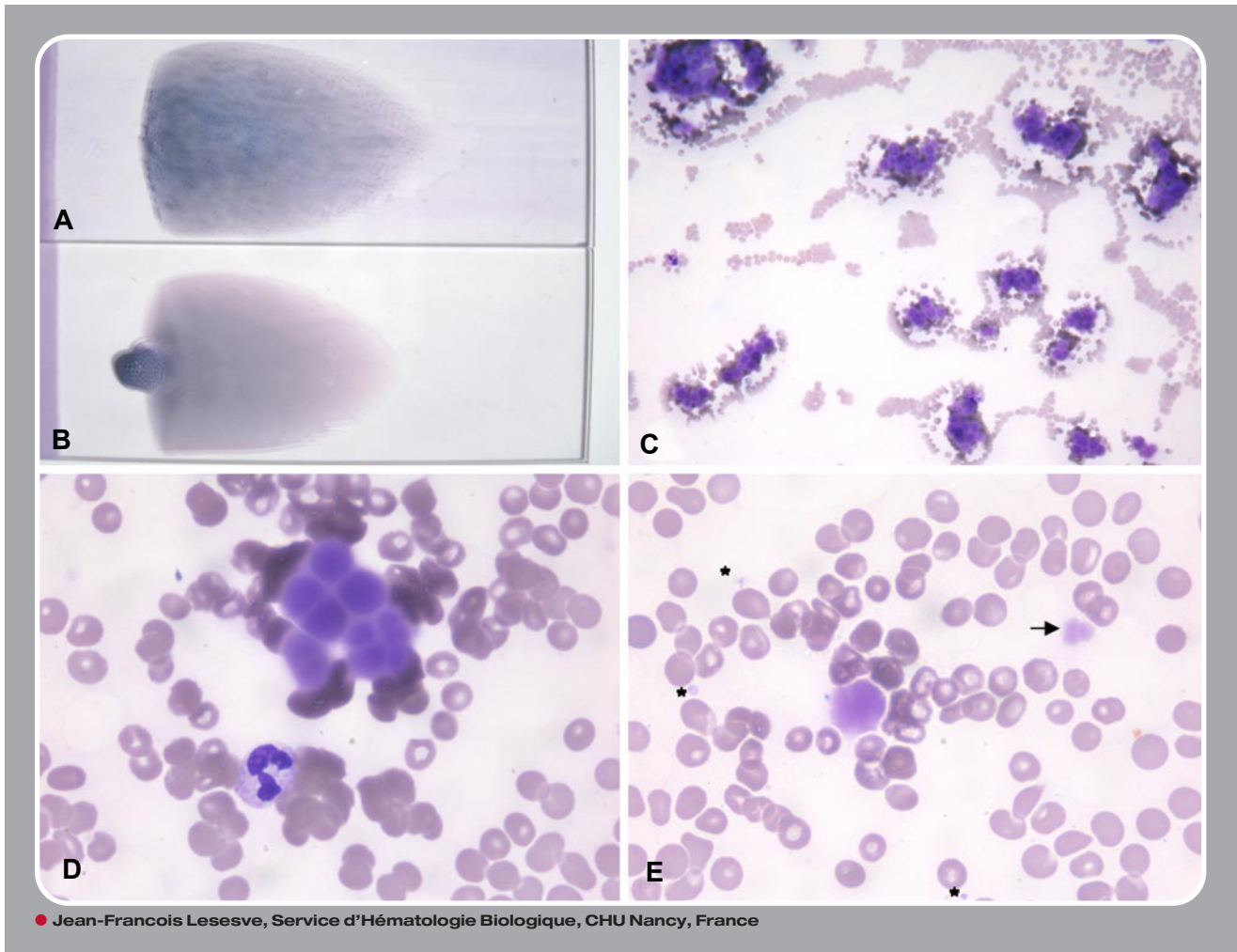


Cryoglobulin deposits on a blood smear



A 61-year-old male presented with 2 months of bone pain. Complete blood count showed Hb 10 g/dL, white blood cell count $4.5 \times 10^9/L$, and platelets $130 \times 10^9/L$. The peripheral smear contained visible agglutinates and a blue background color (panel A). Aggregates of amorphous particles mimicking lysed cells were observed microscopically (panels C-E) with smaller and less stained deposits (panel E arrow), some resembling platelets (panel E stars). These findings suggested cryoglobulins. After warming the blood ($37^\circ\text{C} \times 4$ hours), the smear regained its usual staining characteristics (panel B) and was free of microscopic deposits. A serum prepared at 37°C demonstrated protein precipitation when cooled to room temperature. This was determined to be an IgG, κ monoclonal protein (29.3 g/L). Afterward, the patient was noted to have sternal and vertebral lytic lesions. Bone marrow examination revealed 34% plasma cells, and a diagnosis of multiple myeloma was made.

Cryoglobulins may occur in multiple myeloma and non-Hodgkin lymphoma, and, in lesser quantities, in viral illnesses, connective tissue diseases, and some renal diseases. Cryoglobulins are rarely observed macroscopically on a peripheral smear. In this case they were seen as precipitates of pale amorphous particles between red cells with smaller particles that appeared as platelets.



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