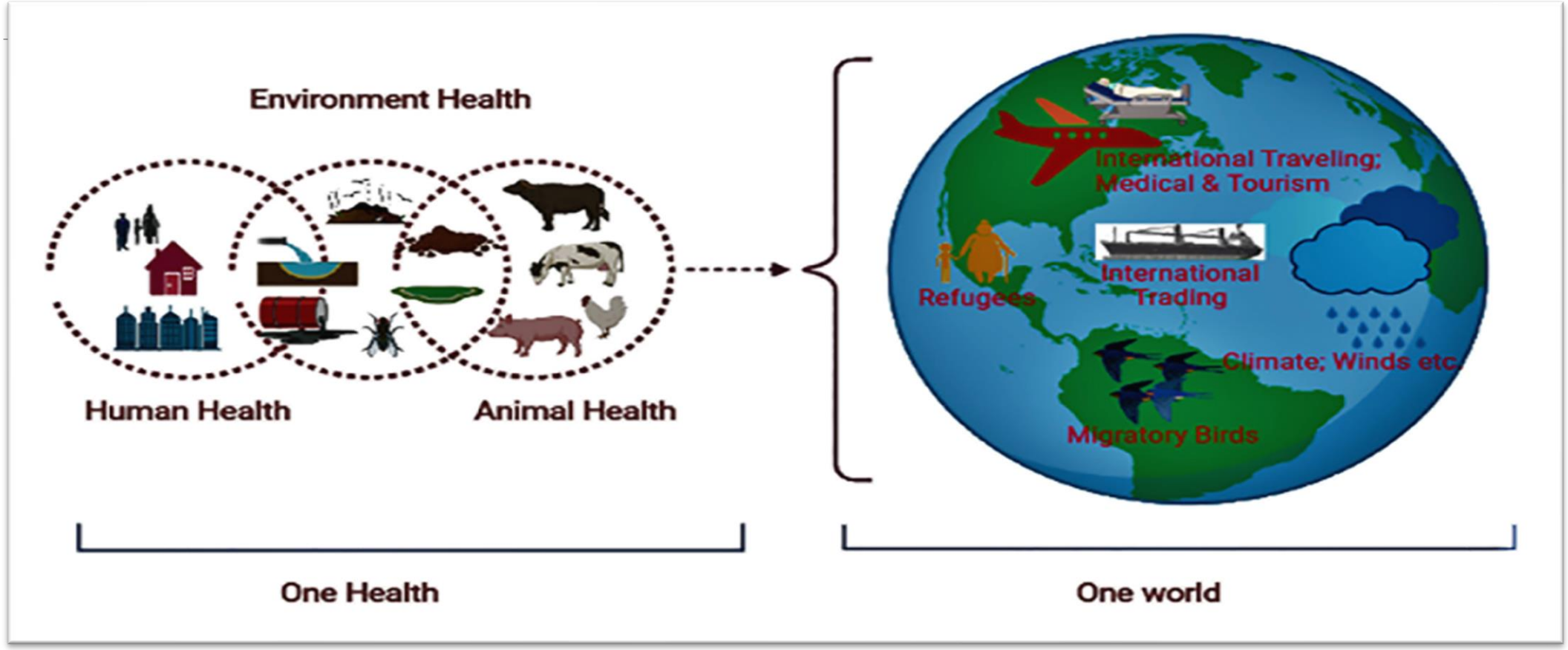
One Health *y*

S. caprae

JAVIER DÍEZ DE LOS RÍOS GONZÁLEZ

One Health



Front. Cell. Infect. Microbiol. 11:771510. doi: 10.3389/fcimb.2021.771510

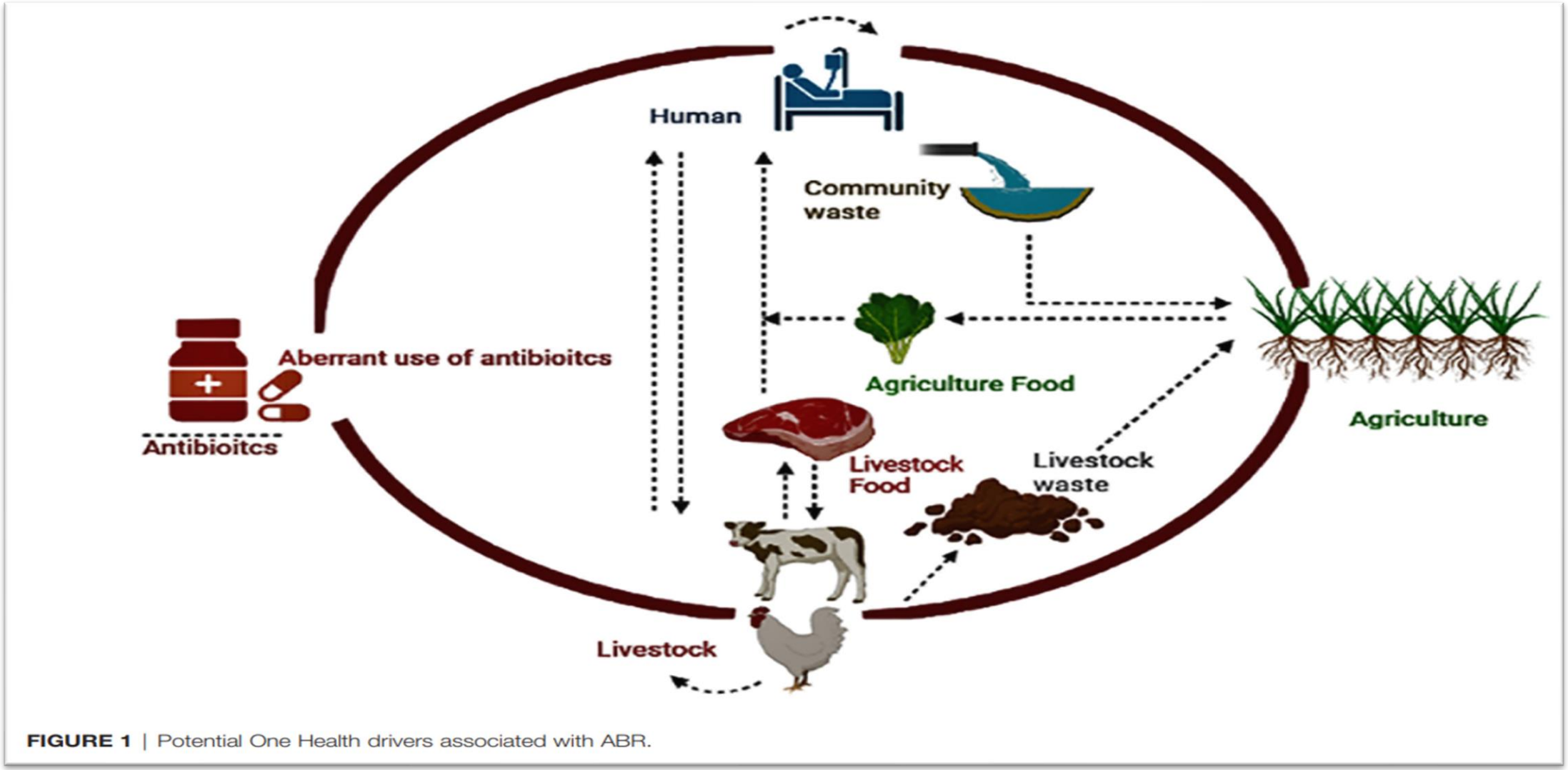


FIGURE 1 | Potential One Health drivers associated with ABR.

Front. Cell. Infect. Microbiol. 11:771510. doi: 10.3389/fcimb.2021.771510

S. caprae

- Estafilococo coagulasa negativo.

- Descrito en 1983 de una cepa aislada de leche de cabra.

- También aislado recientemente en leche de oveja.

- Es un microorganismo comensal de la piel y glándulas mamarias de cabras, pero también puede producir mastitis.

- Zoonosis.

