**PERINODAL ADIPOSE TISSUE PARTICIPATES IN IMMUNE PROTECTION THROUGH A LYMPHATIC VESSEL-INDEPENDENT ROUTE**

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**Objective:** Lymphatic vessels remove and transport excess interstitial fluid to lymph nodes (LNs) for fluid balance and immune protection. LNs are typically surrounded by perinodal adipose tissue (PAT). However, PAT is a blood vessel-rich but lymphatic-rare tissue, therefore how excess fluid in PAT is removed remains unclear.

**Results:**In mice, using fluorescent dye tracing and transmission electron microscopy results suggest that fluid in PAT can travel to the LN via collagen I+ channels (PAT-LN conduits), merge into a collagen rich space between the PAT and LN capsule (PAT-LN sinus), and may enter the LN via the LN capsule associated conduits (LNC conduits). This newly identified route of fluid flow allows fluid to enter the draining LN even when the afferent lymphatic vessels are blocked, indicating that fluid trafficking in PAT-LN conduits is not dependent on functional lymphatic vessels. Similar to lymphatic vessels, PAT-LN conduits can deliver antigens to the LN for immune protection. Additionally, *Staphylococcus aureus*from intradermal or intravenous infection may utilizePAT-LN conduits to infect PAT and stimulate PAT immune protection.

**Conclusion:** Our studies revealed a new route of material exchange between PAT and the LN. Antigen accumulation and bacterial infection in PAT demonstrate that PAT not only provides energy and regulatory factors, but can also directly participate in immune protection, indicating a new immune function of PAT for host immunity.