Table 1.

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| PMID | Age | Area | Rat Exposure, Route of inoculation, Incubation period | Diagnostics | Prodromi | Clinical Features And Complications | Biochemistry | Differential Diagnosis | Treatment Regimen | Hospital Admission | Outcome |
| 11484516(2001) **(1)**11411484516 (2001) (1)84516(2001) (1) | 16 | BE | -Bite of a pet rat a few days before admission | Blood cultures:growth after 72h of incubation>Gram stain: pleomorphic, filamentous and branching, non-motile Gram-negative bacilli with swellings >Culture: positive>Identification (phenotypically and gaschromatographically): *Streptobacillus moniliformis* | -minus D1:-recurrent vomiting-headache | D0:-fever-headache-recurrent vomiting |  | \*meningitis\*urinary tract infection | amoxicillin-clavulanate IV (3 days) and PO (10 days) (4x 500mg) | yes | CR |
| 11757440 (2001) (2)11757440(2001) (2)011757440 (2001) (2)11757440 (2001) (2)11757440 | 48 | NO | -Bite by pet rat, 10 days before hospital admission | Blood cultures: >Culture positive: *Streptobacillus moniliformis* |  | -minus D5: fever + malaise-minus D3:rash and arthritis hand and feetD0: hospital admission | CRP: 231 md/dlESR: 88/houraspartate aminotransferase: 87U/Lalanine aminotransferase 218 U/Lgamma-GT 461 U/L |  | Erythromycin > 2 weeks IV penicillin | yes | CR |
| 11518380 (2011518380 (2001) (3)01) (3) | 13 | UK | -rat bite on the fingertip 5 days before the onset of symptoms in a pet shop | Right hip joint effusion (arthrotomy and joint lavage) >seropurulent material>Gram stain: Gram-negative bacilli>culture: *Streptobacillus moniliformis* (using special culture media) sensitive to penicillin | -minus D9: malaise and fluctuating arthralgia affecting the right hip | D0:-progressive worsening of right hip pain and inability to bear weight-initially apyrexial, 39°C a few hours after admission | L: normalESR: >100/hourCRP: 69 mg/L |  | IV penicillin > oral amoxycillin (6 weeks) | yes | CR |
| 12922949 (2003)12922949 (2003) (4)(4) | 62 | UK | -minus D21: rat bite on left foot | right knee aspiration: >purulent>neutrophilic formula >Gram stain: regular Gram negative intracellular bacilli >culture: positive (small grey colonies)>Gram stain colonies: filamentous cells with many bulbous swellings, typical of *Streptobacillus moniliformis* Blood cultures: negativeTTE: negative | -minus D17: pain over his left foot followed by pain and swelling in both knees, elbows, wrists, the small joints of both hands, and the left ankle | D0: -febrile-jaundice-synovitis affecting the wrists, interphalangeal and metacarpophalangeal joints of the hands, effusions in the right knee, right ankle, and left midtarsal joint | L: 29.3×109/L with 90% PMN CRP: 197 mg/lLiver function tests: cholestatic hepatitis serum bilirubin 55 μmol/lalkaline phosphatase 399 U/lalanine aminotransferase 230 U/laspartate aminotransferase 63 U/l Hepatitis B and C serology: negative | -sepsis-hepatitis-streptobacillary septic arthritis | Oral ciprofloxacin and doxycycline (history suggestive of type I hypersensitivity to penicillin) > high dose IV penicillin G 18 MU during 4 weeks (skin tests to penicillin G: negative) | y | CR |
| 12810419 (2003)

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| 12810419 (2003) (5) |