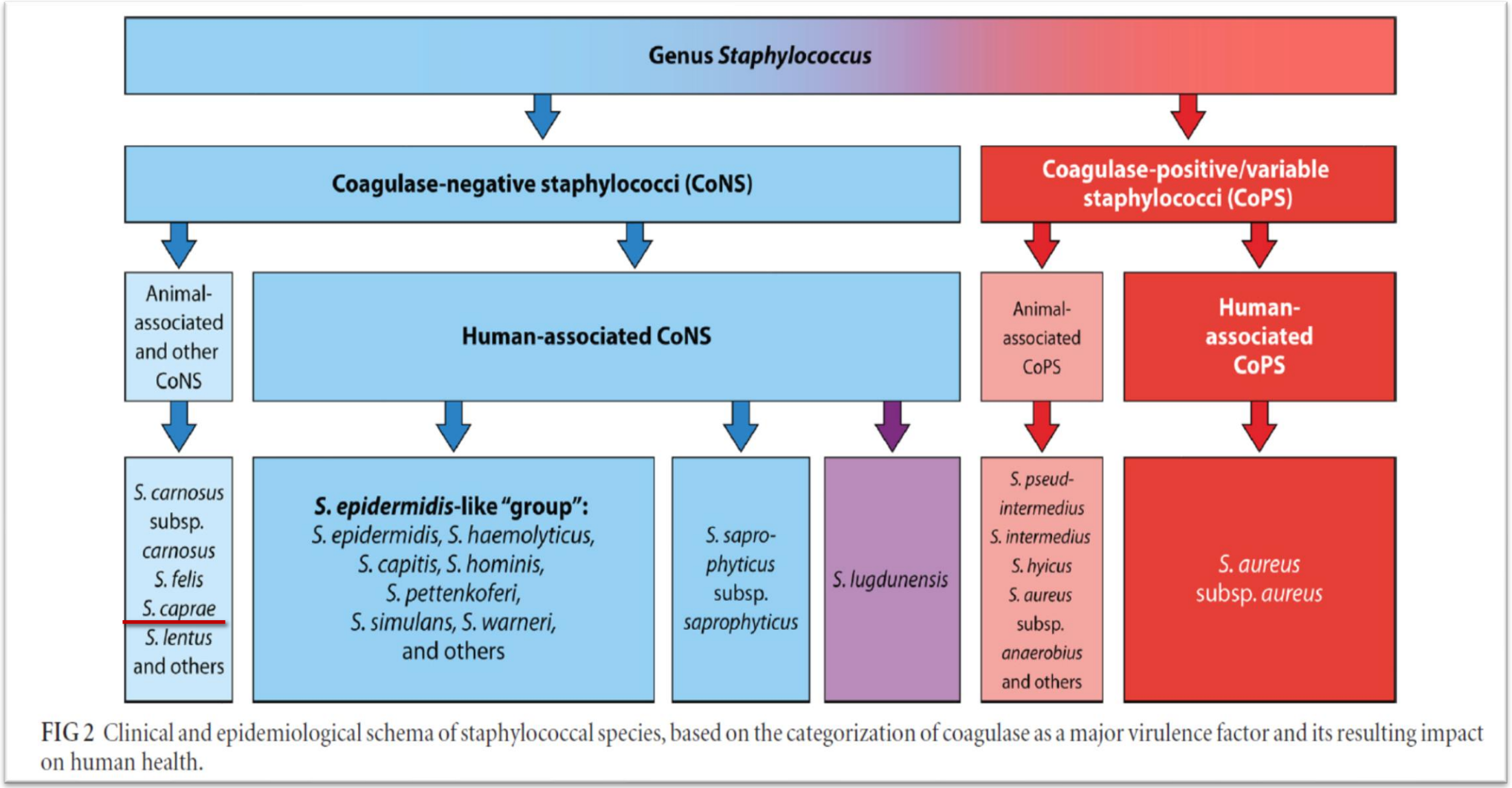


FIG 2 Clinical and epidemiological schema of staphylococcal species, based on the categorization of coagulase as a major virulence factor and its resulting impact on human health.

Clin Microbiol Rev. 2014 Oct;27(4):870-926. doi: 10.1128/CMR.00109-13

Transmisión

1. **Transmisión en Animales**

a. **Contacto directo**

- ✓ **Entre animales**
- ✓ **Madre a cría**

b. **Ambiente y superficies contaminadas**

- ✓ **Superficies en granjas**
- ✓ **Leche contaminada**

Transmisión

2. Transmisión a Humanos

a. Contacto directo

- ✓ **Manipulación de animales**
- ✓ **Heridas y abrasiones**

b. Consumo de productos contaminados

- ✓ **Leche no pasteurizada**
- ✓ **Alimentos contaminados**

Transmisión

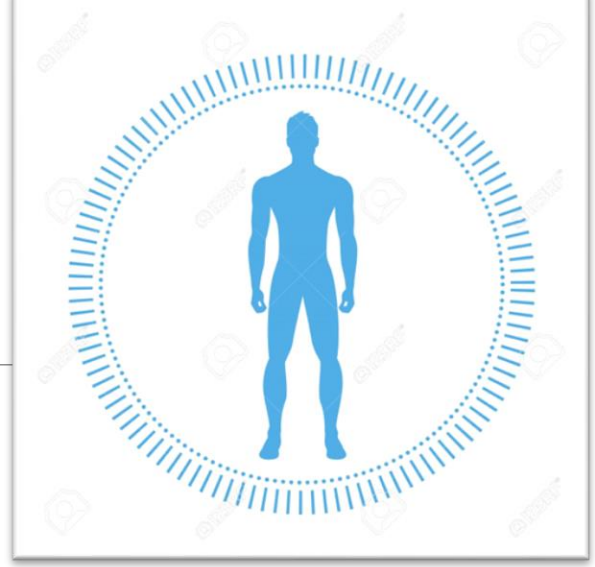
3. Transmisión nosocomial

a. Infecciones hospitalarias

✓**Dispositivos médicos**: En entornos hospitalarios, *S. caprae* puede causar infecciones asociadas a dispositivos médicos como catéteres, válvulas cardíacas artificiales y prótesis ortopédicas.

✓**Transmisión de persona a persona**: Aunque no es una vía común, la transmisión nosocomial puede ocurrir entre pacientes, especialmente en unidades de cuidados intensivos o en pacientes inmunocomprometidos.

S. caprae



- Primera descripción en humanos en 1991.

- Infecciones más frecuentes:

  - **Infecciones osteoarticulares: asociados a prótesis o material de osteosíntesis.**
  - Bacteriemia.
  - Otitis.
  - Endocarditis infecciosa.
  - Infecciones urinarias.
  - Peritonitis
  - Meningitis.

Factores de riesgo

- **Contacto estrecho con cabras u ovejas:**
  - *** Agricultores.**
  - *** Ganaderos.**
  - *** Mordeduras o heridas.**

- Inmunosupresión.
- Obesidad.
- Fractura abierta.
- Traumatismos.

