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Case Report

Penile Telescoping, Dermatological and Multisystem Adverse Effects of Lithium Therapy in a Middle-aged Man: A Case Report in a Resource-Limited Setting

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Abstract

Background: Lithium is the gold standard in the management of bipolar affective disorder (BAD). This case is unique because it involves multiple lithium adverse effects in a patient on long-term lithium therapy, showcasing a rare dermatological and genital complication. It has longitudinal laboratory monitoring of lithium assays and describes the complex interplay of factors that led to the rare genital complication.

Method: Information was derived from his medical records, clinical interview, in-patient and out-patient records, multidisciplinary management, and serial lithium levels assessed at intervals of not more than 3 months. Also, electrocardiograms, thyroid function tests, renal function tests, and other investigations spanning across 8-10 years of follow-up were conducted. WHOQOL-BREF assessed his quality of life. This was followed by correlating temporal changes in serum lithium levels and clinical findings to assess patterns of lithium toxicity. Specialist evaluations from general medical practice, urology, cardiology, dermatology, neurology, and nephrology were extrapolated to characterize the multisystemic manifestations and rare complications. Informed consent was obtained from the patient for the publication of this report including the patient's perspective, while his personal information has been anonymized and de-identified. This report was prepared following the Case Report (CARE) guidelines.

Results: Genital findings include marked scarring of the penile shaft and penile telescoping, while dermatological examination revealed psoriatic plaques in the genital area, umbilical region, and prominent silvery scaling on both elbows. Metabolic effects include truncal obesity, subclinical hypothyroidism, and Blood pressure changes. There was evidence of chronic kidney disease with an eGFR of 56ml/min/1.73m². The chronic burden of these multisystem side effects led to a reduced quality of life. However, serum lithium levels showed values within the therapeutic range, despite these adverse effects.

Conclusion: This report demonstrates that chronic lithium therapy exposure influences morbidity, with the patient developing progressive multi-organ effects despite serum lithium levels within therapeutic range. This underscores the need for proactive clinical inquiry about the multiple systems during lithium therapy, irrespective of the tolerated therapeutic dose.

Keywords: "adverse effect", "Bipolar disorder", "case report", "lithium therapy", " penile telescoping"

Introduction

A particularly unique aspect of this case is the presence of a rare and underreported genital complication, that is, acquired penile telescoping secondary to glans scarring and abnormal adiposity. There hasn't been any description of a direct relationship between this complication and lithium therapy in current literature, making this a potentially novel finding. While lithium has been associated with cutaneous manifestations such as psoriasis (Cuniberti et al., 2024) and weight gain that may lead to altered body habitus, the progression to significant urogenital impairment with associated urinary and sexual dysfunction is highly unusual. (Eskandari., 2025)

This finding broadens the scope of possible adverse effects from lithium therapy and suggests a need for greater clinical vigilance and holistic physical examination of systems, including those the patient may feel reluctant to report (Yi OS., 2022). It also demonstrates extensive multisystemic toxicity associated with chronic lithium therapy in a single patient being managed for Bipolar Disorder, despite serum lithium levels largely remaining within or near the therapeutic range. Although there have been reports of lithium causing neurological, endocrine, dermatological and renal adverse effects, they are often reported individually or in limited combinations. In contrast, this patient exhibited multiple organ systems involvement occurring simultaneously, emphasizing the concept of cumulative toxicity rather than acute, dose-dependent toxicity. This highlights the need for comprehensive physical examination and laboratory monitoring of systemic lithium toxicity other than just serum lithium levels alone. (Gitlin., 2016)

Patient Information

A 58year old married African business man with a long standing history (over 3 decades) of mood disorder, consistent with Bipolar Affective Disorder presenting for routine outpatient follow up. The patient had been on long -term lithium therapy with sustained use for approximately 10-15 years alongside other adjunct medications.

