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Scientific letters

Peptostreptococcus canis and *Bacteroides pyogenes* prosthetic joint infection☆

Infección de prótesis articular por Peptostreptococcus canis *y* Bacteroides pyogenes

We present a case of acute prosthetic joint infection caused by *Peptostreptococcus canis* and *Bacteroides pyogenes* in a 53-year-old patient with systemic lupus erythematosus, operated on successfully with a primary knee replacement. At discharge, she had an eschar on the surgical wound, which is why it started to drain after her stitches were removed. She was readmitted 20 days later with a fever, suppuration and wound dehiscence. The patient was operated on urgently; the wound was cleaned, surgical debridement performed and the polyethylene replaced. Empirical treatment with intravenous vancomycin and ceftazidime was initiated. Four intraoperative samples (osteoarticular biopsy, wound exudate, joint fluid and synovial tissue) and the replaced polyethylene were sent to the microbiological laboratory for culturing.

When the samples were Gram-stained, with the exception of the polyethylene, abundant polymorphonuclear leukocytes and gram-positive cocci were observed. Culturing was done in blood agar, MacConkey agar, Schaedler agar and Schaedler kanamycin–vancomycin agar (Becton Dickinson). The polyethylene was processed using sonication and was cultured in the above media as well as in thioglycollate broth (Becton Dickinson). Turbidity was observed in the broth after 24 h and growth in the Schaedler agar and Schaedler kanamycin–vancomycin agar after 48 h of incubation in anaerobic conditions. The isolates were identified using mass spectrometry (MALDI-TOF) as *P. canis* and *B. pyogenes*.

Susceptibility testing was performed with gradient-diffusion strips (E-test, bioMérieux) in Schaedler agar with a reading after 48 h of incubation in an anaerobic atmosphere.[1] Both isolates were susceptible to penicillin, amoxicillin/clavulanic acid, piperacillin/tazobactam, imipenem, clindamycin and metronidazole. Antibiotic therapy was replaced with parenteral penicillin and, subsequently, rifampicin was introduced. Ten days after the debridement, due to persistent signs of infection, the prosthesis was removed and a gentamicin- and clindamycin-loaded spacer was inserted. Two intraoperative samples (osteoarticular biopsy and joint fluid) and the prosthesis were sent to the laboratory for culturing. Polymorphonuclear leukocytes were observed in the staining of the joint fluid sample. The culture of the samples was negative, except in the sonication fluid of the prosthesis, in which *B. pyogenes* was isolated. Progress was favourable, with the patient treated with intravenous ampicillin and, at discharge, with oral clindamycin until six weeks of treatment were completed. Six months after the prosthesis was removed, a new prosthesis was re-implanted. Cultures of intraoperative samples were negative.

In our literature review we did not find any reported case of prosthetic joint infection caused jointly by *P. canis* and *B. pyogenes*. *P. canis* is a gram-positive anaerobic coccus found in the subgingival plaque of dogs, while *B. pyogenes* is a gram-negative anaerobic bacillus found in the oral microbiota of dogs and cats.[2,3] Wound infections caused by contact with animal saliva tend to be polymicrobial and reflect their oral microbiota. Prosthetic joint infection due to these microorganisms is rare. When it does occur, it tends to arise in knee prostheses and be associated with bites, scratches or licks from animals.[4] Our patient lived with a dog, although she denied having been bitten or scratched. Contact with a dog in the presence of an open surgical wound supports the aetiology of the infection. Close contact with pets may be a risk that these patients should be warned about.

Prosthetic joint infection caused by anaerobic microorganisms is rare (3–6% of cases), but is associated with significant morbidity and a poor prognosis.[5] Most are caused by *Propionibacterium* spp., which is mainly responsible for chronic infections. *Peptostreptococcus* spp. and *Bacteroides* spp. are reported less frequently, generally in polymicrobial cultures, and associated with acute, post-operative or haematogenous infections.[5] Infections caused by *Propionibacterium acnes* are more indolent, while those caused by *Peptostreptococcus* spp. and *Bacteroides* spp. are associated with greater inflammation and suppuration.[5] The aetiological diagnosis is based on proper sample taking and preserving them in anaerobic conditions until they are processed.[6] The advance in microbiological diagnostic techniques, such as the use of MALDI-TOF, has allowed these rarely reported microorganisms to be identified with greater precision.

Antibiotic therapy is primarily administered with beta-lactams, in accordance with the antibiogram results. In acute, streptococcal prosthetic joint infections treated with implant retention, the combination of a beta-lactam (or levofloxacin) with rifampicin has been suggested due to its alleged activity against stationary-phase bacteria in biofilms according to the findings of two observational studies, where a better prognosis is described.[6,7] However, its *in vitro* synergy and clinical efficacy in implant-related infections due to anaerobes and streptococci is yet to be demonstrated.