Watanabe et al. BMC Genomics (2018) 19:810 doi.org/10.1186/s12864-018-5185-9

TABLE I. Review of 106 cases of *Staphylococcus caprae* human infection, including 31 cases of *S. caprae* osteoarticular infection

Clinical specimens	Case (*n*)	Reference
Colonizing strains	10	
Nose	7	Shuttleworth *et al.* [3], Ross *et al.* [4]
Nail	1	Shuttleworth *et al.* [3]
Skin	2	Shuttleworth *et al.* [3], Ross *et al.* [4]
Pathogenic strains	106	
Acute otitis externa	32	Shuttleworth *et al.* [3], Roland and Stroman [5]
Peritonitis	3	Shin *et al.* [6]
Urinary tract infection	4	Kanda *et al.* [7], Vandenesch *et al.* [8]
Pneumonia	1	Barelli *et al.* [9]
Endocarditis	1	Vandenesch *et al.* [8]
Bacteraemia	33	Vandenesch *et al.* [8], Spellerberg *et al.* [13], Barelli *et al.* [9], Fujita *et al.* [12], Ross *et al.* [4], Kini *et al.* [16], Kato *et al.* [14], Abdul Rahman *et al.* [15], Darrieutort-Laffite *et al.* [11]
Meningitis	1	Kato *et al.* [14]
Bone and joint infections	31	
Arthritis	1	Elsner *et al.* [18]
Bone infection without osteosynthesis device	3	Shuttleworth *et al.* [3], Darrieutort-Laffite *et al.* [11]
Prosthesis	21	Shuttleworth *et al.* [3], Allignet *et al.* [19], Blanc *et al.* [20], Arciola *et al.* [23], Campoccia *et al.* [28], Achermann *et al.* [24], Roux *et al.* [25], Bajwa *et al.* [26], Darrieutort-Laffite *et al.* [11]
Osteosynthesis device	2	Allignet *et al.* [19], Lang *et al.* [21]
Presence of osteosynthesis device was not mentioned	4	Sivadon *et al.* [22]

Clin Microbiol Infect. 2014 Dec;20(12):O1052-8. doi: 10.1111/1469-0691.12743.

TABLE 2. Clinical relevance of 25 cases of *Staphylococcus caprae* osteoarticular infection in our study

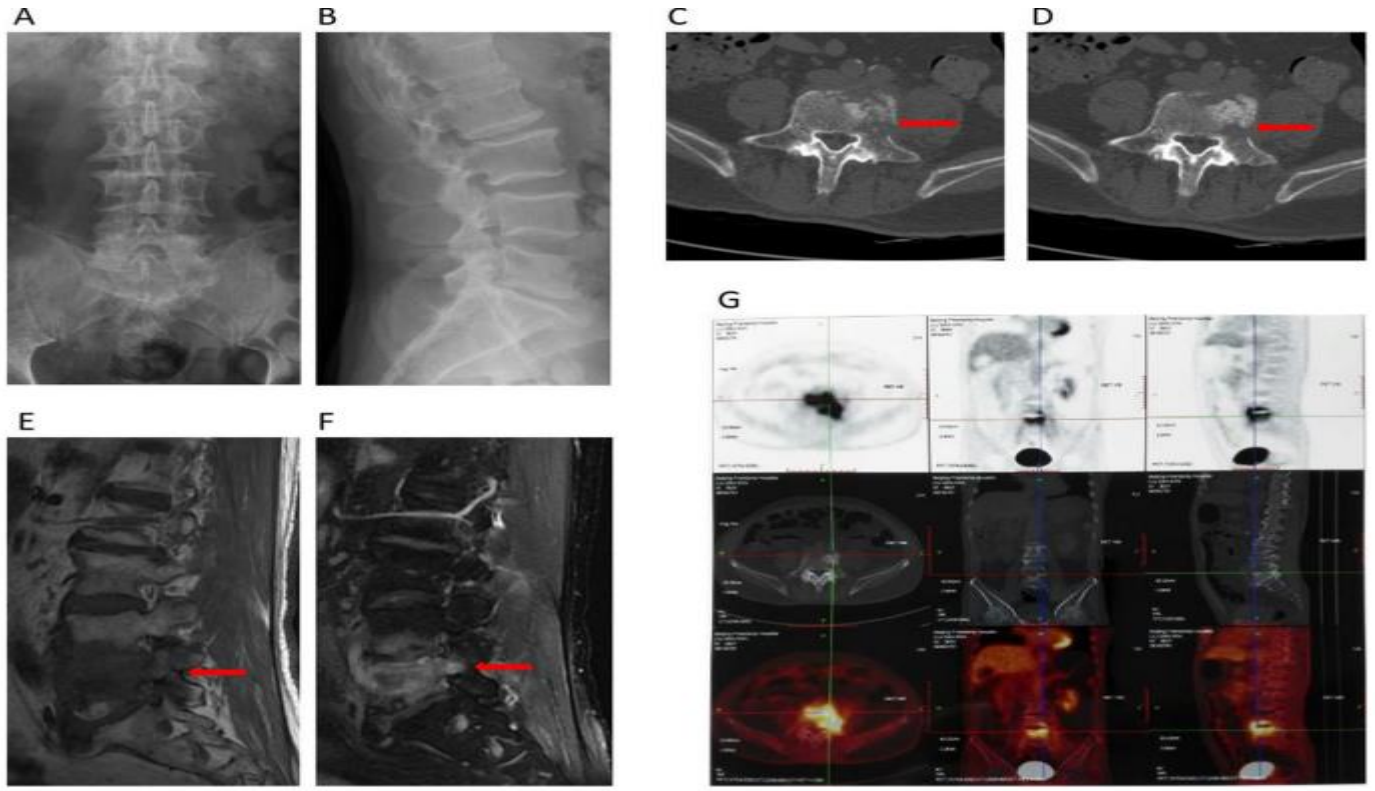
	Total number of cases	Proportion (%)
Sex		
Female	4	16
Male	21	84
Comorbidities and risk factors		
Contact with goats/sheep	5	20
Obesity	4	16
Osteosarcoma	3	12
Corticosteroid treatment	2	8
Diabetes mellitus	2	8
Localization		
Knee	9	36
Hip	4	16
Tibia	4	16
Ankle	3	12
Foot	3	12
Femur	1	4
Vertebra	1	4
Classification of orthopaedic device infections		
Early infection (first month)	1	4
Delayed infection (second month to sixth month)	2	8
Late infection (after sixth month)	19	76
Sixth month to 1 year	4	16
After 1 year	15	60
Orthopaedic device		
No orthopaedic device	3	12
Orthopaedic prosthesis	15	60
Knee prosthesis	8	32
Hip prosthesis	4	16
Ankle prosthesis	3	12
Other orthopaedic devices	7	28
Plate or screw	4	16
Intramedullary nails	2	8
Pins	1	4