His Premorbid personality had been characterized by being calm, introverted, religious, and socially well-adjusted. He resides in a resource-limited area, where access to medications, laboratory monitoring, and specialist care have been largely inconsistent due to cost, industrial actions, healthcare constraints, and logistics sometimes necessitating external sourcing, including importation of his drugs. He has experienced multiple episodes of the illness characterized by predominantly manic symptoms with periods of remission in between episodes. His treatment course had been marked by unorthodox approaches and intermittent medication non-adherence largely due to inconsistent access to medications and financial constraints Baseline Weight at presentation: 65 kg, height 1.63 metres, BMI 24.5kg/m², and Waist circumference 98cm.

There was difficulty maintaining Psychiatric stability without lithium therapy having failed to respond to other mood stabilizers. Presenting in the 6th episode of mental illness with 2 months history of Hyperactivity, Talkativeness, Undue irritability, Hearing voices of unseen persons in clear consciousness, making false claims about his identity. He was admitted on the 5th of August, 2017 to the male psychiatric ward of the hospital, spent 2 months on admission, and was ,managed as a case of Bipolar Affective Disorder, Current Episode Manic With Mood Congruent Psychotic Features. Index episode was preceded by failure to comply with medication and erratic availability of his lithium therapy.

Also, there was financial constraint affecting medication adherence and toxicity monitoring. He was noted to have verbalized financial constraints in procuring the lithium carbonate tablets and other medications aggravated by scarcity of lithium carbonate in Nigeria's pharmacies which led to subsequent medication non-adherence. At the time, a pack of lithium cost ₦50,400, which

will last him about 6 weeks. And he couldn't get at all the pharmaceutical stores in his state for a couple of weeks. He currently imports his latest stock of lithium carbonate from the United Kingdom. The patient provided written informed consent for the publication of this case report and accompanying images.

Management:

Psychopharmacological treatment was commenced, routine investigations (Full blood count, Electrolytes, Urea and Creatinine, Urinalysis) were requested; medications reinstated; Tabs Chlorpromazine 200mg AM, 300mg ON, Tabs Benzhexol 5mg AM and 5mg 6PM, Tabs lithium 800mg daily; long-acting IM zuclopenthixol 200mg stat which led to substantial clinical improvement.

By four months on lithium, his wife reported slurred speech, neck stiffness, and body weakness, though the patient said the symptoms had subsided. At 27 months, his weight had increased to 77 kg. By August 2022, after about six years of treatment, he presented with worsening tremors of the lips and both hands; mental state examination confirmed fine bilateral hand tremors.

At 67 months, he developed loose watery stool occurring at least three times daily for one week, without mucus, blood, fever, abdominal pain, or body weakness. Symptoms improved with oral rehydration therapy and antibiotics, while bilateral hand tremors remained the only positive physical finding. At 71 months, he reported worsening skin rashes and persistent mouth and hand tremors. At 79 months, he complained of right knee pain and excoriations affecting both elbows, the umbilical region, and perineum; examination showed fine bilateral hand tremors and hypopigmented skin patches.

At 82 months, he again reported recurrent loose watery stool, two episodes daily for one week, with similar past episodes resolving after lime or tea. Serum lithium assay, thyroid function test, electrolytes/urea/creatinine, and liver function tests were requested, but he declined because of financial constraints despite counselling on the importance of monitoring for lithium toxicity. At 84 months, he returned with investigation results. His wife noted worsening slurred speech during prolonged talking, and persistently elevated blood pressure over six months was documented. Consequently, lithium carbonate was reduced to 600 mg daily, while other medications were unchanged.

By 101 months on lithium therapy, he presented with investigation results and a one-year history of progressive penile shrinkage, with complete retraction of the glans into the shaft. This was associated with difficulty voiding urine and inability to have sexual intercourse. He reported needing to squat to avoid urine dribbling and splitting, and his last intercourse with his wife was one year earlier.

