Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Scientific letter

Experience with Panbio™ rapid antigens test device for the detection of SARS-CoV-2 in nursing homes☆

Experiencia con los test rápidos de antígenos Panbio™ para la detección del SARS-CoV-2 en centros residenciales

Since the beginning of the COVID-19 pandemic, viral RNA detection using reverse transcriptase polymerase chain reaction (PCR) has been used as a diagnostic test for the SARS-CoV-2 virus.[1,2] The main limitation of this is that its results are not immediate, which lengthens decision-making in the event of possible outbreaks.[3] This limitation is especially important in the context of care homes, where the great vulnerability of their residents makes the early implementation of measures essential for controlling the spread of the virus.[4]

In September, new diagnostic tests (rapid antigen detection tests) began to be marketed in Spain, which provide a rapid diagnosis in 15–20 min in the healthcare setting, with a simple, low-cost procedure.[1,3] They present a sensitivity greater than 90% and a specificity greater than 95% in patients with symptoms of less than seven days evolution.[3]

Given the arrival of these tests, our care home coordination and support unit decided to test their usefulness during the month of September and compare their reliability and agreement with the PCR test. To do this, residents who presented symptoms compatible with COVID-19 and/or were close contacts of residents with a positive COVID-19 diagnosis were given a PCR test and simultaneously a rapid antigen detection test (Panbio™ COVID-19 Ag Rapid Test Device).

Both tests were used in 30 residents, with a mean age of 76.23 years (SD: 19.76). Of these, 36.67% were male and 63.33% female. In total, 90% had had symptoms compatible with SARS-CoV-2 infection for less than five days and the other 10% were asymptomatic, but were close contacts.

The rapid tests detected 19 positive and 11 negative cases while the PCR test detected 20 positive cases (9 cases with Ct below 20, 8 cases with Ct between 20 and 25, and the other 3 cases with Ct above 25) and 10 negative cases (Table 1). The agreement between the PCR and the antigen test was 96.66%.

If we analyse the agreement according to the reason for conducting the test, it was 100% when they were used in symptomatic residents, while the only case in which the results of the tests differed was when it was used in an asymptomatic close contact. In this case, the antigen test result was negative while the PCR was positive in two genes at Ct amplification thresholds of 29.8 and 39.7.

Table 1
Rapid antigen test for detection of SARS-CoV-2 compared to RT-PCR.

		RT-PCR		Total
		Positive	Negative	
Panbio™ COVID Ag	Positive	19	0	19
	Negative	1	10	11
Total		20	10	30

RT-PCR: reverse transcription polymerase chain reaction.

The sensitivity of the test was 95% and the specificity 100%. The positive predictive value was 100% and the negative predictive value was 90.9%.

Our first contact with antigen tests reveals their usefulness as a diagnostic test for COVID-19, as the Ministry recognised on 25 September.[3] Agreement with the PCR test in this study was almost 100%, being at its maximum when the resident presented compatible symptoms. Most authors highlight a greater sensitivity of antigen tests when the viral load is high,[5,6] especially when Ct values are less than or equal to 25,[1] a fact that our study confirms. The viral load was high in most cases in which the antigen test was positive. Furthermore, in the only discordant case, the PCR showed a low viral load.

One of the main advantages of using this test in care homes is the possibility of being able to perform them at the residents' point of care, obtaining the result in 15 min and thus allowing early decision-making and isolation. In addition, the simplicity of these tests makes it possible for the nursing staff of the care homes to perform the tests themselves, thus speeding up diagnosis.

In conclusion, the experience presented here shows a new way of diagnosing the SARS-CoV-2 virus that is of special interest for residential care homes, thus following the trend of other authors who accept the use of tests that are less sensitive but rapid, and with a lower cost.[7,8] Its use allows early diagnosis and consequently a decrease in the spread of the virus and its consequences in this vulnerable population.