Clin Microbiol Infect. 2014 Dec;20(12):O1052-8. doi: 10.1111/1469-0691.12743.

CASE REPORT Open Access

A rare lumbar pyogenic spondylodiscitis caused by staphylococcus caprae with initial misdiagnosis: case report and literature review

Zihan Fan, Yong Yang†, Dong Li and Qi Fei*†



There was no contact history of cows, goats or raw milk as well.

ELSEVIER MASSON

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Médecine et maladies infectieuses 43 (2013) 131–135

Médecine et maladies infectieuses

- 27 años
- Dx sacroileitis
- Portador de DVP
- Contacto con cabras
- *S. caprae* sensible a meticilina

Arthrites septiques à *Staphylococcus caprae*

Staphylococcus caprae ***arthritis***

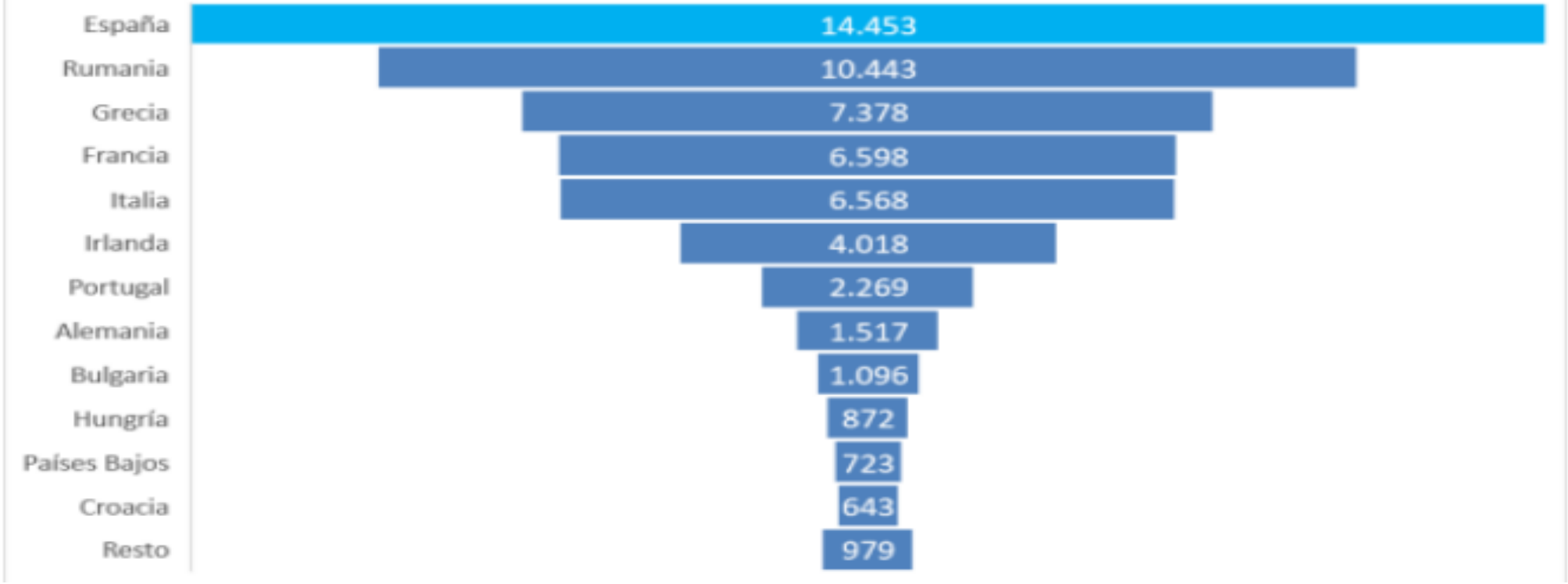
Mots clés : Staphylococcus caprae ; Arthrite ; Sacro-iliite ; Prothèse articulaire