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Ana Gual-de-Torrella[a,*], Ana Isabel Suárez-Barrenechea[a], María Dolores del Toro[b]

[a] *Unidad de Gestión Clínica de Enfermedades Infecciosas y Microbiología, Hospital Universitario Virgen Macarena, Sevilla, Spain*
[b] *Unidad de Gestión Clínica de Enfermedades Infecciosas y Microbiología, Instituto de Biomedicina de Sevilla (IBiS), Hospital Universitario Virgen Macarena/Universidad de Sevilla/Centro Superior de Investigaciones Científicas (CSIC), Sevilla, Spain*

* Corresponding author.
E-mail address: gualdetorrella.ana@gmail.com
(A. Gual-de-Torrella).

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Diagnóstico tradicional versus diagnóstico en un solo paso del virus de la hepatitis C. Estudio piloto en 2 centros asistenciales☆

A pilot study on the implementation of reflex testing for the diagnosis of active hepatitis C virus infection at two healthcare centres

Hepatitis C treatment with direct-acting antiviral agents successfully cures over 95% of patients.[1] Providing access to treatment for all patients with chronic hepatitis C virus (HCV) is a priority in all plans to eliminate hepatitis C. To this end, suitable strategies are required for the diagnosis of active HCV infection.

The diagnostic algorithm for hepatitis C starts with the detection of antibodies. However, antibody detection techniques do not distinguish an active infection from a resolved infection.[2] The detection of HCV RNA indicates viral replication, which is why it is the most commonly used marker to diagnose and confirm active HCV infection. Patients with positive HCV RNA are candidates to be assessed for antiviral therapy. HCV core antigen forms part of the internal structure of HCV. As with HCV RNA, its detection indicates viral replication.[3]

During the period from 2015 to 2017, at the *Hospital Universitario San Cecilio in Granada* and the *Complejo Hospitalario Universitario de Santiago*, we performed an ambispective and observational pilot study to evaluate the impact of the joint implementation of reflex testing, accompanied by the implementation of alerts for the requesting physician, on the referral of patients to be assessed for treatment.

In the retrospective phase (January–December 2015), 204 new patients diagnosed with HCV were identified (108 from the *Hospital Universitario San Cecilio*, 96 from the *Complejo Hospitalario Universitario de Santiago*, 69.6% males, with a mean age of 54.0 ± 13.28 years) by means of the traditional system (HCV serology and, in positive tests, confirmation with immunoblotting techniques and issuance of a report to the requesting physician). Following consultation of the electronic medical records and data in the laboratory information systems, and after one year of follow-up since diagnosis, we determined that 65% (133 patients) visited an infectious/gastrointestinal diseases specialist for a treatment assessment, after a median of 83 days (IQR: 46–164). Of these 133 patients, 68% were referred from Primary Care. The remaining 71 patients (35%) were not seen for a treatment assessment. A total of 65% of the patients had been diagnosed by Primary Care. Of all the patients who were assessed for treatment, 88% were viraemic.

The prospective phase was performed in the period from March to December 2016 and consisted in implementing reflex testing, by incorporating the detection of viraemia using core antigen testing (Architect HCV Core Ag Assay®, Abbott Diagnostics, Germany) on the same sample in which the positive serology result was obtained for all new diagnoses, so that patients with previous positive serological tests were excluded. In addition, a comment was included systematically in the reports, in which it was advised to refer patients with active infections to the specialist in order for them to be assessed for treatment. In this period, we analysed 116 new HCV diagnoses in Primary Care (87 from the Hospital San Cecilio, 29 from the *Complejo Hospitalario Universitario de Santiago*, 67% males, with a mean age of 56 ± 14 years). There were no differences in terms

Table 1
Characteristics of patient referrals in the retrospective and prospective phases of the study.

	Retrospective phase						Prospective phase					
	Overall (*n* = 204)		HUSC (*n* = 108)		CHUS (*n* = 96)		Overall (*n* = 116)		HUSC (*n* = 87)		CHUS (*n* = 29)	
Referral rate (%)	12 m	65	12 m	68	12 m	61	12 m	84	12 m	86	12 m	79
	6 m	51	6 m	50	6 m	36	6 m	77	6 m	78	6 m	72
Time to referral (median in days, IQR)	12 m	83 (46–164)	12 m	96 (57–194)	12 m	73 (36–113)	12 m	69 (25-102)	12 m	65 (24–99)	12 m	72 (29–123)
	6 m	67 (36–102)	6 m	70 (47–108)	6 m	59 (32–96)	6 m	63 (22–91)	6 m	62 (22–91)	6 m	70 (26–91)

CHUS: Complejo Hospitalario Universitario Santiago de Compostela; HC: hospital care; HUSC: Hospital Universitario San Cecilio; m: months; PC: primary care.

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