Table 1 illustrates the summary of the pattern of presentation over the last 10 years, while figure 1 shows their progression, and figure 2 summarises the lithium levels during these periods

Figures 3 and 4 show psoriatic patches on dorsal surface of both hands. Figure 5 shows similar psoriasis plaques on both elbows, about 4 by 4 cm, Figure 6 shows a 2cm scaly, hyperpigmented lesion on the umbilicus with truncal obesity.

Figures 7 and 8 show urogenital examination findings with retraction of the glans penis into the penile shaft, hypopigmented scaly skin rashes on the shaft of the penis, surrounding erythema around the corona, whitish discharge deposit around the glans.

Table 1: Pattern of Presentation and Interventions

Case Report Timeline: Multisystem Adverse Effects of Long-term Lithium Therapy

Time/Year	Clinical Events & Symptoms	Investigations	Interventions/Outcomes
1983 (Age 24)	First episode – mania	–	Unorthodox care → remission
1984	Second episode	–	Unorthodox care → remission
2001	Third episode	–	Private psychiatric care → remission
2006	Fourth episode	–	Admission, lithium introduced
2008	Fifth episode (non-adherence)	–	Admission → remission
2017	Index episode: mania with psychosis	Baseline labs	Lithium + antipsychotics
1–4 months	Skin rash, tremors, slurred speech	Lithium ~1.2–1.25	Monitoring, dose adjustment
5 months	Persistent tremors	TFT abnormal	Subclinical hypothyroidism
7–12 months	Stable mood, tremors persist	Lithium 0.8–1.0	Continue treatment
30 months	Hypomania	Lithium 0.98	Dose adjustment
54 months	Tardive dyskinesia	Lithium 0.8	Pyridoxine added
67 months	Diarrhea	Lithium 0.72	Dose reduced
71–75 months	Psoriasis worsens	Creatinine ↑	Further dose reduction
~100 months	Penile telescoping	TFT abnormal, BP ↑	Specialist referral
105 months	CKD stage G3a	Lithium 1.3, eGFR 56	Lithium reduced, multidisciplinary care

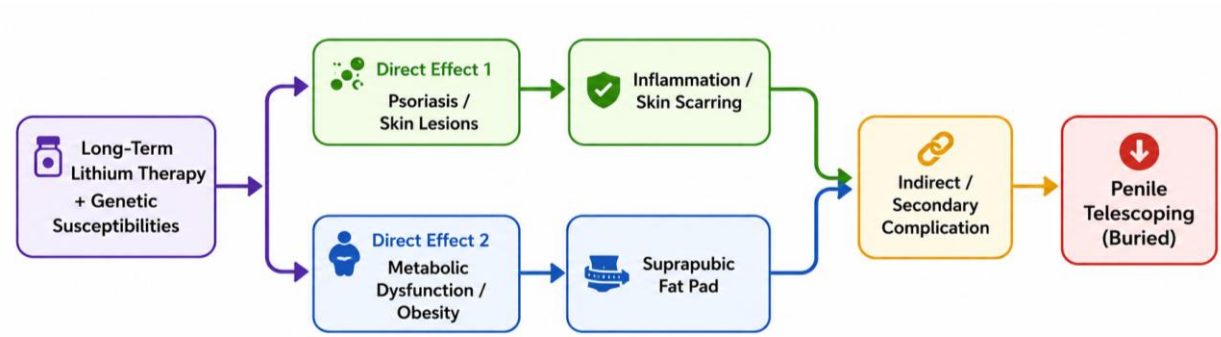

Figure 2

Figure 3:

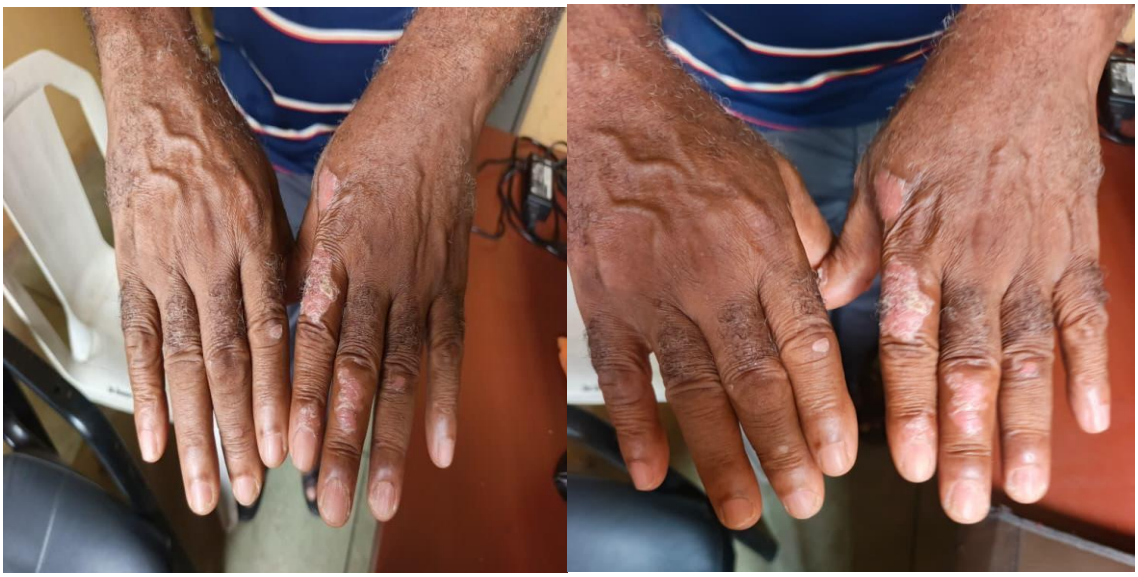

Figure 3 and Figure 4: Psoriatic plaques and patches at the dorsum

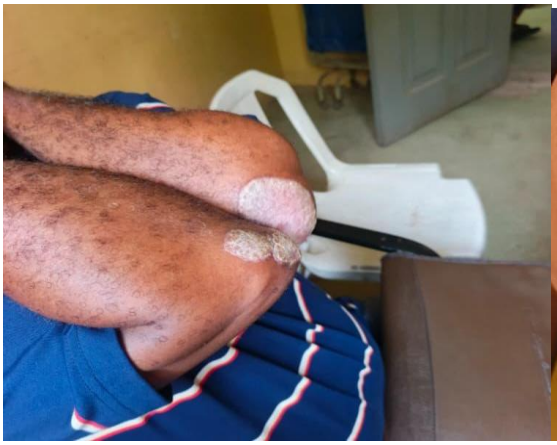

Figure 5: Plaque at the elbows.