Keywords: Staphylococcus caprae; Arthtitis; Sacroiliitis; Joint prosthesis

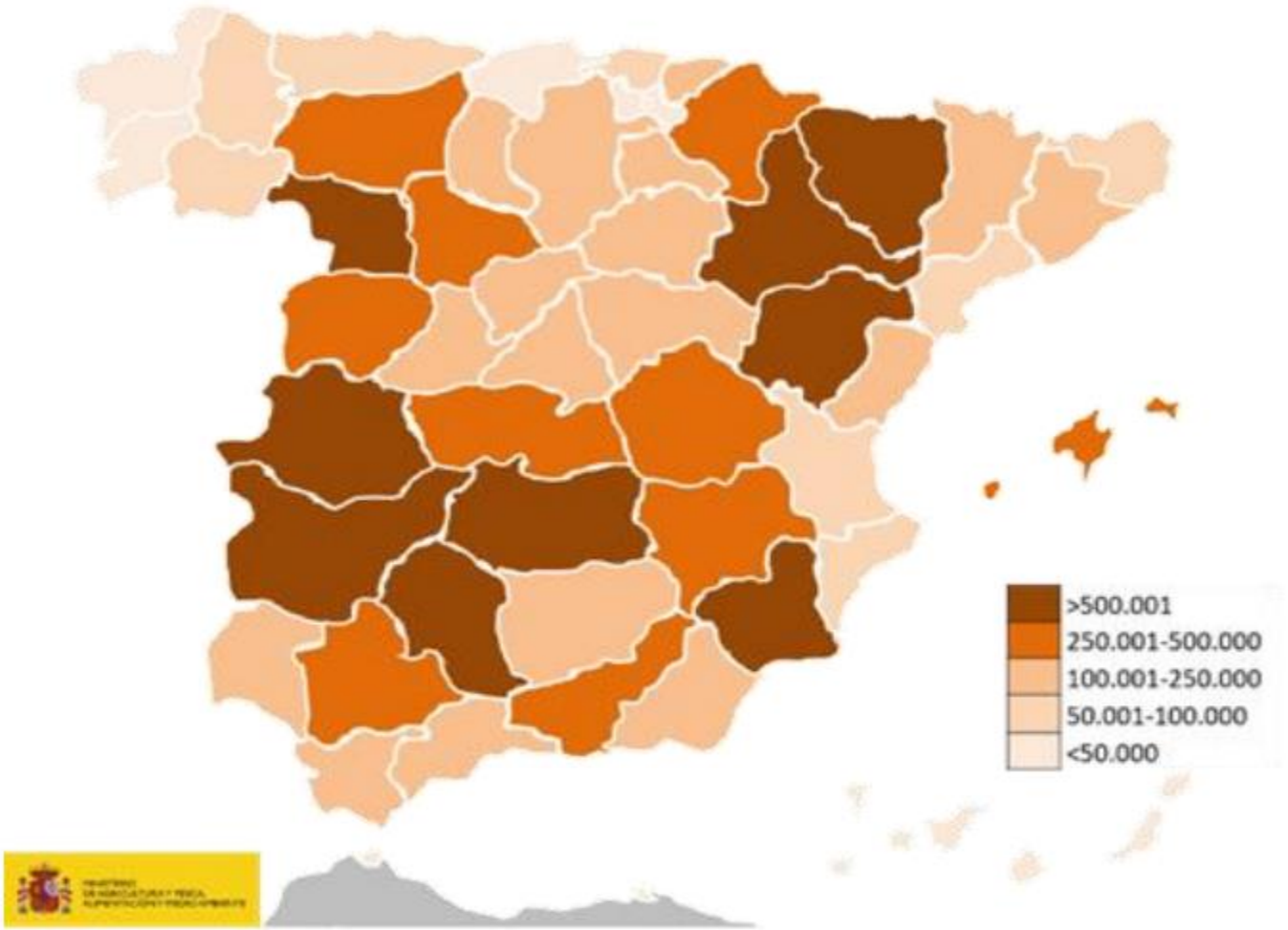
- 93 años
- Dx infección prótesis rodilla
- No contacto con cabras
- *S. caprae* sensible a meticilina

