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## ORIGINAL ARTICLE

# Prognostic value of the presence of pericolic air bubbles detected by computed tomography in acute diverticulitis<sup>☆</sup>



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### KEYWORDS

Colonic diverticulitis;  
Computed tomography;  
Intestinal perforations

### Abstract

**Background:** Diverticular disease is common in industrialised countries. Computed tomography has been used as the preferred diagnostic method; although different scales have been described to classify the disease, none of them encompass total disease aspects and behaviour. **Objective:** To analyse the patients with acute diverticulitis confirmed by computed tomography at the ABC Medical Centre Campus Observatorio from January 1, 2010 to December 31, 2012, in whom pericolic free air in the form of bubbles was identified by computed tomography and if this finding can be considered as a prognostic factor for the disease.

**Methods:** A series of 124 patients was analysed who had acute diverticulitis confirmed by computed tomography, in order to identify the presence of pericolic bubbles.

**Results:** Of the 124 patients, 29 presented with pericolic bubbles detected by computed tomography; of these, 62.1% had localised peritoneal signs at the time of the initial assessment, ( $p < 0.001$ ); leukocytosis (13.33 vs. 11.16,  $p < 0.001$ ) and band count (0.97 vs. 0.48,  $p < 0.001$ ) was higher in this group. Patients with pericolic bubbles had a longer hospital stay (5.5 days vs. 4.3 days,  $p < 0.001$ ) and started and tolerated liquids later (4.24 days vs. 3.02 days,  $p < 0.001$ ) than the group of patients without this finding.

**Conclusions:** The presence of pericolic bubbles in patients with acute diverticulitis can be related to a more aggressive course of the disease.

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**PALABRAS CLAVE**

Diverticulitis  
colónica;  
Tomografía axial  
computada;  
Perforación intestinal

## Valor pronóstico de la presencia de burbujas de aire libre pericólico detectadas por tomografía computada en diverticulitis aguda

**Resumen**

**Antecedentes:** La enfermedad diverticular es característica de los países industrializados. La tomografía computada se prefiere como método diagnóstico, y aunque se han descrito diferentes escalas para clasificarla, ninguna de ellas engloba el comportamiento completo de la enfermedad.

**Objetivo:** Analizar los pacientes con diagnóstico de diverticulitis aguda comprobada por tomografía computada del Centro Médico ABC Campus Observatorio en el periodo comprendido entre el 1 de enero de 2010 al 31 de diciembre de 2012, en quienes como hallazgo tomográfico se identificaron burbujas de aire libre pericólico, y analizar si este hallazgo puede ser considerado como un factor pronóstico de la enfermedad.

**Métodos:** Se analizó el comportamiento clínico de 124 pacientes con presencia de burbujas de aire libre pericólico en la tomografía computada con diagnóstico de diverticulitis aguda.

**Resultados:** De los 124 pacientes, 29 presentaron burbujas de aire libre pericólico en la TC; de estos, el 62.1% tenían datos de irritación peritoneal al momento de la valoración inicial ( $p < 0.001$ ); además, presentaban mayor leucocitosis al momento de la valoración inicial (13.33 vs 11.16,  $p < 0.001$ ) y mayor bandemia (0.97 vs 0.48,  $p < 0.001$ ). Así mismo, se identificó una mayor estancia intrahospitalaria (5.5 días vs 4.3 días,  $p < 0.001$ ) y un mayor tiempo de inicio y tolerancia a la vía oral (4.24 días vs 3.02 días,  $p < 0.001$ ) en comparación con los pacientes que carecían de este hallazgo tomográfico.

**Conclusiones:** La presencia de burbujas de aire libre pericólico en pacientes con diverticulitis aguda puede ser relacionada con un curso más agresivo de la enfermedad.

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**Background**

Diverticular disease has an estimated prevalence of between 20% and 60% of the general population. Its incidence increases with age, it is considered a characteristic disease of industrialised countries,<sup>1</sup> and is directly associated with low fibre intake. In western countries, colonic diverticulosis is a rare condition in people aged under 40 and affects approximately between 5% and 10% of people in the fifth decade of life, 30% in the sixth decade, and around 60% of patients aged 80. There is no predominance as to gender.<sup>2,3</sup>

The great majority of patients with colonic diverticulosis remain asymptomatic throughout their lives. Only 20% of these patients develop the most common complication, known as acute diverticulitis (AD). Only 1% will require surgical treatment in any of its forms. An increased prevalence of 16% of patients requiring medical or surgical treatment has been recorded in the past 20 years, with an increase in associated morbidity.<sup>4</sup>

Gastrointestinal perforation associated with AD is a complication of diverticular disease which constitutes around 75% of the diverticular emergencies that require surgical treatment. It has an associated morbidity of approximately 40–44% and mortality of 4.4–23.7%.<sup>5,6</sup>

While uncomplicated cases of AD are best treated conservatively with hydration, intestinal rest, analgesia and antibiotic therapy, complicated AD requires drastic measures and more aggressive management. The optimal treatment strategies are currently based on the severity of the disease according to various staging systems such as those of Minnesota, Hinchey and Hinchey as modified by Wasvary et al.<sup>7,8</sup> Antibiotics are the conservative treatment of choice for Hinchey 1 diverticulitis, and drainage of the abscess plus antibiotics for Hinchey 2. When these AD events are associated with gastrointestinal perforation with diffuse purulent or faecal peritonitis (Hinchey stages 3 and 4 respectively) treatment is surgical. Unfortunately, the Hinchey staging system and its modified version are based on surgical findings. However, tomographic correlation with Hinchey staging has proved extremely useful in preoperative assessment.<sup>9,10</sup> It is important to stress that none of the abovementioned scales mention the presence of free air inside the cavity in any of their forms, either as a localised or as a distant pneumoperitoneum, even though this is a finding that has long been thought an indicator for surgery. These staging systems only mention inflammatory changes in the pericolic fat and the presence of an abscess or fluid (signs of purulent or faecal peritonitis) as relevant.

Traditionally, sigmoidectomy with terminal colostomy (Hartmann's procedure) or sigmoidectomy with primary

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