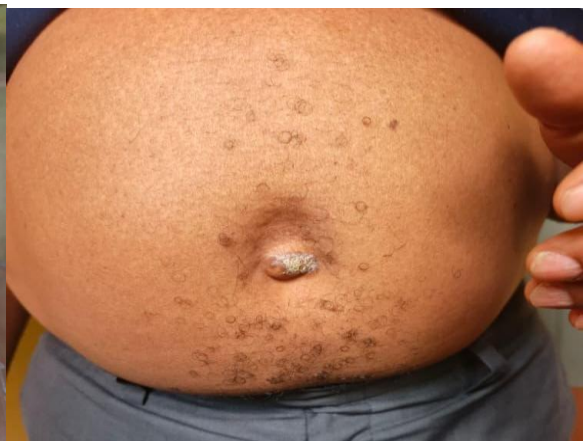

Figure 6: Umbilical plaque and obesity

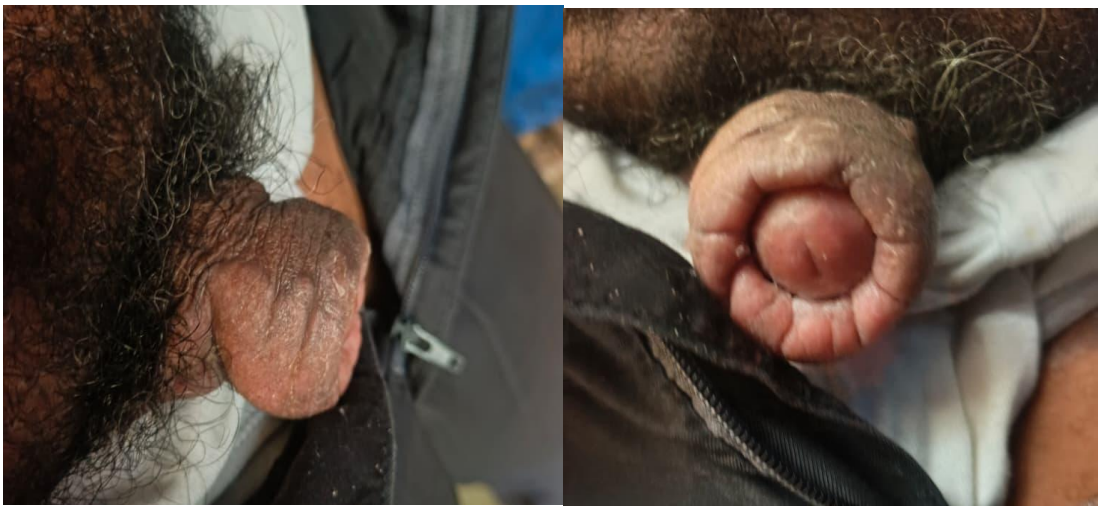

Figure 7 and Figure 8: Penile telescoping

Multi-disciplinary interventions

The management plan involved coordinated pharmacological, psychological, dermatological, genito-urinary, surgical, psychosocial, monitoring, and relapse-prevention interventions.

The use of the lowest effective dose with close monitoring remains the core strategy in reducing morbidity. A risk vs benefit assessment should be done to reassess need for lithium, while considering a gradual switch or augmentation if risks outweighs benefits, alternatives considered in this case include olanzapine. He was counselled on lifestyle modifications including diet and exercise and the drugs adjusted to abate the reported complaints. The dose of Chlorpromazine was reduced from 300mg ON to 200mg ON, Lithium carbonate, Depot Zuclopenthixol decanoate dose however remained unvaried. During the 91 months on lithium therapy, the dose of chlorpromazine was reviewed downward to 100mg ON, and atypical antipsychotic mood stabilizer Tabs Olanzapine 20mg ON was added, Tabs Benzhexol was also reviewed to 5mg BD, Lithium remained unvaried at 600mg daily, Pyridoxine phosphate 100mg Bd. The dose of lithium carbonate was reviewed downwards on different occasions following reports of adverse effects, laboratory findings suggestive of toxicity and upward trend of serum lithium from 800 mg > 600 mg > 400 mg daily.

Dermatological care included topical corticosteroids and retinoids, follow-up for suspected lithium-induced psoriasis, assessment for alternative dermatoses such as lichen sclerosis, and possible biopsy to exclude chronic inflammatory or premalignant conditions. Genito-urinary care addressed obesity through lifestyle modification, restoration of skin integrity, hygiene counselling, and treatment of secondary infections. Urology review was recommended for possible penile shaft reconstruction, suprapubic lipectomy, skin grafting, urethral evaluation, and management of glans scarring if voiding symptoms persisted. Psychosocial care included couple counselling, support for body image concerns, occupational therapy for tremors, and structured sexual function assessment using IIEF-5. Ongoing monitoring should include lithium levels, renal and thyroid function, weight, BMI, and blood pressure, with multidisciplinary specialist review. Relapse prevention emphasized psychoeducation on medication side effects, lithium toxicity, early relapse signs, adherence, follow-up, and diagnostics including uroflowmetry, PVR, and cystoscopy.