DISTRIBUCIÓN DEL CENSO DE OVINO POR PAÍSES EN LA UE-27

Fuente: Eurostat, 2022

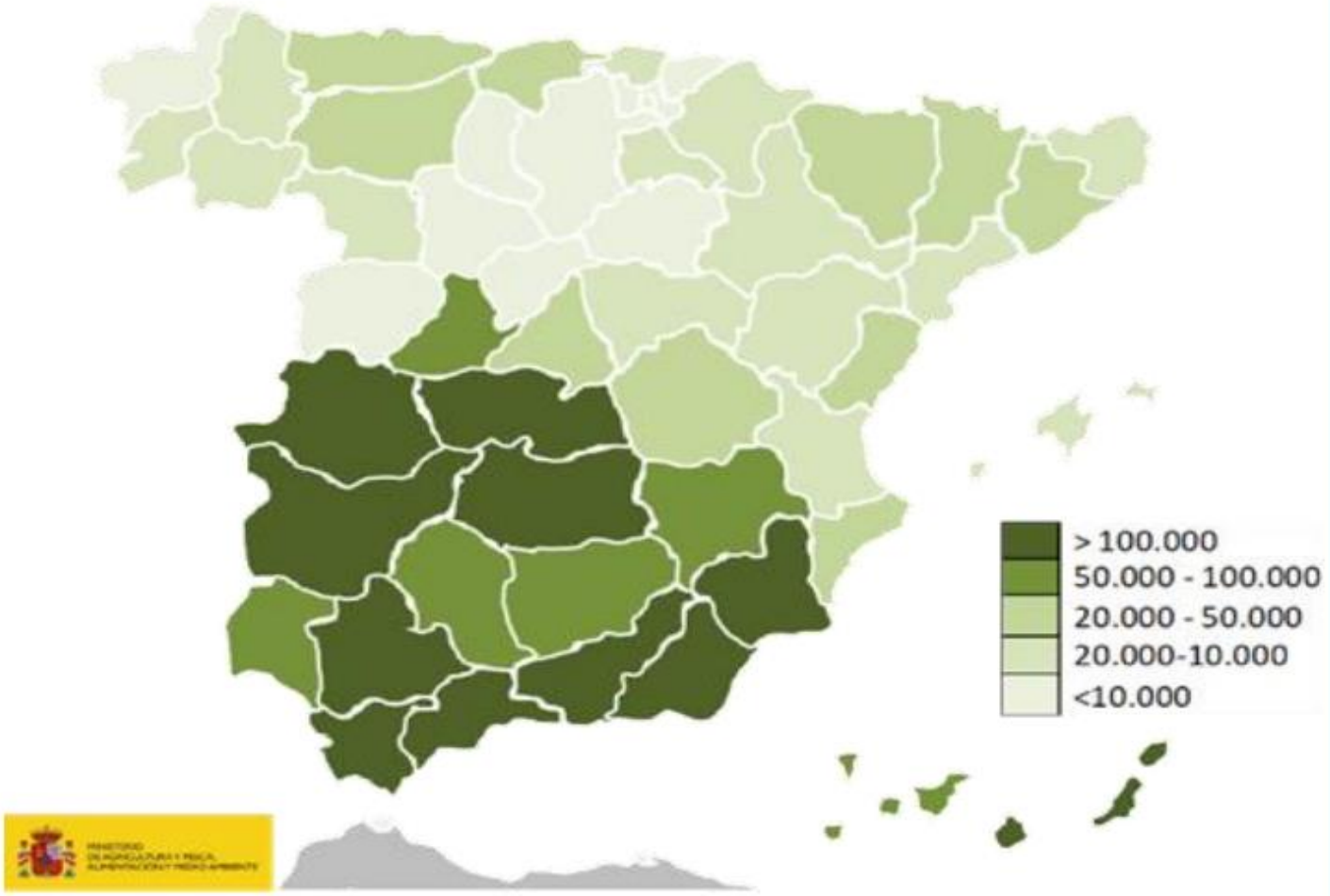


DISTRIBUCIÓN PROVINCIAL DEL CENSO DE OVINO – 2022



Fuente: S.G. Análisis, Coordinación y Estadística (MAPA). Elaboración: S.G. de Producciones Ganaderas y Cinegéticas

DISTRIBUCIÓN PROVINCIAL DEL CENSO DE CAPRINO – 2022



Fuente: S.G. Análisis, Coordinación y Estadística (MAPA), Elaboración: S.G. de Producciones Ganaderas y Cinegéticas

Situación en España

14 casos publicados

2 casos publicados en Cataluña

Características de la serie

Caso	Edad/ sexo	Factor predisponente	Cuadro clínico	Implicación material protésico	Localización	Cultivo	Infección polimicrobiana/germen acompañante
1	73/M	No	Politraumatismo	Sí	Columna cervical	Exudado tejido superficial herida quirúrgica	No
2	63/V	Inmunosupresión farmacológica	Absceso	No	Muslo	Exudado absceso cutáneo	Sí/*Streptococcus oralis*
3	57/V	Diabetes mellitus	Pie diabético	No	Pie	Exudado tejido profundo úlcera	Sí/*Actinomyces turicensis, Peptoniphilus, Parvimonas micra*
4	87/V	No	Aneurisma	No	Muslo	Exudado superficial herida quirúrgica	No
5	89/V	Diabetes mellitus, Enfermedad renal crónica	Pie diabético	No	Pie	Exudado tejido profundo úlcera	No
6	61/V	No	Osteomielitis	Sí	Pierna	Exudado tejido profundo perióseo herida quirúrgica	Sí/*Staphylococcus epidermidis*
7	66/V	No	Osteomielitis	Sí	Pie	Exudado tejido profundo perióseo herida quirúrgica	No
8	57/V	No	Derrame pericárdico	No	Bacteriemia	Sangre	No
9	88/V	No	Osteomielitis	Sí	Pie	Exudado tejido profundo perióseo herida quirúrgica	Sí/*Staphylococcus aureus* resistente a la meticilina, *Staphylococcus epidermidis*
10	77/V	Diabetes mellitus, Inmunosupresión farmacológica, Enfermedad renal crónica	Artritis	No	Pie	Líquido articular	Sí/*Staphylococcus epidermidis*
11	63/V	No	Isquemia extremidad inferior	No	Pierna	Exudado tejido superficial herida quirúrgica	No
12	62/V	Enfermedad renal crónica	Cardiopatía isquémica	No	Bacteriemia	Sangre	Sí/*Staphylococcus hominis*
13	53/V	Diabetes mellitus	Pie diabético	No	Pie	Exudado tejido profundo úlcera	*Sí/ Staphylococcus capitis, Peptoniphilus harei, Fusobacterium gonidiaformans, Peptostreptococcus anaerobius*

