

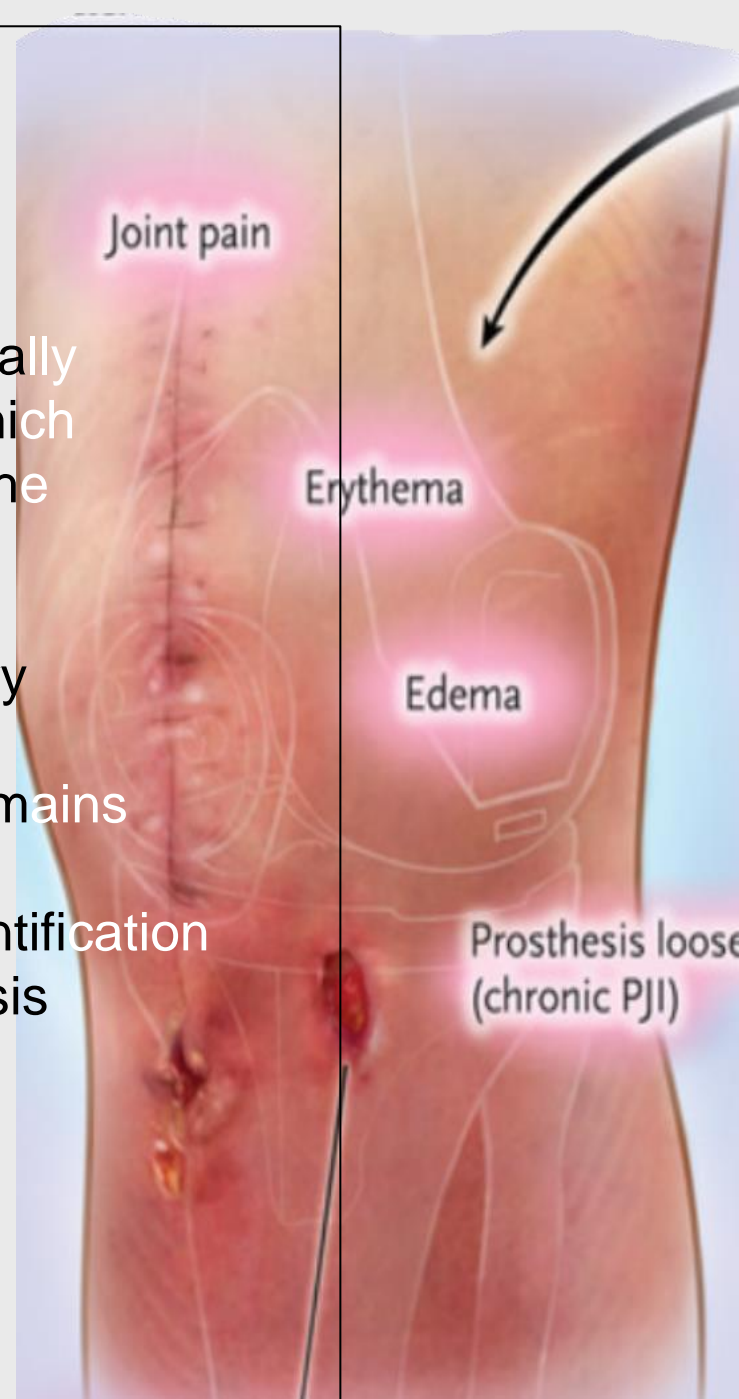


Common skin diseases as Periprosthetic Joint Infection (PJI) risk factors

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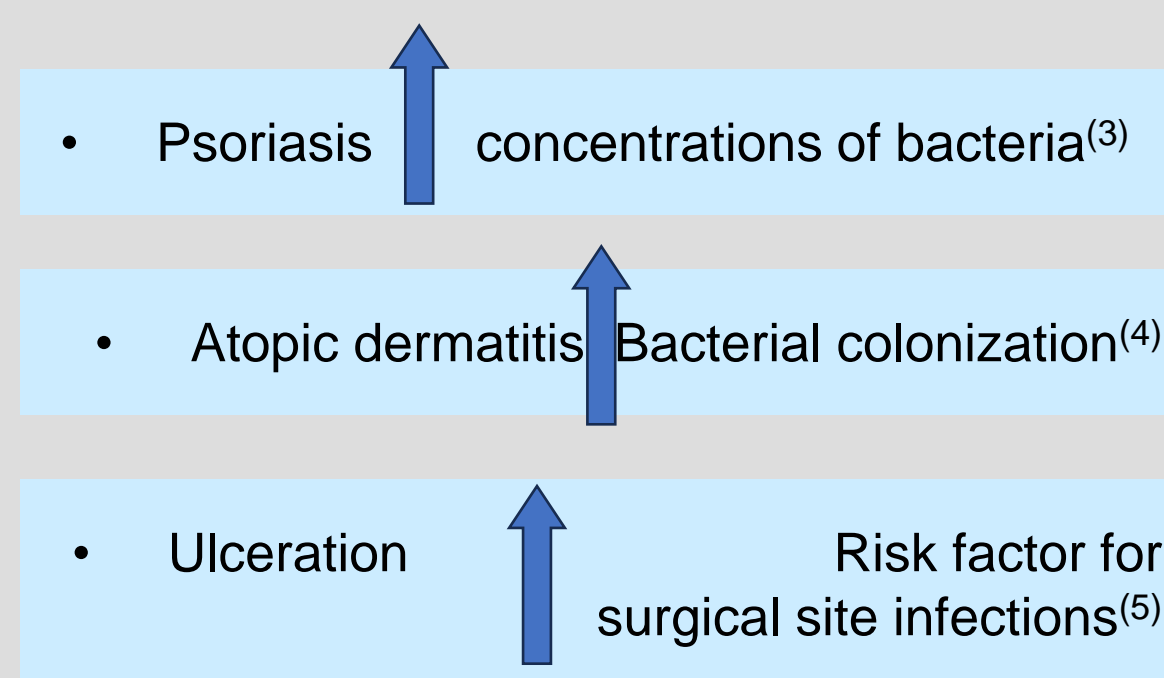
INTRODUCTION

Periprosthetic joint infection (PJI) is a serious –and in some cases fatal– complication after hip or knee reconstruction surgeries, increasing over time. Infections related to foreign materials are generally difficult to treat, due to the creation of biofilm which prevents antibiotics from taking effect but also the increased incidence of antibiotic resistance. Several risk factors have been identified, although bacterial skin flora at the site of surgery recommends a contingent risk factor for PJI. The determination of preventative measures remains unclear. We present a case of an early preoperative identification of skin infection from staphylococcus lugdunensis and the prevention of a possible PJI.



For SSIs after total hip and knee arthroplasties, the source of pathogens could be the endogenous flora of the patient's skin.⁽¹⁾ The presence of bacterial infection of the skin (boils, folliculitis, erysipelas) may encountered in patients undergoing total hip and knee arthroplasty. Bacterial skin infections have some risk of bacteremia.⁽²⁾ For patients who have a prosthesis or other implant placed during the operation, such a remote seeding could be particularly important because such devices provide a nidus for attachment of organisms.

Skin diseases



RESULTS

RESULTS

Staphylococcus lugdunensis PJI are difficult-to-treat infections⁽⁶⁾, with pivotal roles of an optimal surgical management. Strong biofilm production in S. Lugdunensis isolates are associated with relapse in PJI.⁽⁷⁾



PJI prevention requires a combination of measures. Patients' pre-admission microbiota may contain staphylococcus lineages linked to PJIs. Therefore, it is essential to investigate possible transmission events perioperatively and identify specific risk factors associated with staphylococcus PJIs. As observed, the presence of comedones can be considered a risk factor for Staphylococcus infection, even though comedone cultures have shown that about 30% of them are bacterial-free. Hence, careful skin observation before the surgery is necessary.