(5) | 56 | UK | -rat bitein the web space of the index and middle finger of the right hand 3 weeks before admission | left ankle aspirate:>urate crystalsleft thumb MCP joint aspirate:>Gram stain:“odd” Gram positive coccus>culture:Gram negative pleomorphic coccobacillus *Streptobacillus moniliformis* (confirmed by DNA sequencing) | -10D: fevers,cough, sore throat, and loose stools-8D: acute polyarthritis affecting the right wrist, leftthumb, both feet, and the right ankle, followed by arash over elbows, fingers, and feet | -Apyrexal-maculopapular, nonblanchingrash with pustules and necrosis overthe extensor surfaces of both elbows and left calf-acute, erythematous synovitisaffecting the right elbow, wrist, and shoulder, left thumbMCP joint, both mid-tarsal joints, and right ankle-healing lesion in the web space of the index and middle finger of the right handComplications:>Critical ischaemia on his right handfrom the mid-palm distally>Pyrexia>Acute worsening of his joint symptoms (left ankle and thumb)Diagnosis: rat bite fever complicated by polyarticulargout | L: 12.6\*109/lneutrophils: 11.4\*109/lCRP: 225mg/lESR: 79 mm/1st hour | -reactive arthritis-vasculitis | methylprednisolone and cyclophosphamide(presumed medium vessel vasculitis)Colchicine (gout)IV benzylpenicillin and flucloxacillin > 6 weeksoral doxycycline | yes | gradual recovery, with persistent damage to the right wrist and left hand extensor tendons |
| 18562588 (2005)18562588 (2005) (6)(6) | 80 | FR | -shaking chills and back pain, a few days after a rooster scratch on his left hand | -Blood cultures: positive>3 anaerobic bottles >2 aerobic bottles> gram stain: pleomorphic forms with fusiform gram-negative rods > culture: positive> identification by conventional biochemical and carbohydrate analysis: failed> identification by 16S rRNA sequencing from agar cultures: failed Aspiration of the abscess: > Gram stain: pleomorphic fusiform gram-negative rods> Culture: negative> 16S rRNA PCR assay: obtained 450-kb amplicon shared 99% homology with that of the 16S rRNA gene of *Streptobacillus moniliformis* Pericardial and pleural effusions and collections in the right iliac psoas in contact with a screw of the right prosthesis> Culture: negative | -minusD7: shaking chills without fever and back pain that irradiated to both legs, which gradually disappeared | Medical history:-bilateral total hip replacementD0:-deterioration of general health-inflammatory syndromeComplications:-psoas abscess and spondylodiscitis at T5 and T6 and at L2 and L3 | L: 19 x 109/L with 18 x 109/L neutrophilsCRP: 488 mg/LProcalcitonin: 13 ng/ml (<0.5 ng/ml) | -Sepsis-Cauda equina syndrome-lumbar hernia-Spondylodiscitis-Malignancy | IV amoxicillin-clavulanic acid 3\*1g + ofloxacin 2\*200 mg > imipenem – cilastatin 2\*1g + ciprofloxacin 2\*400 mg + teicoplanin 1\*600 mg > 9 week treatment with IV ofloxacin 2\*200 mg + clindamycin 3\*600 mg + metronidazole 3\*500 mg | yes | CR |
| 16186643 (2005) (716186643 (2005) (7)) | 23 | NL | -nine pet rats-an assistant at a veterinary clinic-no overt bite | Blood cultures: >Gram stain: gram-negative rods>Culture: *Streptobacillus moniliformis*A PCR for *Streptobacillus moniliformis* using the saliva of the pet rats: positive | -malaise for several weeks- painful and swollen joints (knees and wrists most prominently)- a large red lesion on the right upper arm, which had resolved spontaneously- painful, small, red spots on her hands and feet with especially the palmar side of the hands and fingers affected | D0: - fever accompanied by rigors- slight swelling of the left wrist, with diminished flexion- a maculopapular rash with numerous small, dark-red eruptions, some of which with a blister-like appearance on both hands and feet- a small aphthous lesion on lateral edge of the tongue | CRP: 22 mg/l | - systemic lupus erythematosus - Henoch-Schonlein purpura- cytomegaly/ Epstein-Barr virus infection- toxic drug reaction- secondary syphilis | Treatment with oral clarithromycin | yes | CR |