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Letter to the Editor

Staphylococcus caprae: an emerging pathogen related to infective endocarditis

Javier Díez de los Ríos [1,*], Marta Hernández-Meneses [2], María Navarro [3], Silvia Montserrat [4,5], Andres Perissinotti [6], Jose M. Miró [2,7], Hospital de Vic and Hospital Clinic Endocarditis teams

Summary characteristics of infective endocarditis because of *S. caprae* described in the literature, present two cases included

Case	Case 1	Case 2	Case 3	Case 4 (present study)	Case 5 (present study)
Year publication	1995	2016	2020	2023	2023
Age (y)	46	76	45	73	50
Sex	Male	Male	Male	Male	Female
Farm-animal contact	Not reported	No	Goats	Goats	Pig slaughterhouse
Underlying cardiopathy	No	Mild mitral regurgitation	No	Previous valve surgery	Previous valve surgery
Previous endocarditis	No	No	No	No	No
Type of IE	Native	Native	Native	Prosthetic + Native	Prosthetic
Valve involved	Mitral	Mitral	Aortic	Aortic + Mitral	Pulmonary
New onset heart failure	No	No	No	Yes	No
Clinical presentation	Malaise, night sweats (8 wk)	Fever, dry cough (2 wk)	Fever (2 wk)	Fever (2 wk)	Fever, dry cough (1 wk)
Diagnostic samples	Blood culture, valve culture	Blood culture	Valve culture	Blood culture, autopsy	Blood culture
Penicillin MIC (μg/mL)	Resistant MIC not reported	Resistant MIC not reported	Not reported	Susceptible. MIC ≤0.03	Resistant. MIC ≥0.5
Cloxacillin MIC (μg/mL)	Susceptible MIC not reported	Susceptible MIC not reported	Resistant MIC not reported	Susceptible. MIC = 0.5	Susceptible. MIC ≤0.25
Vancomycin MIC (μg/mL)	Susceptible MIC not reported	Susceptible MIC not reported	Susceptible MIC not reported	Susceptible. MIC = 1	Susceptible. MIC ≤0.5
Embolic events	None	Brain	Kidney, spleen, myocardial infarction	None	Lung
Treatment (duration)	Vancomycin (2 wk)	Flucloxacillin (6 wk)	Vancomycin (4 wk)	Cloxacillin, rifampicin (6 wk), gentamicin (2 wk)	Cloxacillin, rifampicin (6 wk) followed by levofloxacin, rifampicin
Surgery indication	Large vegetation	No	Aortic abscess + embolic events	Heart failure + paravalvular complications	No
Surgery	Vegetectomy	No	Yes	Yes	No
Outcome (follow-up)	Survived (at 3 y)	Survived (at 3 mo)	Survived	Died	Survived (at 9 mo)

IE, infective endocarditis.

Clin Microbiol Infect. 2023 Sep;29(9):1214-1216. doi: 10.1016/j.cmi.2023.06.006.

Clinical characteristics and epidemiological of *S. caprae* infections in Catalonia.

Germans Trias i Pujol Hospital

CHV CONSORCI HOSPITALARI DE VIC

Characteristics	Total (n=31)	HUV (n=16)	HTGiP (n=15)
Demographic			
Age, y, median	58,87	55,31	62,67
Male sex	18 (58,1)	7 (43,8)	11(73,3)
Period			
2010-2016	8 (25,8)	8 (50)	0 (0)
2017-2023	23(74,2)	8 (50)	15 (100)
Charlson índex	3,55	3,06	4,07
Livestock exposure (goats, sheep, pigs, abattoirs, close relatives)	8 (25,8)	7 (43,75)	1 (6,7)
Type of infection			
Skin and SSTI	10 (32,3)	8 (50)	2 (13,3)
Osteomyelitis	6 (19,4)	0 (0)	6 (40)
Joint prosthetic infections	5 (16,1)	1 (6,25)	4 (26,7)
Bursitis	3 (9,7)	1 (6,25)	2 (13,3)
Infective endocarditis	2 (6,5)	2 (12,5)	0 (0)
Urinary tract infection	2 (6,5)	2 (12,5)	0 (0)
Diabetic foot infection	1 (3,2)	0 (0)	1 (6,7)
Tunneled catheter for haemodyalisi infection	1 (3,2)	1 (6,25)	0 (0)
Otitis media	1 (3,2)	1 (6,25)	0 (0)
Oxacillin susceptibility	31 (100)	16 (100)	15(100)
Outcomes			
In-hospital death	1(3,2)	1 (3,2)	0 (0)
1-year death	0 (0)	0 (0)	0 (0)

Datos preliminares, pendiente de publicación

Conclusiones

- We suggest strong suspicion of IE in any patient with fever and positive coagulase-negative staphylococcal blood cultures, particularly in individuals from rural areas with livestock contact.

- In our latest study, more than 75% of *S. caprae* infections are related to skin and osteoarticular infections.

- The future will determine whether *S. caprae* is an emerging pathogen in humans.

Gracias por vuestra atención