PACIFIC JOURNAL OF MEDICAL SCIENCES

{Formerly: Medical Sciences Bulletin}

ISSN: 2072 – 1625

Pac. J. Med. Sci. (PJMS)

www.pacjmedsci1625.com. Email: managingeditorpjms1625@gmail.com.

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SHORT RUNNING TITLE: DENGUE FEVER IN ELDERLY

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Submitted: November 2025. Accepted: January 2026

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ABSTRACT:

Dengue is an increasingly common infection among older adults, whose presentations are often atypical and easily misattributed to other causes of fever. We report the case of a 72-year-old man who presented with a short history of intermittent fever, lethargy and increased urinary frequency, initially treated as a suspected urinary tract infection. Laboratory investigations showed leucopenia, thrombocytopenia and mild anaemia. Urinalysis and cultures were negative. Dengue NS1 antigen testing confirmed the diagnosis. During the admission, the patient developed marked thrombocytopenia but did not progress to plasma leakage, bleeding, organ impairment or shock. He was managed with careful supportive care and frequent monitoring, recovering fully by Day 10 of admission. This case highlights the diagnostic challenges of dengue in older adults, whose altered physiological responses may mask classical features such as myalgia, rash and haemorrhagic manifestations. Older adults are at increased risk of severe dengue, prolonged hospitalisation and complications, thus early recognition, judicious fluid management and close observation are essential. Clinicians should consider dengue in older adults presenting with fever and cytopenias in endemic regions, even when symptoms appear non-specific.

Keywords: aged; dengue, fever, leukopenia, thrombocytopenia

INTRODUCTION:

Dengue is a mosquito-borne viral disease, with an expanding global reach and increasing incidence among older adults. Current estimates suggest that over half of the world's population is now at risk, which is expected to increase further due to climate change, urbanization and vector adaptation to new environments [1,2]. The global demographic shift towards an ageing population also means it is imperative that clinicians recognise dengue infections in older people.

Older adults usually present atypically, or have muted clinical manifestations, often lacking the classic dengue triad of fever, myalgia, and rash. Presentations tend to reflect comorbidity-related symptoms or non-specific systemic complaints [3]. Age-related immune dysregulation, multi-morbidity, decreased physiological reserve, and altered inflammatory responses contribute to diagnostic delays and worse outcomes.

Compared to younger adults, older patients have higher rates of severe dengue, dengue haemorrhagic fever (DHF), organ impairment, hospital-acquired infection, prolonged hospitalisation and dengue-related mortality [4,5]. The World Health Organization classifies dengue into febrile, critical, and recovery phases, with each phase associated with different risks. However, dengue in older adults may be less predictable, occasionally deteriorating earlier or outside these phases [6].

We report a case of dengue in a previously well 72-year-old man, whose atypical presentation was initially suggestive of a urinary tract infection. This case highlights the diagnostic challenges and key considerations in managing dengue in older adults.

Case Presentation:

A 72-year-old man presented with a two-day history of intermittent high fever with chills, poor oral intake, light-headedness and increased urinary frequency. He denied dysuria, abdominal pain, arthralgia, rash or bleeding symptoms. His past medical history was benign prostatic hypertrophy (BPH) and thalassaemia trait. He was not on regular medications, other than multivitamins. He was active and independent, working on his farm.

On examination, he was febrile, lethargic, and mildly dehydrated. Cardiovascular, respiratory, abdominal, neurological and dermatologic examinations were unremarkable. There was no lymphadenopathy or organomegaly.

Given the urinary symptoms and background of BPH, an initial diagnosis of urinary tract infection was made. Laboratory investigations showed mild anaemia (Hb 10.3g/dL), leucopenia (WBC $2.2x10^3/\mu L$) and thrombocytopenia (44 $x10^3/\mu L$). Renal and hepatic function tests were within normal limits. Urinalysis and urine culture were negative.

Dengue serology revealed a positive NS1 antigen, with both IgM and IgG initially negative. Intravenous co-amoxiclav was started but discontinued once dengue was confirmed. He received supportive therapy with careful intravenous hydration and close monitoring for bleeding manifestations and plasma leakage.

His platelet count reached a nadir of 26 $x10^3/\mu L$ on Day 3, and his haematocrit declined gradually during the initial part of the admission. Mild transient transaminitis (ALT 66U/L) was

noted, with coagulation profile showing a mildly increased INR of 1.19. The detailed results are shown in Table 1.

Despite thrombocytopenia and mild warning signs such as lethargy and reduced oral intake, he remained haemodynamically stable. He did not develop plasma leakage, mucosal bleeding, organ impairment or shock. He improved clinically and biochemically and was discharged well on Day 10.