Patient's Perspective:

"I have had this illness for many years, and I must acknowledge that the medications, especially lithium, have helped me maintain mental stability most of the time. However, I have had to cope with many bodily changes over the years which is quite distressing. The tremors in my hands are always there and make it hard for me to do simple things. I also developed skin problems that itch and change how my skin looks which worries me when people around me notice.

The most troubling issue is a problem with my private part, which has gradually decreased in size. I now find it difficult to urinate unless I squat. Intimacy with my wife has also been affected, which has reduced my self-esteem as a man. The specialists I was referred to suggested that most of my problems may be due to my medication. This puts me in a difficult situation because the same drug that helps my mental health is also causing serious side effects. They also mentioned that this might explain my abnormal kidney function tests, blood pressure, and other health problems I have developed. Despite these challenges, including the cost of treatment and tests, I would like to

remain mentally stable while hoping for a way to reduce these side effects and enjoy my life better.

Prognosis

He has demonstrated Psychiatric stability with good response to lithium therapy, the need for dose reduction due to toxicity however predisposes him to risk of future relapse, particularly given his recurrent history of relapses following medication non-adherence.

The medical prognosis is also more concerning, in the presence of chronic kidney disease (stage 3a, Subclinical hypothyroidism, persistent neurological symptoms (tremors, dyskinesia), and dermatological complications. Renal impairment is likely to progress over time with continued lithium exposure, although dose reduction may slow down progression.

The genito-urinary complications (acquired penile telescoping) may greatly impact a patient's quality of life, as reversibility is uncertain without surgical interventions.The functional impairment related to voiding and sexual dysfunction are likely to persist without specific treatment approaches.

Contextual factors such as financial constraints, inconsistent access to medications and laboratory monitoring,and health system disruptions further influence the prognosis, increasing risk of delayed complications detection, suboptimal treatment adjustments, and overall poorer outcome.

Discussion

Lithium has been shown to demonstrate multisystemic toxicity. The renal system is a major target of this assault. Reduction in glomerular filtration rate and urine concentrating ability has been reported in systematic review. Hypothyroidism, hyperparathyroidism leading to hypercalcaemia, and weight gain were also reported in the same review. A population-based cohort study of patients with a mean duration of 55 months on lithium therapy however did not demonstrate a consistent effect of therapeutic lithium levels on rate of change in estimated glomerular filtration rate (eGFR) over time suggesting renal function affectation results from acute lithium toxication rather than prolonged use in the stable maintenance dose. Age, baseline eGFR, concomitant use of nephrotoxic medications, comorbidities and history of lithium toxicity rather than duration of exposure to lithium and average serum lithium levels were found to be predictors of reduction in eGFR(Clos et al., 2015).

Polyuria (urine output greater than 3000ml/24hrs) and polydipsia (excessive thirst) are common side effects of lithium therapy occurring in up to 70% of chronic use. Polydipsia is thought to result from reduction in the ability of the kidneys to produce concentrated urine Risk factors for these symptoms include increased treatment duration, raised serum lithium levels, multiple lithium intoxication, use of antipsychotics.

Lithium is notable for its narrow therapeutic window, with the implication that there is a tight margin of safety with small dosage changes capable of causing toxicity. Toxicity even within therapeutic serum levels is a real possibility with the use of the medication as blood lithium levels are not always an accurate reflection of intracellular toxicity. Chronic lithium toxicity is potentially life threatening due to the risk of lithium accumulation in the intracellular spaces. This is an important reason for lithium prescription hesitancy among psychiatrists despite it being widely recognized as the gold standard medication in the management of bipolar affective disorder (Gitlin, 2016).

Preventing lithium intoxication, regular serum lithium measurement with aim of achieving

efficacy at lowest possible concentration, annual serum creatinine monitoring and restricting lithium use to once daily dosing have been proposed to reduce the potential for nephrotoxicity from lithium use. (Gitlin, 2012)

The antithyroid effects of lithium are well recognized. Possible mechanisms include blockade of thyroid hormone release from the thyroid gland, reduced iodine storage in the thyroid and inhibition of thyroid hormone production. Some of these effects are even exploited for the treatment of hyperthyroidism (Kibirige et al., 2013; Lazarus, 2009).

