Case Report

DOI: 10.7860/JCDR/2026/87269.24427

Juvenile Psoriatic Arthritis with Incidental Horseshoe Kidney: A Rare Case Report

Paediatrics Section

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ABSTRACT

Juvenile Idiopathic Arthritis (JIA) represents the most common chronic rheumatologic disorder in children, encompassing a group of heterogeneous conditions with varied clinical manifestations. Juvenile Psoriatic Arthritis (JPsA) is a distinct subtype characterised by the association of arthritis with psoriasis or its related features. JPsA, a heterogeneous subtype of JIA, accounts for approximately 5% of all JIA cases, with reported ranges between 1% and 10%. An eight-year-old girl presented with subacute oligoarthritis involving bilateral hips and the right knee, along with nail pitting and minimal psoriatic skin changes, leading to a diagnosis of JPsA based on the International League of Associations for Rheumatology (ILAR) criteria. An incidental horseshoe kidney, a congenital renal anomaly with an incidence of approximately 0.2-0.25% in the general population and no established association with JPsA, was identified during evaluation. The child responded well to Non Steroidal Anti-Inflammatory Drugs (NSAIDs) and methotrexate. The present case is notable for the rare co-existence of JPsA and an incidental horseshoe kidney, with no previously established association between the two conditions. It also underscores the importance of identifying congenital renal anomalies when planning long-term immunosuppressive therapy. Although incidental, identification of such renal anomalies is clinically relevant when planning long-term anti-inflammatory and immunosuppressive therapy.

Keywords: Autoimmune disease, Congenital renal anomaly, Oligoarthritis, Psoriasis

CASE REPORT

An eight-year-old girl presented to the Paediatric Outpatient Department with a 3-month history of bilateral hip pain and intermittent swelling of the right knee. The knee swelling was insidious in onset, initially noted as mild fullness around the joint and gradually increased in size over time. It was initially intermittent but became more persistent, with mild fluctuations in severity. There was no history of preceding trauma, fall, or insect bite. The swelling was associated with a dull aching pain and morning stiffness lasting approximately 30-45 minutes, which improved with activity. Caregivers noted local warmth over the joint, without redness, skin discolouration, or visible venous prominence. There was no history of acute exacerbation with severe pain or inability to bear weight.

The child experienced difficulty in squatting, climbing stairs and rising from a sitting position on the floor, with mild limitation of daily activities since the past two months. There was no history of joint locking, clicking, or instability. The swelling was non migratory and showed no diurnal variation and no similar swelling was noted in other joints during the course of illness. There were no associated systemic symptoms such as fever, weight loss, night sweats, or fatigue. There was no history suggestive of preceding infections, including upper respiratory, gastrointestinal, or genitourinary illness and no bleeding manifestations such as easy bruising or recurrent joint bleeds.

There was no prior history of similar complaints or involvement of small joints of the hands or feet. There were no features suggestive of connective tissue disorders, including oral ulcers, photosensitivity, or alopecia. The child had no significant past medical history and was not on any long-term medications prior to presentation. Birth history was uneventful, developmental milestones were appropriate for age and immunisations were up to date. Family history was negative for psoriasis, arthritis, or other autoimmune diseases.

On examination, the child was afebrile (37.3°C), with a heart rate of 110 beats per minute and a respiratory rate of 30 breaths per minute. Her height was at the 3rd centile and weight between the 3rd and 10th centiles. Examination of the right knee revealed diffuse periarticular swelling involving the suprapatellar and parapatellar regions, with local warmth and mild effusion. There was no erythema or deformity. Range of motion was restricted, with flexion limited to approximately 90-100 degrees and terminal extension restricted by about 10 degrees due to pain.

