diseases in patients.[2] Since the majority of patients initially attribute whatever symptoms they experience to cause other than psychological issues, delaying psychiatric treatment, dermatologists are frequently among the first physicians to encounter them. Therefore, dermatologists must be cognizant of dermatological conditions with possible psychological backgrounds and consult with psychiatrists. We herein report a case of plica neuropathica (PN) in a patient who first visited the dermatology department and was subsequently diagnosed with schizophrenia after a complete psychiatric evaluation.

## Case Presentation

A 32-year-old Thai woman visited the dermatology department alone and sought consultation because she had been unable to detangle her hair for the past month, a condition that spontaneously occurred. She washed and conditioned her hair every other day with commercial products but did not dry it using a hair dryer. The patient had normal personal hygiene. Prior to visiting the dermatological clinic, a visit to the hairdresser failed to correct her problem. Thereafter, her



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condition worsened. The hair mass became more prominent and still unable to be detangled because she continued her usual hair care practice. She had no history of hair or scalp disorders and denied any scalp symptoms. The patient's medical history was unremarkable. According to the history obtained from the patient, there was no history of previously diagnosed psychiatric disorders, either in the patient or her family. Importantly, we noticed several abnormal thinking and bizarre behaviors in the patient during her dermatologic evaluation, including bizarre delusion, in which she frequently mentioned she was spied on by a witch, a high level of anxiety, which was shown as restlessness and irritability, and disorganized speech, which we noticed when the patient talked about one topic, she mostly jumped to another unrelated issue. Therefore, a concomitant psychiatric consultation was performed.

A physical examination of the patient revealed compact and stiff masses of hair in the vertex, parietal, and occipital scalp regions, with frontal area sparing (Figure 1). The hairs were not malodorous, but multiple casts were found on hair shafts. The scalp showed fine scales without erythema. Trichoscopy revealed fractured hair, trichorrhexis nodosa, and telogen roots embedded in the hair mass (Figure 2). Microscopic examination of the hair shaft revealed hair casts without infestations. Routine blood and urine tests revealed no abnormalities. Based on the clinical presentations and investigations, the patient was diagnosed with PN. We recommended daily hair care by soaking in water, applying olive oil, rinsing with a gentle shampoo, and detangling the hair mass. Gradual cutting of the matted hair was advised, but she declined due to cosmetic concerns.

Two days after the dermatological examination, the patient visited the psychiatric outpatient clinic with her mother. Regarding psychological evaluation by a psychiatrist, the patient is an unmarried woman, educated up to 3rd year of university. She belongs to a broken family of middle socioeconomic status and resides in an urban area. She had no prior substance abuse history. As informed by her mother, who stated having a distant relationship with the patient, the patient had behavioral changes for six years, but this was the first time for psychiatric consultation. The patient appeared healthy until age 26 when her personality started to change gradually. Three years ago, the patient developed symptoms, including self-muttering and occasional irrelevant speech and became increasingly isolated. Her sleep was also disturbed, and she continuously took over-the-counter medications for insomnia; however, her sleep disturbance still occurred intermittently. Her mother informed us that her personal care was regular except for her refusal to use a hair dryer for approximately one year because she said she always heard voices of a woman speaking to her and warning her of severe illness from the hair dryer use. On mental status examination, the patient was alert but had difficulty concentrating on

**Figure 1** Compact and stiff masses of hair in the vertex, parietal, and occipital scalp areas.

**Figure 2** Trichoscopic examination demonstrating fractured hair, trichorrhexis nodosa, and telogen roots embedded in the hair mass.

a target idea. Longer thinking latencies were observed. Cognitive functions were impaired, including memory, thinking, and concept formation. She revealed an inappropriate smile, and her speech was sometimes irrelevant and scanty. According to her history and mental state examination, the patient revealed bizarre delusion and disorganized speech, as presented on the day she visited the dermatological clinic. She also had an auditory hallucination, as she still complained of a woman telling her the negative impact of the hair dryer use, and negative symptoms, manifested as a reduction in facial and vocal expression and decreased interest in activities she used to enjoy. Therefore, the patient was diagnosed with schizophrenia by the psychiatrist and prescribed olanzapine (20 mg/day).

