When Imaging is Negative but Infection Persists: Abdominal Wall Abscess Linked to CGM Sensor

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Introduction: Soft tissue infections related to continuous glucose monitoring (CGM) devices are uncommon but can lead to severe complications if diagnosis is delayed. Imaging studies are frequently used to evaluate suspected cellulitis and abscesses, but their sensitivity is limited in atypical presentations. In cases where imaging is inconclusive, early multidisciplinary consultation, targeted biopsy, or consideration of bedside diagnostic procedures may help identify occult infections sooner and enable timely intervention.

Case Presentation: A 32-year-old woman with poorly controlled type 2 diabetes mellitus (A1c=12.4%), hyperlipidemia, polycystic ovary syndrome, and asthma presented with progressive erythema, pain, and induration at the site of her continuous glucose monitoring sensor on her left abdominal wall. She had been treated previously with oral antibiotics for presumptive cellulitis without improvement and was admitted for sepsis. Serial imaging including CT and ultrasound revealed cellulitis without evidence of an abscess. Despite broad-spectrum intravenous antibiotics, her condition worsened. Surgical consultants deferred intervention due to the absence of a fluid collection. On hospital day 6 dermatology performed a punch biopsy, which unexpectedly released copious purulent drainage. Surgery was emergently consulted and performed incision and drainage at the bedside, followed by operative debridement the next day with wound vac placement. Cultures resulted with *Streptococcus anginosus*, *Parvimonas micra*, *Candida guilliermondii*, and *Campylobacter curvus*. The patient improved with surgical source control and targeted antimicrobial therapy and was discharged in stable condition after 17 days.

Discussion: Cutaneous complications from CGM devices are most often allergic or irritant reactions, with infections reported but relatively uncommon. Although rare, severe device-site infections such as necrotizing soft tissue infection have been documented, underscoring the need for vigilance. In this case, despite CT and targeted soft tissue ultrasound, the presence of a walled-off abscess was not identified prior to punch biopsy and surgical intervention. Early evidence suggested that ultrasound outperforms CT for superficial abscess detection, with sensitivities of 96.7% versus 76.7%, respectively. More recent meta-analytic data confirm the high diagnostic accuracy of point-of-care ultrasonography in cases with high pre-test suspicion of abscess or cellulitis, with sensitivity of 93.5% and specificity of 89.1%. While these imaging modalities generally demonstrate strong diagnostic accuracy, negative findings should not exclude the presence of a complex or evolving abscess, as seen in this case. Clinicians must maintain a high index of suspicion, apply careful clinical judgment, and engage multidisciplinary evaluation when cellulitis is refractory to help identify occult infections sooner and enable timely intervention.

References

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