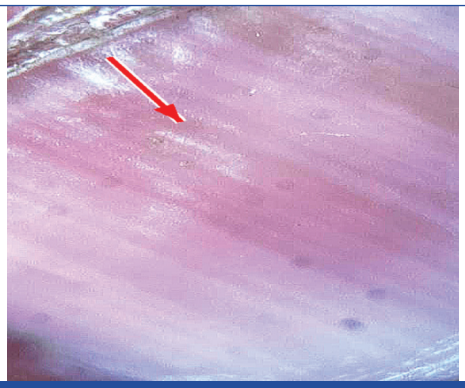
Both hips were tender on deep palpation, with mildly reduced range of motion, particularly in internal rotation and abduction. Internal rotation was limited to approximately 20-25 degrees bilaterally, with mild restriction of abduction. External rotation was relatively preserved but elicited discomfort. Gait was mildly antalgic due to hip discomfort and the child avoided squatting. Nail pitting was observed in multiple digits. There was no clinical evidence of uveitis. No features of dactylitis, enthesitis, or spinal involvement were noted. At presentation, there were no clinical features suggestive of uveitis. A formal ophthalmologic evaluation with slit-lamp examination was advised as part of routine screening for JIA-associated uveitis, with plans for periodic follow-up.

Functional status was assessed clinically through detailed history and physical examination, with emphasis on activities of daily living (including mobility, self-care and play activities), school attendance and caregiver-reported functional limitations. Although a formal Childhood Health Assessment Questionnaire (CHAQ) score was not obtained, the child demonstrated only mild limitations in daily activities, consistent with mild functional impairment.

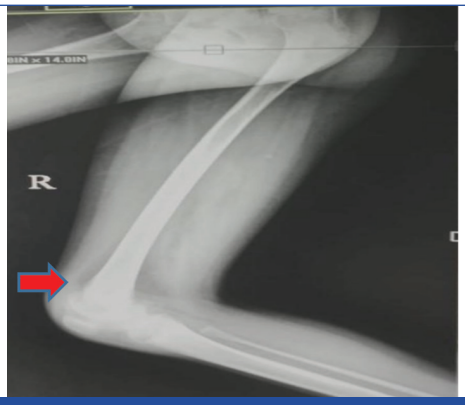
The chronic joint symptoms had a modest impact on school attendance and participation in routine activities. The child experienced intermittent difficulty attending school during periods of increased pain and stiffness, along with reduced participation in physical play and peer interactions. The condition also imposed a mild caregiver burden due to the need for ongoing care and regular medical follow-up.

Following initiation of treatment, there was a clear improvement in school attendance, activity levels and overall functional participation. However, the absence of a standardised functional assessment tool such as CHAQ may limit objective quantification and comparability of functional outcomes.

Laboratory evaluation demonstrated mild thrombocytosis (545,000/mm^3). The C-reactive protein level was mildly elevated at 6 mg/L (reference <5 mg/L). The erythrocyte sedimentation rate was 22 mm/hour, which is mildly elevated for age (normal <15 mm/hour in children). Fibrinogen levels, liver enzymes, creatine kinase, renal function tests and urinalysis were within normal limits. Rheumatoid factor and anti-cyclic citrullinated peptide antibodies were negative. Human Leukocyte Antigen B27 (HLA-B27) testing was negative. Karyotyping revealed a normal chromosomal profile. Onychoscopy revealed irregular, deep nail pits with an erythematous background, consistent with psoriatic nail involvement [Table/Fig-1]. Plain radiography of the right knee showed synovial thickening with joint effusion [Table/Fig-2].

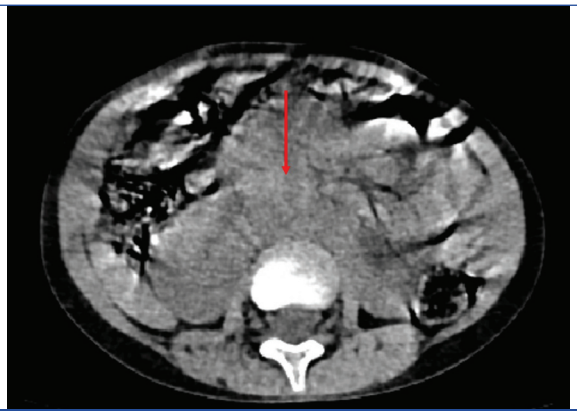


[Table/Fig-1]: High-magnification image of the nail plate demonstrating focal pitting (arrow), caused by defective keratinisation in the proximal nail matrix. Nail pitting is a characteristic feature of psoriatic nail involvement.