After four weeks of treatment, the patient and her mother attended both dermatological and psychiatric outpatient clinics. The patient's mental state partially improved, as she had more organized speech, mood and vocal expression. She said she rarely heard voices telling her about the harm from the hair dryer. Scheduling by her mother, she regularly took olanzapine as the prescribed dosage. Regarding the hair condition, smaller hair masses and normal hair around their borders were visible (Figures 3A and B). Although matted hairs remained, the patient was satisfied with overall hair improvement

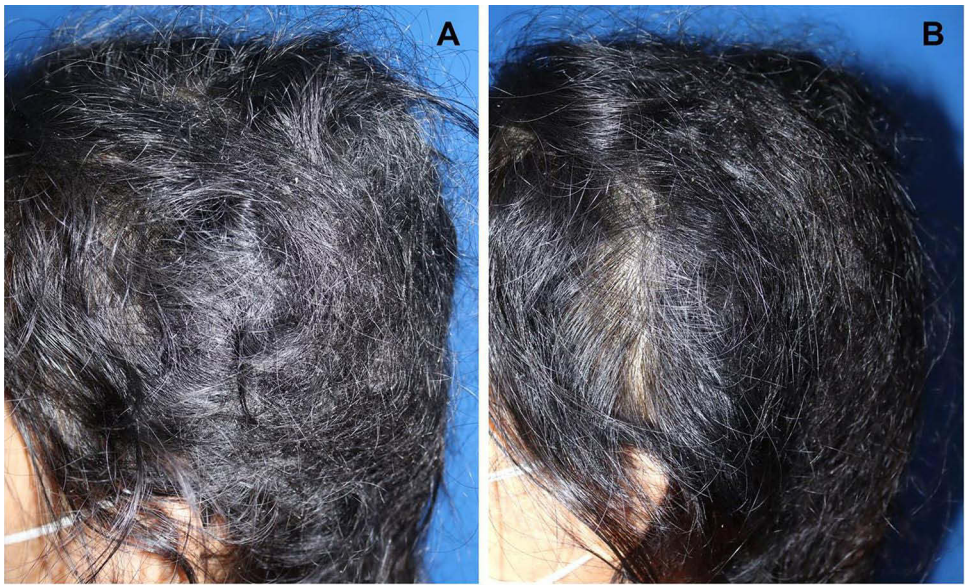


**Figure 3** The improvement of the matted hair: (**A**) before and (**B**) after four weeks of treatment, smaller hair masses and normal hair around their borders were visible.

**Table 1** Previously Reported Cases of Plica Neuropathica Associated with Schizophrenia

| Authors, Year | Sex | Age | Presenting Symptoms | Treatment | Result/Clinical Course |
|---|---|---|---|---|---|
| Kumar et al, 2001[22] | Female | 30 | • Delusion of persecution, muttering to self, social withdrawal, preoccupied behavior for 2 years<br>• Sudden hair tangling for 1 year despite oiling and washing the hair regularly, following by lice infestation | • Hospital admission for 3 weeks<br>• Risperidone 8 mg/day<br>• Trihexyphenidyl 4 mg/day<br>• Psychological intervention | • Significant improvement in psychopathology<br>• Unimproved hair condition, rejected haircut |
| Kumar and Rajmohan, 2012[21] | Female | 38 | • Persecutory delusion, auditory hallucination, fearfulness, irrelevant talk, decreased interest in household activities<br>• Sudden tangling of scalp hair in the hair lock on the vertex | • Inpatient admission<br>• Chlorpromazine 400 mg, trihexyphenidyl 4 mg, nitrazepam 10 mg<br>• Haircut<br>• Removed hair lock in a religious ritual | • Psychopathology and hair condition improvement |
| Pruszyński et al, 2013[23] | Female | 51 | • Inability to perform simple and complex activities of daily living, delusions of control<br>• Entangled hair with roots in parietal lobe area, reached to middle of the back | • Olanzapine up to 10 mg/day | • Regained ability of self-care<br>• Agreed to cut the plait after 6 weeks to tidy up her hair |
| Dutta et al, 2015[24] | Female | 33 | • Poor self-care, muttering, disorganized behavior, self-smiling, aggressiveness, irrelevant talk for 5 months<br>• Curling, twisting, tangling of her hair for 5 months | • Olanzapine 20 mg/day<br>• Trihexyphenidyl 2 mg/day<br>• Haircut<br>• Psychoeducation | • Improvement in psychological conditions<br>• No further abnormal hair growth |
| Sönmez et al, 2022[25] | Female | 46 | • Diminished self-care, intense persecution, delusions, significant weight loss after medication discontinuation by herself<br>• Oily and scaly skin<br>• Firm-to-hard mass of matted hair over the vertex and occiput for 5 months, 30 cm in length | • 32 days of hospital admission<br>• Olanzapine up to 20 mg/day<br>• Psychotherapies<br>• Psychoeducation<br>• Haircut<br>• Hair care by special shampoo | • Improvement in psychological conditions<br>• Healthy hair |

following our recommendation. She continued to deny cutting her hair but expressed willingness to undergo the same treatment and attend the next follow-up visit.