Regarding neurological effects, tremor is a common side effect occurring in up to 25% of patients on lithium.(Gitlin, 2016) Lithium-induced tremor could occur at any point in treatment, especially in the early stage with potential for improvement after long-term treatment. Tremors were more frequent at serum lithium levels above 0.7mmol/l. Advanced age, use of antipsychotics and antidepressants, and increased serum lithium levels have been seen to correlate with higher risk of tremor.(Vestergaard et al., 1988). More serious neurological complications of lithium toxicity include cerebellar dysfunction manifesting as ataxia, dysarthria and dysmetria.

Though neurological symptoms of lithium use are usually reversible, permanent irreversible symptoms have been reported. A serious neurological condition termed “The syndrome of irreversible lithium effectuated neurotoxicity (SILENT) syndrome” has been described in 1987 following a review of 55 cases of persistent complications of lithium therapy. The neurological sequelae consisted of cerebellar signs though atypical presentations included optic neuritis, papilloedema, isolated downbeat nystagmus, peripheral neuropathy and myopathy. Widespread peripheral nerve demyelination was found on biopsy with the suggestion that similar demyelination may have also occurred in the central nervous system. (Adityanjee, 1987). Risk factors include fever, high serum lithium in the context of intoxication and co-administration of antipsychotics or antidepressants. The syndrome can also occur within therapeutic serum lithium concentrations and symptoms have been noted to persist for several months following lithium discontinuation highlighting the need to focus on prevention by addressing risk factors. (Farouji et al., 2023)

Weight gain has been shown to occur in the first 2 years of lithium treatment (average weight gain of 4kg) before weight is seen to stabilize. Pre-treatment body weight and concomitant antidepressant therapy were found to be contributory to weight gain.(Vestergaard et al., 1988). Postulated mechanisms of weight gain include increased thirst leading to intake of calorie-heavy drinks, undetected hypothyroidism and oedema.

Dermatological side effects including adverse cutaneous reactions have been reported from lithium therapy. The first report linking lithium use to adverse skin reactions was in 1968 with five patients on treatment for mania developing pruritic maculopapular rashes and cutaneous ulcers within the first 21 days of treatment. The lesions resolved upon dosage reduction or treatment with steroids and antihistamines without recurring with subsequent increase in the dose of the medication. Emphasizing the potential toxicity of lithium even within therapeutic levels, four of the five patients experienced the cutaneous reactions at serum lithium levels significantly lower than expected toxic levels. (Callaway et al., 1968). Acne and psoriatic lesions have also been reported with lithium therapy. Psoriasis was commoner in men possibly due to the effect of testosterone (Chan et al., 2000; Pinna et al., 2017)

In addition to the highlighted multisystem effects, lithium has been associated with a range of sexual side effects including erectile dysfunction, reduced libido, orgasmic dysfunction and premature ejaculation with mechanisms such as reduction in testosterone and impaired nitric oxide function (leading to impaired penile smooth muscle relaxation) implicated (Sheibani et al., 2022)(Almeida et al., 2023; Ferensztajn-Rochowiak & Rybakowski, 2023). Despite an extensive search of the literature, it was difficult to find published cases of penile telescoping in the context of treatment with lithium. To our knowledge, reports linking chronic lithium therapy with adult acquired buried penis are extremely limited, making this case clinically noteworthy.

Penile telescoping is the clinical manifestation of adult acquired buried penis, a condition in which a normal-sized penis progressively becomes concealed beneath suprapubic skin, subcutaneous tissue and fat. (Ho & Gelman, 2018)

Possible causes include obesity, connective tissue defects, penile scarring from lichen sclerosis or chronic balanitis.