| 16254115 (2005)16254115 (2005) (8)(8) | 7 | FR | -two pet rats and direct contact with rats’ faeces | Blood cultures: negativeCerebrospinal fluid cultures: negativeBlister fluid samples:>Gram stain: pleomorphic Gram negative rods>culture positive>Biochemical identification: unsuccessful>Antimicrobial susceptibility testing: unsuccesfull>bacterial 16S ribosomal DNA PCR: 99% similarity with the Genbank *Streptobacillus moniliformis* sequence Z35305 (type strain ATCC16467) |  | D0:-fever-bilateral arthralgia in the knees, ankles, elbows, and wrists-maculopapular morbilliform exanthema on the palms and soles, associated with several blisters (3–8 mm in diameter), containing a whitish fluid, on the face and elbowsD5:-bilateral desquamation of the fingers and toes | L: normalCRP: 300 mg/LESR: 60 mm/hour | -atypical Kawasaki disease-toxic shock syndrom | Erythromycin (7 days) and amoxicillin (15 days) | yes | CR |
| 18023687(2007) (9)18023687 (2007) (9) | 29 | GE | -right hand injury 2 weeks before admission | Aortic valve:> Gram stain: Gram-positive/Gram-variable straight, curved, and filamentous rods> Culture: tiny colonies on blood sheep agar, showing long filamentous Gram-variable rods>Identification: 16S rRNA gene sequencing:  *Streptobacillus moniliformis*  Blood cultures: negative | Right hand injury with progressive lethargy and weakness | D0: Fever, dyspnea, dizziness, increasing somnolenceComplication: Endocarditis with giant floating vegetations on a degenerated, insufficient aortic valve and a large perivalvular abscess cavity |  | -Sepsis | empirical antibiotic therapy: ampicillin, ceftriaxone, and gentamicin > penicillin, fosfomycin, and gentamicin | Yes | Almost normal left and right ventricular function with a well-functioning aortic valve prosthesis on echocardiography |
| 22180758 (2009)

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| 22180758 (2009) (10) |

(10) | 23 | UK | manipulation of a dead rat two weeks before his illness | blood cultures:culture: weak growth of a Gram variable rodPCR: *Streptobacillus moniliformis* |  | D0:- swinging pyrexia, rigors- headache- abdominal pain, vomiting with right upper quadrant tenderness- right shoulder pain with unremarkable examination- no rashes | L: 12×109 cells/LCRP: 333 mg/Lalkaline phosphatase 130 IU/l (NR 45–120 IU/L), aspartate transaminase 278 IU/l (NR 0–40 IU/l), alanine transaminase 339 IU/l (NR 0–40 IU/l), γ-glutamyltransferase 210 IU/l (NR 11–50 IU/l) | Atypical PneumoniaUrinary tract infection | oral amoxicillin/clavulanic acid and erythromycin | yes | CR |
| 21292904 (2011) (11)21292904 (2011) (11) | 89 | FR | -living alone in precarious conditions in contact with rats | Blood cultures:>1 anaërobic bottle: growth detection>gram stain: pleomorphic filaments and branching Gram-negative bacilli. |  | D0: foot burns (domestic accident)D4: fever, somnolence |  | -Sepsis | Amoxicillin- clavulanate and gentamicin>D9: ceftazidime, vancomicin, and metronidazole>D11: rifampicine | yes | Died on day 14 |
|  |  |  |  | >Culture: negative>16S-rRNA gene amplification PCR assay followed by sequencing: *Streptobacillus. moniliformis* -Centrifugation shell vial technique: inoculation of previously frozen blood culture broth sample on Colombia blood agar (bioMerieux) and ECV 304 human endothelial cell monolayers: after 24 hours, a cyto- pathic effect was observed on the monolayer cells shell vial super- natant: >Gimenez and gram staining: Gram-negative bacillus inoculated onto Colombia blood agar and new shell vials: both positive. bacterial identity was verified again by 16S rRNA gene sequencing |  |  |  |  | and doxycyclin |  |  |