DISCUSSION

METHODS AND MATERIALS

A 72-year-old Caucasian male, who presented at our outpatient clinic and diagnosed with hip osteoarthritis, scheduled for total hip arthroplasty. Multiple open comedones were noticed in the skin incision area. The same type of lesions: grouped, dilated follicular openings with dark keratin plugs appear on the face, neck, abdomen, and groin area. Two (2) comedones were collected aseptically from the site of the incision and cultured. The surgery was postponed considering that the presence of an active skin infection could potentially increase the risk of SSIs/PJIs. The culture results showed two coagulase-negative staphylococci (CoNS) organisms: Staphylococcus lugdunensis and Staphylococcus simulans in both samples. Based on the antibiogram the patient was treated with Sulfamethoxazole-Trimethoprim for 14 days. The oral dosage was 800 mg of sulfamethoxazole and 160 mg of trimethoprim every 12 hours. After the initial treatment, new cultures were sent for microbiological investigation. Although, Staphylococcus epidermidis was isolated, considered a member of the skin microbiome and the surgery was rescheduled. Blood tests involving white blood cell count, C-reactive protein, and erythrocyte sedimentation rate were unremarkable. The patient underwent AMIS (Anterior Minimally Invasive Surgery) total hip joint replacement and was discharged postoperative day 3. Six months after, no evidence of infection noticed.

Search strategy

- Periprosthetic joint infection
- PJI
- Staphylococcus lugdunensis
- Skin diseases
- Skin lesions



Author	Patients	Age	Skin disorder	Surgery	Outcome	Preparation
Bernasek et al	F	25	Epidermolytic hyperkeratosis	THA	Good outcome, no infection	Cephalexin, coal tar solution, petroleum jelly
Beyer et al	34 (18M-17F)	62	Psoriasis	TKA	1 infection	Perioperative antibiotics
Stern et al	16 (11F-5M)	61	Psoriasis	TKA	17% revision due to infection	Topical fluocinonide cream
Homma et al	F	59	Epidermolysis bullosa	THA	Good outcome	Preop. 2 h vancomycin and postop. 2w, levofloxacin and rifampicin 3 months
Kawasmi et al	F	49	Epidermolysis bullosa	THA	Good outcome	Vancomycin, imipenem 4 d postop
Gouzoulis et al	322F/159M	481	Hidradenitis suppurativa	THA	2,5% PJI	
Gouzoulis et al	223F/67M	280	Hidradenitis suppurativa	TKA	10% PJI	

Table 1. Skin diseases and reconstruction surgeries, according to literature

Author	Patients	Sex	Age	Outcome	Treatment	Joint
Fisher et al	10	50% M	68	N/A	N/A	N/A
Charalambous et al	3 (5.5%)	N/A	N/A	N/A	N/A	N/A
Amini et al	10.9%	N/A	N/A	Recurrent 1 infection	N/A	N/A
Tsaras et al	3(4%)	N/A	N/A	N/A	N/A	N/A
Sivadon et al	3(7%)	N/A	N/A	N/A	N/A	N/A
Lourdet-Hascoët et al	28	46.4% M	67.5	89% good outcome	Fluoroquinolone, rifampicin or linezolid or oxacillin	10 THA, 1 RTSA, 1 FOOT, 16 TKA
Masood et al	28	N/A	N/A	Relapse: 15% p two-stage revision, 44% debridement, 100% no surgical intervention or one-stage revision	Oxacillin	TKA (67.9%), THA(25%)
Shah et al	22 patients (28 surgeries)	50% M	73.5	85% good outcome	Cefazolin or Ceftriaxone	25 TKA, 3 THA
Askar et al	1	F	50	Good outcome	Rifampicin and Ceftriaxone	TKA
Weightman et al	1	M	72	N/A	Flucloxacillin and Fusidic acid	TKA
Sanzeni et al	1	M	54	Good outcome	Intraarticular Teicoplanin and oral Rifampicin, Clindamycin	THA
Sampathkumar et al	1	M	72	Good outcome	Oxacillin and Ceftriaxone, revision surgery	TKA
Sampathkumar et al	1	M	74	Good outcome	Cefazolin, revision surgery	TKA

Table 2. Periprosthetic Joint Infections due to staphylococcus lugdunensis, according to literature

CONCLUSIONS

In this case we successfully identified skin inflammatory lesions around the hip joint preoperatively and the surgeon postponed the total hip replacement. Prevention is a crucial factor to reduce the incidence of PJI and orthopedic surgeons should adopt various measures during the surgical procedure to cease the expansion of this complication.

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