Altered appearance and penile hygiene as well as voiding and sexual dysfunction may result. Spraying and dribbling of urine are possible outcomes as seen in the case being discussed. This has significant psychosocial implications with shame, stigma and practical difficulties with daily life as experienced in the limitation of sexual intercourse (patient's inability to have conjugal relations with his spouse). He also has difficulties passing urine normally. Obesity which is an important cause of the anatomical changes in the condition was also noted in this patient with a progressive increase in weight over the course of treatment. In the condition, the normal sized phallus appears shorter due to the reduction in the visible penile area.(Ho & Gelman, 2018) This is a potential cause for distress in men who may have come to associate penile length with virility and manliness, shaping perceptions of masculine competence sexual attractiveness and authority(Aich et al., 2026). This patient as noted below in the patient's perspective verbalized distress at the apparent shortening of the penis; this was compounded by the practical difficulties experienced in voiding and sexual intercourse.

Weight gain results in selective fat deposition in the suprapubic area. As the suprapubic fat pad surrounds the penis circumferentially, the patient is forced to sit to void due to dribbling of urine.(Ho & Gelman, 2018) This was voiced as a great source of distress in this case. The changes in the skin-penis structure provides a fertile ground for microbial growth as a result of persistent pooling of moisture around the penis leading to recurrent bacterial or fungal infections. This case also had suboptimal hygiene and developed a scaly rash. Chronic infection can result in inflammatory skin contracture and a phimotic scar ring which could then lead to further invagination of the penile shaft skin, further enveloping the penis.

The observed multiple organ system involvement in toxic effects is most plausibly attributable to chronic lithium therapy. A causal relationship is supported by a temporal relationship between the neurological, renal, endocrine, dermatological and metabolic features which clearly developed after prolonged use of lithium. These findings are biologically plausible, as each has been well described among the recognized adverse effects of long-term lithium treatment. The progressive clinical deterioration despite therapeutic serum lithium concentrations is in line with the body of evidence that chronic toxicity may occur through cumulative tissue exposure rather than raised serum levels alone

A partial improvement following lithiu.m dose reduction further supports a treatment-related effect, although established chronic complications may not be completely reversible. Alternative explanations, including concomitant chlorpromazine .and olanzapine therapy, obesity and ageing, were considered. While these factors may have contributed to specific issues such as weight gain, they do not fully explain the combination of renal dysfunction, neurological features, worsening psoriasis and the temporal progression observed over long-term follow-up.

The patient's acquired buried penis (penile telescoping) is unlikely to represent a direct adverse effect of lithium. Rather, it is more plausibly an indirect consequence of lithium-associated weight gain, with obesity promoting suprapubic fat deposition and progressive concealment of the penile shaft. This proposed mechanism is coherent with current understanding of adult acquired buried penis, in which obesity is recognized as the commonest underlying cause. Chronic psoriasis and inflammatory skin changes may also have contributed to local tissue changes, making the overall process multifactorial.

Although causality cannot be conclusively established from a single observational case, the temporal relationship, biological plausibility, multisystem involvement, longitudinal clinical course, partial improvement following lithium dose reduction and exclusion of more likely alternative explanations strongly support chronic lithium exposure as the principal contributor to the patient's adverse clinical outcomes. The acquired buried penis is most plausibly explained as an indirect consequence of lithium-associated obesity rather than a direct pharmacological effect of lithium itself.

The primary “take-away” lessons of this case report

Therapeutic serum lithium concentrations should not be regarded as absolute guarantees of safety, as chronic toxicity may occur despite levels within the therapeutic range. This case highlights the potential for cumulative multisystem adverse effects involving the renal, neurological, endocrine, dermatological and metabolic systems, with possible indirect consequences such as adult acquired buried penis secondary to lithium-associated weight gain. It underscores the importance of regular clinical and laboratory monitoring, early recognition of chronic toxicity, and multidisciplinary management to minimize morbidity, particularly in resource-limited settings where access to specialist care and monitoring may be constrained.

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