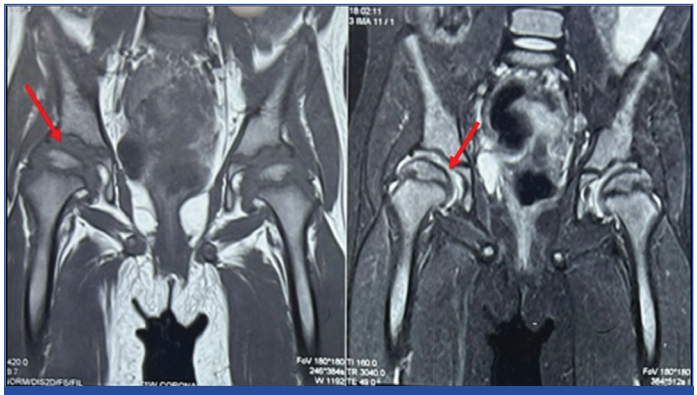
[Table/Fig-2]: The lateral knee radiograph demonstrates increased soft tissue density and distension of the suprapatellar pouch anterior to the distal femur, consistent with joint effusion.

Abdominal Computed Tomography (CT) scan revealed fused kidneys at the lower poles with a connecting isthmus anterior to the abdominal aorta, consistent with a horseshoe kidney [Table/Fig-3]. Corticomedullary differentiation was preserved bilaterally, with no significant pelvicalyceal dilatation. Both ovaries were visualised and appeared normal in volume.



[Table/Fig-3]: Axial CT demonstrates a midline renal parenchymal isthmus anterior to the vertebral body, consistent with a horseshoe kidney.

Coronal MRI of the pelvis demonstrates bilateral hip joint effusions with capsular distension and associated synovial thickening, consistent with bilateral hip joint synovitis [Table/Fig-4]. Gram stain and cultures of synovial fluid were negative.



[Table/Fig-4]: Coronal MRI of the pelvis demonstrates increased intra-articular fluid within the hip joint causing capsular distension, along with associated synovial thickening (arrows), consistent with hip joint effusion and synovitis.

With infectious arthritis excluded, differential diagnoses included early-onset oligoarticular JIA, reactive arthritis and JPsA. Based on the presence of chronic arthritis and characteristic nail changes, in the absence of alternative diagnoses, a diagnosis of JPsA was established in accordance with the International League of Associations for Rheumatology (ILAR) criteria [1].

According to ILAR classification, JPsA is defined as arthritis and psoriasis, or arthritis with at least two of the following: dactylitis, nail pitting or onycholysis and a family history of psoriasis in a first-degree relative. In the present case, the child had chronic oligoarticular arthritis involving the hips and knee, along with characteristic nail pitting, fulfilling the ILAR criteria for JPsA. There was no evidence of rheumatoid factor positivity, enthesitis, or other features suggestive of alternative JIA subtypes and infectious causes were excluded.