## Discussion

PN is an acquired hair disorder characterized by sudden onset, irreversible matting of hair, which appears as a compact mass with irregular twists and normal appearing scalp.[3–5] Its trichoscopic features include 180° twisted hair, honey-colored concretions resembling a "wrangled mesh of wires" appearance, fractured hair shafts, and trichorrhexis nodosa.[3,6] PN is considered a relatively rare condition with an unknown incidence; however, a female predilection has been documented, likely since women tend to have longer hair and increased risk of developing psychological disorders.[7–9]

PN was initially reported by Le Page in 1884, who described a 17-year-old female patient suffering from hysteria, whose hair was tangled into a solid mass that she could not untangle.[10] Subsequently, additional PN cases have been associated with ionic or herbal shampoos, vigorous hair care practice, self-neglect, systemic infection, parasitic infestation, immunosuppressive agents, or psychiatric morbidities.[5,11–15] Individuals with mental disorders may manifest PN, and most initially attribute whatever symptoms they experience to cause other than psychiatric problems. Therefore, efforts should be made to identify underlying psychological conditions that may be comorbidities of PN.

Since the 19th century, PN has been wrongly considered a representation of a person's spirit, superstition, or religious beliefs. It was prevalent in Central and Eastern Europe, and among members of the Sadhus tribe in India.[7] In the first reported case by Le Page, the patient's parents believed that PN was a visitation from God.[10] In Thailand, enquiries and discussions regarding PN tend to include superstitious aspects. From 2019 to 2021, several online media outlets in Thailand reported PN-related stories. For example, matted hair is a sign of fortune and cutting it off may lead to severe illness or death unless it is done via supernatural means.

The precise mechanism by which matted hair is produced is not fully understood. Several hypotheses have suggested mechanisms for the occurrence of PN but none have been conclusively supported experimentally. Factors including electrostatic force, hair care products, behavioral factors such as rubbing or neglecting hair, and concurrent psychological conditions have been implicated in the hair matting process.[16] Electrostatic attraction occurring from mechanical force applied on hair shafts causes hair felting. Moreover, detergents used during hair care practice can provide electrostatic and mechanical factors that initiate PN development.[5] The disorganized behavior and inappropriate self-care observed in patients with psychiatric disorders may increase risk of PN development.[6,7] PN is overrepresented among patients with mental disorders.[17] However, few cases of psychological disturbances have been described in the literature. Previously reported psychological conditions relevant to PN include hysteria, autism, schizophrenia, severe reactive depression, obsessive-compulsive disorder, and mixed anxiety-depressive disorder.[7,10,18–21] Reported cases of PN associated with schizophrenia are summarized in Table 1.[21–25]

Treating PN is challenging because simple modalities such as manual separation and soaking with organic solvents are usually unsuccessful.[3,6] Based on current evidence, cutting matted hair is the most effective option. In individuals with anagen effluvium associated PN (ie chemotherapy and severe illness), whose matted hair eventually falls out, hair regrowth can occur normally without treatment. Moreover, psychiatric comorbidities should be properly evaluated and managed in some cases to improve patient outcomes. PN can be prevented by regular hair cleaning with mild shampoos and deep hair conditioners, gentle oiling and combing, proper hair trimming, and avoiding vigorous hair care practices.[4]

## Conclusion

The current case of PN subsequently diagnosed as schizophrenia was reported to remind clinicians of the possibility of this co-occurrence. Despite the lack of knowledge of a precise mechanism of PN, we suggest that improper hair care and disorganized thinking and behaviors may have initiated PN in this patient. PN is an acquired hair abnormality with an unknown incidence, and psychological disturbances likely play a significant role in its etiology. PN is not an actual hair disorder, but rather results from behavioral, physical, chemical, medical, and mental factors. Although its diagnosis is primarily clinical, trichoscopic examination could support its diagnosis and help identify coexisting hair and scalp disorders. Furthermore, dermatologists should be aware of associated psychiatric disorders in PN patients since they may be the first physician to encounter them. Therefore, all patients with PN should be screened for underlying psychological abnormalities,

as emerging evidence tends to support their association. Dermatologists should pay attention to skin/hair conditions that may have accompanying psychological bases and forge close liaison with psychiatry. Doing family assessments may be a way of organizing the referral to psychiatry. In contrast, if the psychiatrist is the first physician to encounter PN, dermatologic consultation is recommended, as particular patients need advice for appropriate hair care methods. Early detection and management limit the disease burden and improve the quality of life of those living with psychiatric disorders.

## Ethics Approval and Consent to Participate

This article was performed in accordance with the principles of Declaration of Helsinki. Ethical review and approval was not required to publish the case details in accordance with the local legislation and institutional requirements. Written informed consent was obtained from the patient for publication of this case report and any accompanying images as per our standard institutional rules.

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