| 22744925 (2012) (12)22744925 (2012) (12) | 55 | NL | -rat breeding to feed pet snakes with regular rat bites | Left thenar eminence pus culture:> Gram stain: pleomorphic Gram-negative bacillus > S16 rRNA sequencing: *Streptobacillus moniliformis* | -MinusD4: fever with headaches, myalgia and neck pain | D0:-subfebrillitas- nausea- red spotted non-blanchable maculopapular rash on both palms and soles joint- pain of the wrists and fingers with enlarged and painful left thenar eminence | L: 8.6 x 109/l CRP: 235 mg/l | -Leprospirosis,-Parvovirus B19-Coxackievirus- Enterovirus- Syphilis | Oral doxycyclin | No | CR |
| 25414213 (2014) (13)25414213 (2014) (13) | 49 | UK | -homeless man-no overt animal bites or rodent contact-contaminated foodproducts? | Positive blood cultures:> Direct Gram stains: long and thin filamentous gram-negative rods in loops and coils>Culture: Small grey–white colonies> MALDI-TOF MS: S. moniliformis (ID scores of 1.8 and 2.1)>16S ribosomal RNA (rRNA) gene detection and sequencing: S. moniliformis> susceptibility testing: unsuccessful |  | - septic with high-grade fever (40°C)- progressively worsening right leg pain, swelling and rash-apical pan-systolic murmur-splinter hemorrhages-TTE and TEE: vegetation on mitral valve-splenic infarcts secondary to probable septic emboliInfective endocarditis | L: normalCRP: 117 mg/Lnormocytic normochromic anemia | cellulitis with deep vein thrombosisoccult abscesses (chest, abdomen, pelvis) | IV benzylpenicillin and flucloxacillin > co-amoxiclav and gentamicin > meropenem and doxycycline > IV high-dose benzylpenicillin 6\*2.4 g and oral doxycycline 2\*100 mg(6 weeks) | yes | CR after mitral valve replacement |
| 24695665 (2014) (1424695665 (2014) (14)) | 29 | UK | -direct contact with multiple pet rats | Blood cultures: negativeRight ankle joint aspiration>purulent>microscopy: no organisms>culture: no growth on culture>bacterial 16S rRNA PCR: negative.Repeat right ankle aspirate:>bacterial 16S rRNA PCR:positive for the 16S rRNA gene, diagnostic for *Streptobacillus moniliformis* infection | -minus D5: worsening generalized malaise, fever, sore throat and polyarthralgia | D0:- malaise- fever- sore throat- polyarthralgia- bilateral plantopalmar rash(widespread, partially blanching, rash with vesicular, petechial and pustular components over both feet, hands, legs and buttocks) | L: 10.62×109 cells/LCRP: 211 mg/LESR: 36 mm/h (normal <14 mm/h) | VasculitisViral exanthematous pustulosis | empirical broad-spectrum antibiotics>IV benzylpenicillin(2 weeks)> oral amoxicillin (3 weeks) and physiotherapy | yes | CR (minimal pain on impact activities) |
| **28652481 (2017) (15**28652481 (2017) (15)**)** | 44 | UK | -purchase of live rats to feed pet snakes-no overt rat bites or scratches-direct contact of bare hands with rat and snake faeces two days before onset of systemic symptoms | -Blood cultures: negative-Aspiration of right knee effusion>purulent>neutrophilic formula>Gram stain: pleomorphic, filamentous, gram-negative rods arranged in chains and tangles>culture: positive for *Streptobacillus moniliformis* | -minus D14: acute malaise, headache, myalgias, subjective fevers, vomiting and diarrhea with resolution | Medical history:-mild psoriasis-bilateral ankle fractures-right metacarpal fracture -right knee anterior cruciate ligament repairD0: -subfebrillitas-swelling of ankles and right knee, hand, wrist and shoulder -large right knee effusion -no rashes | L: 10.3 × 109/L CRP: 340 mg/L | -Septic arthritis-Seronegative inflammatory arthritis (spondyloarthritis)-Rheumatoid arthritis -Crystal related arthritis -Sarcoidosis | IV cefazolin (2 days) > IV penicillin G 6\*2 MU (2 weeks) > IV ceftriaxone 2g (2weeks) | yes | - Extension of therapy with 2 because of persistent mild wrist pain at completion of the course of IV penicillin G- CR |