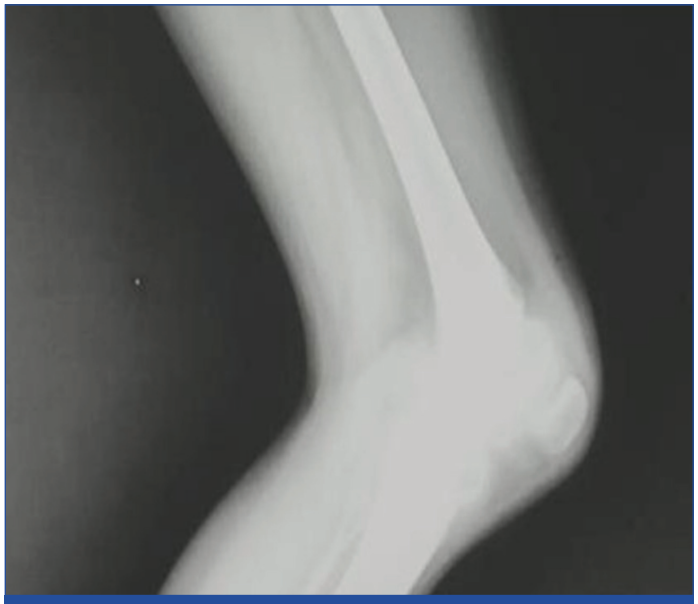
The child was initiated on oral paracetamol (15 mg/kg/dose every 6-8 hours as needed) for relief of pain and fever and ibuprofen (10 mg/kg/dose three times daily) for its anti-inflammatory effect in controlling active synovitis. Ibuprofen was continued for approximately three weeks and then gradually tapered and discontinued as clinical improvement was observed, while paracetamol was used intermittently during the initial phase for breakthrough pain.

Given the persistence of arthritis and to achieve disease control, methotrexate was initiated at a dose of 7.5 mg once weekly (approximately 10-15 mg/m^2/week) along with folic acid supplementation (5 mg once weekly, administered 24-48 hours after methotrexate). Methotrexate was continued as the primary disease-modifying therapy. Given the presence of localised knee synovitis, intra-articular corticosteroid injection was considered as a therapeutic option for rapid symptom relief. However, the procedure was deferred due to satisfactory clinical response to systemic therapy.

Renal function was monitored periodically due to the congenital renal anomaly. The family was counselled regarding the chronic and relapsing nature of JPsA, the need for long-term follow-up and the importance of adherence to therapy. They were informed about the expected disease course, potential complications and the need for regular monitoring for disease activity and treatment-related adverse effects. At 12-month follow-up, the child demonstrated sustained clinical improvement with no disease flares. There was complete resolution of knee joint swelling, with absence of effusion and local warmth. Range of motion of the right knee was fully restored, with flexion up to 130-140 degrees and full extension without pain.

Both hips showed significant improvement in range of motion, with internal rotation improving to approximately 35-40 degrees and

abduction to near-normal limits. There was no residual tenderness on deep palpation. Morning stiffness had completely resolved. Functional outcomes showed marked improvement, with the child able to squat, climb stairs and participate in age-appropriate physical activities without limitation. School attendance and participation in daily activities returned to normal, indicating restoration of functional capacity. Nail pitting showed partial improvement, though not complete resolution, consistent with residual nail matrix involvement. No new joints were involved and there were no extra-articular manifestations [Table/Fig-5]. There were no treatment-related adverse effects and renal function remained stable throughout follow-up.



[Table/Fig-5]: Follow-up lateral view of the right knee shows decreased fullness of the suprapatellar pouch with reduced anterior soft tissue density compared to prior imaging, consistent with resolving joint effusion.

Based on clinical assessment, the clinical Juvenile Arthritis Disease Activity Score (cJADAS) improved from an estimated baseline of approximately 13 (moderate disease activity) to ≤2 at 12 months, consistent with inactive disease/clinical remission [2].

a diagnostic challenge; however, characteristic nail pitting with supportive onychoscopic findings was pivotal in diagnosis.

Previous studies have described subsets of JPsA in which arthritis and nail changes predominate without overt psoriasis [3,5]. The close anatomical relationship between the nail unit and the distal interphalangeal joint further supports nail changes as an early marker of psoriatic disease [4]. Recent studies have reinforced that nail involvement may serve as an early clinical marker and predictor of arthritis in children with psoriasis [Table/Fig-6] [3,5,6]. Summarises previously reported cases of JPsA without cutaneous psoriasis.

According to the International League of Associations for Rheumatology (ILAR) classification criteria, JPsA is diagnosed in the presence of arthritis with psoriasis, or arthritis with at least two of the following: dactylitis, nail pitting or onycholysis, or psoriasis in a first-degree relative [1]. In the present case, chronic oligoarticular arthritis with nail pitting fulfilled the classification criteria after exclusion of other causes.

