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Liver abscess due to *Granulicatella adiacens* in an immunocompetent patient: A case report

Absceso hepático por *Granulicatella adiacens* en paciente inmunocompetente: Un reporte de caso

Absceso hepático por *Granulicatella adiacens*

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Julio Garcia-Casallas: analysis of clinical aspects, data collection and writing of the work.

Katherine Patiño-Salazar and Eduardo Tuta-Quintero: management, search and data analysis, participated in the design and writing of the work.

Miguel Molina-Ardila: designed and wrote the paper

Pyogenic liver abscesses due to *Granulicatella adiacens* are infections associated with high mortality, mainly in immunocompromised patients. The main microorganisms associated with liver abscesses are *Klebsiella pneumoniae, Escherichia coli,* or polymicrobial. However, case reports describing liver infection by *Granulicatella adiacens* are limited.

We present the case of an immunocompetent adult patient who presented 15 days of evolution consisting of quantified fever peaks associated with asthenia, adynamia, chills, jaundice and coluria. The initial clinical examination revealed generalized icteric tint without the presence of abdominal pain and blood pressure with a tendency to hypotension. Biliopancreatic confluent neoplasia, secondary cholangitis and sepsis of biliary origin were suspected, initiating fluid resuscitation and antibiotic therapy, blood cultures and complementary diagnostic studies were taken. Hepatobiliary ultrasound with evidence of abscess of 73 x 62 mm in segment IV, bile duct and pancreas within normal limits. In order to better characterize the lesion evidenced in the liver, a contrast-enhanced computed tomography of the abdomen was performed. The patient completed antibiotic management with ciprofloxacin, vancomycin, and metronidazole in good condition and was successfully discharged.

This is the first pyogenic liver abscesses reported caused by *Granulicatella adiacens* in an immunocompetent patient, where early microbiological diagnosis in conjunction with targeted antibiotic treatment and percutaneous drainage of the lesion was decisive in the clinical outcomes.

Key words: Liver Abscess, Pyogenic; case reports.

Los abscesos hepáticos piógenos por *Granulicatella adiacens* son infecciones asociadas a una alta mortalidad, principalmente en pacientes inmunocomprometidos. Los principales microorganismos asociados a los abscesos hepáticos son *Klebsiella pneumoniae*, *Escherichia coli* o polimicrobianos. Sin embargo, los informes de casos que describen la infección hepática por *G. adiacens* son limitados.

Presentamos el caso de un paciente adulto inmunocompetente que presentó 15 días de evolución consistente en picos febriles cuantificados asociados a astenia, adinamia, escalofríos, ictericia y coluria. El examen clínico inicial reveló tinte ictérico generalizado sin presencia de dolor abdominal y presión arterial con tendencia a la hipotensión. Se sospechó neoplasia biliopancreática confluente, colangitis secundaria y sepsis de origen biliar, iniciándose reanimación con líquidos y antibioterapia, se tomaron hemocultivos y estudios diagnósticos complementarios. Ultrasonido hepatobiliar con evidencia de absceso de 73 x 62 mm en segmento IV, vía biliar y páncreas dentro de límites normales. Se realizaron múltiples pruebas moleculares de detección de microorganismos (FilmArray), identificando a *G. adiacens* como el principal patógeno. El paciente completó manejo antibiótico con ciprofloxacino, vancomicina y metronidazol en buenas condiciones y fue dado de alta con éxito.

Este es el primer absceso hepático piogénico reportado causado por *G. adiacens* en un paciente inmunocompetente, donde el diagnóstico microbiológico temprano en conjunto con el tratamiento antibiótico dirigido y el drenaje percutáneo de la lesión fueron determinantes en los resultados clínicos.

Palabras clave: abscesos hepáticos piógenos; reporte de caso.

Pyogenic liver abscesses are suppurative infections of the liver parenchyma associated with a mortality of 10 to 31% in the first 30 days of hospitalization, mainly in immunocompromised patients (1). The most common causes of pyogenic liver abscesses are abdominal infections such as appendicitis or peritonitis, bacteremia, bile duct infection and trauma, when no cause or risk factor associated with the abscess is found, it is described as cryptogenic (1). The main microorganisms associated with liver abscesses are *Klebsiella pneumoniae, Streptococcus milleri, Escherichia coli*, *Burkholderia pseudomallei* and *Staphylococcus aureus* (2,3).