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Cardiac tamponade secondary to acute Q fever☆

Taponamiento cardíaco secundario a fiebre Q aguda

Dear Editor,

Q fever, described in 1935 by Derrick,[1] is a zoonosis with worldwide distribution, with an incidence of three cases per 100,000 inhabitants/year. It is caused by *Coxiella burnetii*, a small gram-negative intracellular coccobacillus, resistant to heat and desiccation, which explains its ability to withstand adverse environmental conditions. Domestic ruminants, sheep and goats, are considered the main reservoir of the bacteria and inhalation is its main route of transmission. On rare occasions, cases of infection have been reported after the consumption of unpasteurised and contaminated dairy products.[2]

We present the case of a young woman with an unusual presentation of acute Q fever, diagnosed with acute pericarditis with cardiac tamponade and liver damage.

The patient was a 34-year-old woman of Moroccan origin, with no relevant family or personal history. Epidemiologically, the consumption of unpasteurised dairy products (fresh cow's cheese) was noted. She consulted for progressive dyspnoea with intolerance to decubitus and chest pain in the right hemithorax with pleuritic characteristics of two days evolution. She reported no fever, cold sensations or other symptoms in the clinical history of organs and systems. The physical examination revealed a tendency to arterial hypotension (84/66 mmHg), with an elevated heart rate and jugular venous engorgement. On auscultation, there were no murmurs or friction, although there were symptoms of right pleural effusion. The electrocardiogram showed sinus tachycardia with decreased voltages and electrical alternation. The tests showed raised total bilirubin (1.9 mg/dl; direct 1.18 mg/dl) and transaminases (GOT 392 U/l, GPT 339 U/l), as well as marked elevation of acute phase reactants (CRP 287 mg/dl, procalcitonin 2.21 ng/ml and fibrinogen 455 mg/dl). Brain natriuretic peptide was determined showing figures of 412 pg/ml, as well as ultra-sensitive troponin I, which was normal. A transthoracic echocardiography was carried out that confirmed the presence of severe pericardial effusion with signs of tamponade, performing percutaneous pericardiocentesis with pericardial fluid with characteristics of exudate with neutrophilic predominance and high levels of adenosine deaminase (ADA: 40 U/l). Both the cytology and the mycobacteria culture were negative. Viral (parvovirus B19, HBV, HCV, HIV) and bacterial (*Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, *Brucella*) serological tests were performed, all negative except for being positive for antibodies against phase II of *C. burnetii* (1/512) and minimal against phase I (1/64), by indirect immunofluorescence. This was confirmed with a second test, after two weeks, obtaining the same antibody levels against phase II and with no detection of antibodies against phase I. Abdominal ultrasound was performed, which showed no significant alterations. Targeted treatment was established, with doxycycline 200 mg per day for three weeks, with the patient becoming asymptomatic after finishing treatment, with normalisation of transaminases and acute phase reactants, and without segmental alterations, ventricular dysfunction or pericardial effusion on follow-up echocardiography.

Both myocarditis and acute pericarditis are rare manifestations of acute Q fever, reported in less than 1% of all cases.[3] In an aetiological analysis of pericardial effusion in 204 patients over four years, it was observed that 10 cases were due to infection by *C. burnetii*.[4] Continuing with the experience obtained over four more years, a similar aetiological incidence was obtained.[5] Echocardiographic findings can be nonspecific and range from normal ventricular function to wall motion abnormalities with severe systolic dysfunction.[6] Patients are considered to have pericarditis due to this pathogen if they show an apparently infectious syndrome; pericardial effusion and an antibody titre consistent with acute Q fever (phase II IgG titre of 200 and IgM titre of 50) is demonstrated.[7] In those cases where pericardial drainage is performed, the fluid must be analysed by culture and PCR analysis, since it can provide an accurate and fast diagnosis. Díaz-Morant et al. noted that such tests are performed in cases with unsatisfactory evolution, because the incidence is likely to be underestimated.[8] The treatment of choice is doxycycline 200 mg daily for three weeks.[9] In patients with a diagnosis of pericarditis or myocarditis, we must always take this pathology into account, although it is infrequent, since the delay in diagnosis and treatment can cause a worsening of morbidity and mortality.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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