Table 1: Blood test results during hospitalization

Parameters	Normal Values	Admit	Day 1	Day 2	Day 3	Day 6	Day 10
White blood cells	4.2-12.6 x10^3/µL	5.4	2.2	3.6	3.1	3.1	4.2
Haemoglobin	13.5-17.9 g/dL	10.3	9.9	9.9	9.5	9.0	9.3
Haematocrit	42-52%	32	31	31	29	28	32
Platelet	174-430 x10^3/µL	192	44	29	26	38	110
Lymphocyte	1.2-7.70 x10^3/µL	1.5	0.3	0.39	0.6	0.6	2.07
C-reactive protein	0.000- 0.500 mg/dL	-	1.3	4.5	2.6	1.4	1.0
Total Bilirubin	3.54-20.5 µmol/L	20	17.5		16.4	26.4	
Alkaline Phosphatase	50-116 U/L	80	49		49	59	
Alanine Transaminase	0-44.9 U/L	21	66		53	43	
Gamma Glutamyl Transferase	0-55 U/L	18	46		39	41	
INR	0.09-1.10		1.19				1.08
Sodium	136-145 mmol/ L	138	137	133	140	141	
Potassium	3.5-5.1 mmol/L	3.8	3.9	3.9	3.5	4.0	
Urea	3.0-9.2 mmol/L	4.8	3.6	3.5	3.5	3.0	
Creatinine	63.6-110.5 µmol/L	73	74	83	73	71	
Bicarbonate	22-29 mmol/L	22	21	21	22	24	
Dengue Serology			NS1 + IgG - IgM -				

DISCUSSION:

This case illustrates the diagnostic complexity of dengue in older adults, whose presentations are often non-specific and easily attributed incorrectly to other conditions, such as a urinary tract infection in this patient. Atypical presentations of dengue are well-documented among older patients, who often lack the classic triad of fever, myalgia or rash, and may instead present with confusion, respiratory or gastrointestinal symptoms instead [3,7].

Delayed recognition contributes to worse outcomes in this population [4,5].

The NS1 antigen test is a useful test during the early febrile phase because it is detectable from the first day of illness and has a high specificity before IgM antibodies appear [6]. In this patient, while both IgM and IgG were initially negative, NS1 positivity allowed a diagnosis to be made. This case demonstrates that in early dengue infections, IgM and IgG antibodies may be falsely negative.

An important aspect of monitoring dengue infections is the interpretation of haematocrit trends, which is an indicator of plasma leakage during the critical phase. A rising haematocrit ≥20% from baseline reflects haemoconcentration and is an early indicator of potential shock [5, 6]. In our patient, haematocrit was low on admission due to known thalassaemia trait and declined rather than rising during hospitalisation. This is explained by underlying anaemia and dilutional effects of hydration, rather than an absence of severity. Older adults often have reduced bone marrow reserve and chronic anaemia; hence a lack of rising haematocrit does not exclude plasma leakage. Therefore, clinicians must integrate clinical warning signs, platelet trends and fluid balance, rather than relying solely on haematocrit in this age group [8].

Hepatic dysfunction is common in dengue, with modest elevations of AST and ALT. Our patient showed transient ALT elevation, peaking at 66 U/L, consistent with mild viral hepatitis secondary to dengue, which usually resolves as the illness recovers. Older adults are prone to hepatic dysfunction; severe transaminase elevations (>10x ULN) would suggest severe dengue, hypoxic hepatitis or alternative pathology, which were absent in this case [6,8].

Dengue patients may bleed due to thrombocytopenia, hepatic dysfunction and consumption of clotting factors, with severe dengue associated with marked coagulopathy or disseminated intravascular coagulation. Our patient exhibited only a mildly prolonged INR, which normalized on recovery. This finding is more consistent with mild, transient hepatic inflammation rather than clinically significant coagulopathy, supported by the absence of mucosal bleeding or haemodynamic instability [4,7].

Older adults are disproportionately affected by severe dengue. Studies have shown that older adults have higher rates of DHF, severe thrombocytopenia, hypo-albuminaemia, organ failure, prolonged hospitalisation and mortality [7-10]. Hypertension, chronic obstructive pulmonary disease, hypoalbuminaemia, renal impairment and hyperpyrexia have been identified as predictors of severe disease [5,10]. Severe organ impairment, especially acute

kidney injury and cardiac dysfunction, are dominant modes of severe dengue in older adults. In our patient, the favourable outcome reflects his low comorbidity burden, stable renal and hepatic function, absence of high-risk features, and early hospital presentation.

Management of dengue in older adults requires careful fluid titration. Excess intravenous hydration during the period of plasma leakage may result in pulmonary oedema, particularly in those with cardiac comorbidities, while inadequate fluids may lead to shock. Older adults also exhibit more frequent metabolic abnormalities, including hyponatremia, hypoglycaemia and hypocalcaemia, which may contribute to encephalopathy or atypical neurological symptoms [11].
Thus, close clinical observation and serial monitoring is essential.

This case illustrates several learning points: dengue should be considered in older adults presenting with non-specific febrile illness, especially when cytopenias are present. NS1 antigen testing is useful in the early febrile phase. Haematocrit interpretation must be contextualised, especially in those with baseline anaemia.

Finally, older adults require careful monitoring even in the absence of overt warning signs.

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