Granulicatella adiacens Gis a nutritional variant of *Streptococcus* from the viridans group, belonging more specifically to the genus Abiotrophia and in recent years described in the genus *Granulicatella spp* (2). *G. adiacens* is present in the oral, gastrointestinal and urogenital flora as commensal bacteria (1,2). At present, the main reported cases of infection by this bacterium are in patients diagnosed with endocarditis, septic arthritis and bacteremia, mainly in users of breast implants, pacemakers, catheters and dental procedures (3). However, reports describing liver infection by this bacterium are limited (2,4,5). We present the case of an immunocompetent adult patient who developed liver abscesses and sepsis due to infection by *G. adiacens.*

Clinical case

A 69-year-old male with a medical history of heavy smoking and allergy to penicillins due to rahs and generalized itching after administration of an intramuscular dose. The patient presented 15 days of evolution consisting of

quantified fever peaks associated with asthenia, adynamia, chills, jaundice and coluria. The initial clinical examination revealed generalized icteric tint without the presence of abdominal pain and blood pressure with a tendency to hypotension. Admission laboratory exams report leukocytosis at the expense of neutrophilia, thrombocytopenia, direct hyperbilirubinemia and compensated metabolic acidosis with hyperlactatemia table 1, calculating a Sequential Organ Failure Assessment of 7 points. Therefore, biliopancreatic confluent neoplasia, secondary cholangitis and sepsis of biliary origin were suspected, initiating fluid resuscitation and antibiotic therapy with ciprofloxacin and metronidazole. Blood cultures and complementary diagnostic studies were taken simultaneously. The patient was transferred to the intermediate care unit, without requiring vasopressor support or invasive mechanical ventilation.

Hepatobiliary ultrasound with evidence of abscess of 73 x 62 mm in segment IV, bile duct and pancreas within normal limits. In order to better characterize the lesion evidenced in the liver, a contrast-enhanced computed tomography of the abdomen was performed figure 1. The patient was referred for percutaneous drainage of the abscess under ultrasound and fluoroscopic guidance with minimal difficulty, culturing the drained material.

Culture reports showed preliminary results with gram-positive cocci, so vancomycin was added to the antibiotic treatment. In addition, multiple microorganism detection molecular tests (FilmArray) were performed, identifying *G. adiacens* as the main pathogen. Antibiotic susceptibility testing allowed ciprofloxacin, vancomycin, and

metronidazole to continue for one month. The patient completed the established antibiotic management in good condition and was successfully discharged.

Ethical considerations

Patient was not involved in the development of the study, and data were analyzed anonymously and approved by the research ethics committee of Clinica Universidad de La Sabana. The results will be disseminated to the scientific community in academic writing.

Discussion

In this clinical case, the report of the microbiological isolation of *G. adiacens* is presented in a patient with no pathological history or users of devices that facilitate its colonization. The patient presented hypotension, leukocytosis, positive cultures, and the tomography showed a liver abscess. Currently, more than 90% of polymicrobial abscesses (4), while in our case only *G. adiacens* was detected as the main pathogen (5).

Pyogenic liver abscesses can have a biliary (40.1%), cryptogenic (26.2%) and portal vein (16.1%) infection route (4,6). In Colombia the most frequent hepatic abscesses due to *Escherichia coli, Streptococcus viridans, Staphylococcus epidermidis, Streptococcus, Staphylococcus aureus* and *Pseudomonas aeruginosa* (3,4,6). However, in patients with immunosuppression due to HIV infection, chemotherapy and organ transplantation, abscesses may occur due to fungi and opportunistic germs (3). Causes of immunosuppression such as human immunodeficiency virus infection or consumption of immunosuppressive drugs were ruled out for the patient described in the case report.

G. adiacens are nutritionally variant gram-positive streptococci that have high nutritional needs for l-cysteine or pyridoxal to support growth, the latter is commonly found in human blood in low amounts of between 20 and 45 µg/ml (1,2,5). Alberti et al. (7), evaluated 132 isolates in blood cultures of bacteria with high nutritional levels of pyridoxal, including *G. adiacens* and *G. elegans*, in order to evaluate the antimicrobial susceptibility pattern. 33% of the isolates were susceptible and 14% resistant to penicillin, finding *G. adiacens* in a high number of susceptible isolates (38.9% versus 10.8%). In our case, the result of the antibiogram revealed that gentamicin, streptomycin and vancomycin were sensitive for all isolates. On the other hand, although the pattern of resistance to penicillin is low, the penicillin allergy described in the clinical history did not allow starting antibiotics with beta-lactams, using cyclic lipopeptides and rifampicin.

In pyogenic liver abscesses, targeted antibiotic therapy and percutaneous drainage greatly decrease the mortality rate from 70% to less than 10%; however, focusing on an antibiotic regimen is a medical challenge because these infections are usually polymicrobial due to anaerobic bacteria and members of the gastrointestinal flora (8-10). The evidence of extravascular infections by *G. adiacens* is limited, being the most frequent anatomical location in the joints, ocular orbit, lung, among others, or after joint prosthetic procedures (3,6). This case is novel because AF due to *G. adiacens* in an immunocompetent patient is unusual in the medical context (2,9,10,11).