| 28322713 (2017) (16)28322713 (2017) (16) | 59 | FR |  |  | -15-day history of fever and arthralgia (left knee, right wrist) but no signs of rash | un­able to stand had acute progressive onset of dyspnea | L: 15 × 109/L, predominantly neutro­phils, CRP: 125 mg/L |  |  | Yes, IC |  |
| 31859955 (2019) (17)31859955 (2019) (17) | 76 | PT | rat bite | lumbar puncture: normal CSF CT scan: normalBlood cultures: positiveIdentification by PCR and Sanger sequencing targeting bacterial 16S rRNA: *Streptobacillus moniliformis* TEE negativeMagnetic resonance imaging (MRI) with T2-weighted images: high signal intensity in the C5, C6, and C7 vertebrae with meningeal enhancement and the left sternoclavicular joint. | medical history: cervical degenerative disc disease | D0: -four-day history of fever, prostration, myalgias, and headache-subfebrile, hypotensive, incised wounds on two fingers of her left hand-neck stiffnessD3: worsening neck pain and tetraparesis Diagnosis: vertebral osteomyelitis and septic arthritis associated with rat bite fever | L: 14,670/μL (86.3% neutrophils) CRP: 334 mg/dL |  | IV ceftriaxone 2 g (26 days) > oral amoxicillin- clavulanate (eight months) after hospital discharge | yes | CR |
| 32998485 (2020)

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| 32998485 (2020) (18) |

(18) | 20 | No | -scratches from pet rats a few days before start of illness-worked as a nurse in a veterinary clinic | Blood cultures:>culture: gram-negative rods>identification using MALDI- TOF MS: *Streptobacillus moniliformis* | -couple of episodes of chills in the days prior to admission to the hospital | D0: 3-to-4-day history of fever, headache, dizziness, nausea and a maculopapular exanthema on her arms and palms of her hands | L: 13 ∙ 109/L (normal differential count)CRP: 222 mg/l | viral syndrome | IV cefotaxime 3 x 2g (3 days) > IV ceftriaxone 1 x 1g (4days) > PO therapy phenoxymethylpenicillin 4 x 1g (7 days) | yes | CR |
| 32117690 (2020) (19)32117690 (2020) (19) | 66 | UK | -minus D8: bite by a small rodent on her right thumb, brought into the home by her cat | Blood cultures: negativeJoint aspirate and arthroscopic washout: negative operative tissue samples (two-stage revision)>16S PCR: *Streptobacillus moniliformis* |  | Medical history:osteoarthritis:2011: right unicondylar knee replacement2014: right total knee replacementD0: -progressive thumb inflammation -acute-onset right knee inflammation-self-dischargeD2: Re-admission- progressive deterioration of her right knee, unable to weightbear -pyrexia, sweating and intermittent rigors - erythematous and tensely swollen thumb with development of a soft tissue abscess - right prosthetic knee was hot, with a moderate effusion and severe generalised tendernessComplications: sepsis, delirium | L: 19.2 x109/L CRP: 353 mg/L | -Surinfected bite wound-sepsis-prosthetic joint infection | IV vancomycin and doxycycline>meropenem (6weeks) (type-1 hypersensitivity to penicillin-based antibiotics) | yes | CR after two-stage knee revision |
| Roeselare (2020) (20)Roeselare (2020) (20) | 11 | BE | -bite of a pet rat | Blood cultures: positive(MALDI-TOF) | -minus D14: recurrent fevers-polyarthritis (left shoulder, ellbow, knee and finger)-fluctuating rash on trunck and limbs | D0:-fever-polyarthritis-rash | L: 12 700/mm3 with 10 130/mm3 neutrophilsCRP: 8,6 mg/dl | -infectious syndome:-Enterovirus-Parvovirus B19-EBV-Brucella | amoxicillin (4\*1g) for 2 weeks | yes | CR |

Table 1.