Imaging plays an important role in early detection of synovitis, particularly in deep joints such as the hip. MRI is more sensitive than conventional radiography in detecting synovitis, effusion and early inflammatory changes [7]. In this child, MRI confirmed bilateral hip synovitis, aiding early diagnosis and assessment of disease extent.

Management was guided by a step-wise date/time treat-to-target approach. Methotrexate remains the first-line disease-modifying therapy in persistent oligoarticular disease [8]. The child achieved remission without escalation to biologic therapy. Recent advances in understanding JPsA pathogenesis, phenotypic variability and treatment strategies have further improved early diagnosis and outcomes [9,10]. Imaging studies have also highlighted the role of MRI in detecting subclinical synovitis and guiding early intervention [11]. Additionally, emerging genetic and clinical evidence has expanded understanding of disease heterogeneity and predictors of progression [2].

The incidental finding of a horseshoe kidney warranted careful monitoring. Although renal function is usually preserved, altered anatomy may predispose to urinary stasis and infection; therefore, periodic renal function assessment was undertaken during

Study	Place of the study (ref no.)	Age/Sex	Presence of psoriasis	Key initial features	Nail involvement	Joint pattern	Imaging findings	Outcome
Stoll ML and Punaro M [3]	USA	Variable	Absent in subset	Arthritis ± dactylitis	Present in subset	Oligoarticular-polyarticular	Not specified	Chronic course
Butbul Aviel Y et al. [5]	Canada/USA (multicentre)	Children cohort	Often absent initially	Arthritis preceding psoriasis	Frequent	Oligo/ polyarticular	Variable	Variable outcomes
Brunello F et al., (2022) [6]	Italy	Paediatric cohort	May be delayed	Nail changes as early marker	Common	Heterogeneous	MRI useful	Early treatment improves outcome
Current case	India (present study)	8/F	Absent	Hip + knee arthritis	Nail pitting prominent	Oligoarticular	MRI: Hip synovitis; X-ray: effusion	Remission with MTX

[Table/Fig-6]: Comparison of the present case with previously reported cases of Juvenile Psoriatic Arthritis (JPsA) without cutaneous psoriasis [3,5,6].
Note: This table highlights that arthritis may precede skin manifestations and that nail involvement serves as an important early diagnostic clue in JPsA.

DISCUSSION

The JPsA is a distinct subtype of JIA, accounting for approximately 5-8% of cases and is characterised by arthritis associated with psoriasis or psoriatic features such as nail changes and dactylitis [1]. Diagnosis is often challenging due to its heterogeneous presentation and the frequent absence or delayed onset of cutaneous psoriasis [3].

In children, arthritis may precede psoriasis by several years and nail involvement may represent the earliest or only manifestation of psoriatic disease [3]. Nail pitting, onycholysis and subungual hyperkeratosis reflect inflammation of the nail matrix and are relatively specific indicators of psoriatic disease [4]. In the present case, absence of skin lesions and negative family history posed

methotrexate therapy. JPsA has a variable clinical course and delayed diagnosis may increase the risk of persistent disease and joint damage. Early recognition, appropriate imaging and timely initiation of disease-modifying therapy are essential to improve long-term outcomes [3,5,6].

CONCLUSION(S)

The JPsA may present without cutaneous psoriasis, posing a diagnostic challenge in children. Careful evaluation of nail changes can facilitate early diagnosis and timely initiation of disease-modifying therapy, leading to favourable outcomes. The incidental finding of a horseshoe kidney highlights the importance of comprehensive assessment and cautious monitoring during long-term treatment.

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jan 21, 2026
- Manual Googling: Jun 11, 2026
- iThenticate Software: Jun 13, 2026 (1%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

Date of Submission: **Jan 06, 2026**
Date of Peer Review: **Mar 28, 2026**
Date of Acceptance: **Jun 15, 2026**
Date of Publishing: **Oct 01, 2026**