Ideally, the pyogenic liver abscesses should be drained for a microbiological diagnosis and removal of purulent material as a complement to antibiotic

treatment, the drainage route of the abscess should preferably be guided percutaneous and include anaerobic identification (12,13). However, the percutaneous or surgical drainage route should be selected according to conditions such as accessibility according to the anatomical location, number of abscesses, size and the clinical condition of the patient (13,14).

One of the main limitations was the non-availability of interventional radiology, however, the patient presented an adequate clinical evolution after minimally invasive drainage. The follow-up from admission to the emergency service allowed a detailed description of the clinical case, in addition, it was reassessed in external consultations.

Conclusion

This is the first pyogenic liver abscesses reported caused by *G. adiacens* in an immunocompetent patient, where early microbiological diagnosis in conjunction with targeted antibiotic treatment and percutaneous drainage of the lesion was decisive in the clinical outcomes. Despite the fact that a high percentage of patients with *G. adiacens* infection present multiple comorbidities and compromise of the immune system, clinical and paraclinical suspicion in immunocompetent patients without medical history should be taken into account when faced with an intra-abdominal focus of infection and pyogenic liver abscesses.

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Conflict of interest

The authors declare that they have no conflict of interest.

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Table 1. Laboratory studies on admission to the emergency service.

Leukocytes	21.720 cel/ml.
Neutrophils	19.630 cel/ml.
Hemoglobin	11.2 g/dL.
Hematocrit	33 %.
Platelets	254.000 mcl.
Albumin	3,75 g/L.
C-reactive protein	180 mg/L.
Alanine aminotransferase	19 U/L.
Aspartate aminotransferase	38 U/L.
Total bilirubins	2,25 mg/dL.
Creatinine	1,2 mg/dL.
Ureic nitrogen	17,6 mg/dL.
Glucose	120 mg/dL.
Sodium	138 meq/dL.

Notes: cel, cells; ml, mililitres; g, grames; dL, decilitres; mcl, microlitres; U, units; L, litres; meq, milliequivalents.

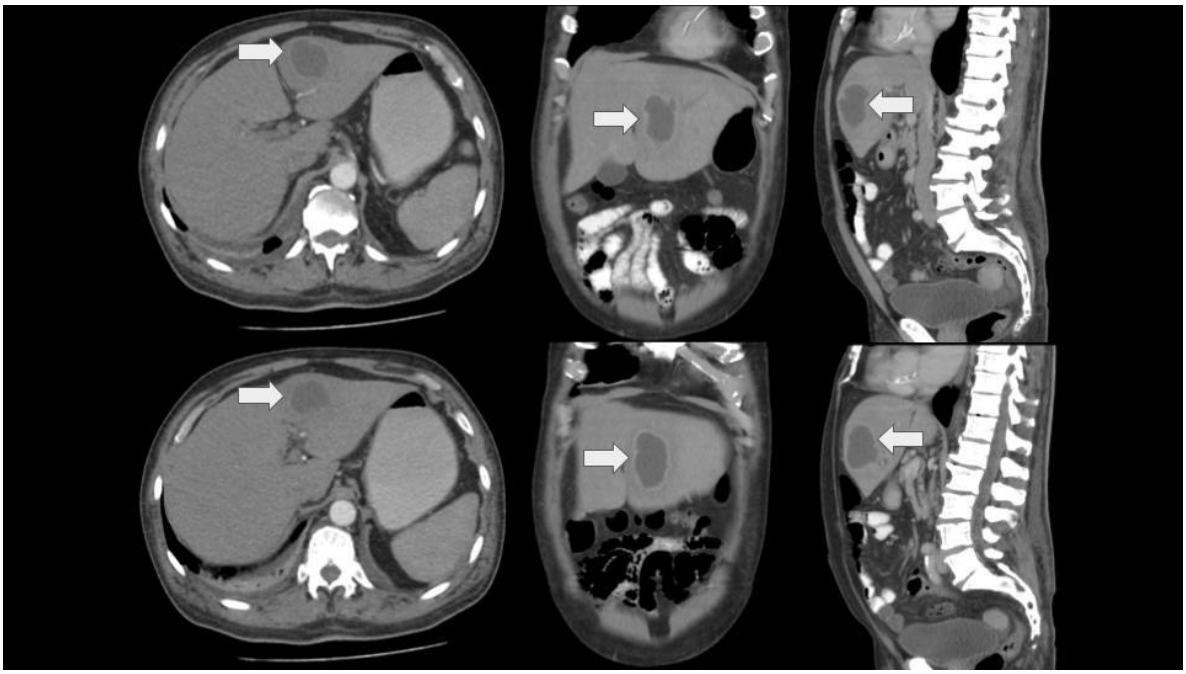

Figure 1. Computed tomography of the abdomen and pelvis with intravenous contrast. Arrow showing a hypodense lesion with a variable density internal pattern in relation to the parenchyma liver compatible with an abscess in the left hepatic lobe.