

## Food borne-botulism during SARS-CoV-2 pandemic time. A case and a possible familial outbreak in Barcelona

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**Introduction.** Botulism is a potentially fatal neuroparalytic syndrome caused by *Clostridium botulinum* neurotoxin. The 25% are food-borne botulism cases.

**Case report.** We describe a confirmed case of botulism attended in our hospital in September 2020, together with a second case in a patient's relative, suspected but not confirmed by laboratory tests. Clinical presentation consisted on general weakness, bilateral cranial palsy, mydriasis, and rapidly progressive tetraparesis in case 1, involving respiratory and swallowing function so she required hospitalization and support treatment. Non specific and transient symptoms occurred in case 2. SARS-CoV-2 infection was initially suspected in both cases due to pandemic situation in our country, ruled out by negative PCR. When B neurotoxin was detected in stool sample of patient 1 we confirmed the diagnosis of food-borne botulism probably linked to home-made conserved beans.

**Conclusion.** Early clinical suspicion, together with laboratory and electromyography findings, and support treatment provided at hospital were crucial for favourable outcome. Being aware of this rare syndrom might contribute to its better management.

**Key words.** Botulism. Case report. Food-borne botulism. Neuroparalytic. Outbreak. Surveillance.

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### Introduction

Botulism is a potentially fatal neuroparalytic syndrome caused by *Clostridium botulinum* neurotoxins (BoNTs). They are very potent toxins produced by the Gram-positive bacterium *Clostridium botulinum* and some other related *Clostridium* species ubiquitous in the environment. BoNTs inhibit acetylcholine release at neuromuscular junctions and cholinergic synapsis leading to muscle flaccid descending paralysis, transient but fatal if not treated appropriately. Food-borne botulism (25% of cases of botulism) is rare nowadays. In Spain, 9-13 cases/year of botulism have been reported during last decades [1], still a public health threat.

In this paper we describe a confirmed case of food-borne botulism, probably linked to home-made conserved beans, attended in our hospital in September 2020, together with a second case in a patient's relative, suspected but not confirmed by laboratory tests. Early clinical suspicion, the same as laboratory and electrocyography (EMG) findings,

were essential to achieve diagnosis and favourable outcome.

Informed consent for the publication of the case was obtained from the patients.

### Case report

#### Confirmed case

A 71 years old woman was attended at the Emergency Ward at Hospital de Mataró (Barcelona, Spain) on 9<sup>th</sup> September 2020 with progressive weakness, and was admitted to Neurology Ward. Affected by high blood pressure, essential tremor, arthrosis, and mild anxiety disorder, with no other relevant medical history; on current treatment with gabapentin, sertraline and tramadol. She had consulted her General Practitioner on 1<sup>st</sup> September 2020 because of abdominal pain together with mild diarrhea lasting for 24 hours. The day after she started to feel weak and next days, dyspnea and difficulty swallowing appeared, so laryngitis was

suspected and prednisone prescribed. On 8<sup>th</sup> September 2020 she was re-visited by her General Practitioner with worsening global weakness; she also presented dysarthria, dysphagia and bilateral ptosis, so she was referred to Hospital.

At arrival she did not present fever and physical examination was normal except for moderate tachypnea. Neurological examination showed: bilateral eyelids ptosis, facial palsy, ophthalmoparesis and bilateral mydriasis; four limbs weakness (3/5); and severe dysphonia and dysphagia; she was conscious and speech content was normal, the same as jerks, sensation and coordination. Fatigability manoeuvres were unclear, and an ice-pack test resulted positive

Polymerase chain reaction (PCR) SARS-CoV-2 was negative. Arterial blood test showed hypoxemia (75 mmHg) and the rest of tests done urgently were normal –chest Rx, routine blood test, and electrocardiogram (ECG)–.

Support treatment with O<sub>2</sub> and serum therapy were started, so she became stable, and she began slow improvement since day 8 from admission. She continued on rehabilitation therapy for the next weeks, and she was fully recovered when visited at neurology clinics six weeks later.

### Suspected case

A 78 years old man, the patient's husband, had been visited at the Emergency Ward during these days. He was affected by hypertension, diabetes mellitus and chronic obstructive lung disease, stable on his medical treatment. He explained non-specific symptoms such as asthenia and dizziness during previous days. Physical exam was normal and supplementary exams resulted normal too (chest Rx, ECG, blood and urine test, PCR SARS-CoV-2). He recovered spontaneously, so no more tests were performed since awareness of diagnosis of botulism of his wife. He was then investigated for neurotoxin, and he was negative.

### Laboratory investigation

PCR for neurotoxin B resulted positive in patient's stool, the day 18 from symptoms onset in case 1, when she was severely ill; but negative in patient 2, one week after complete symptoms recovery.

EMG showed pre-synaptic dysfunction at neuromuscular junction, after facilitation manoeuvres, in case 1 (no EMG was performed in case 2). Exams performed, in case 1, in order to exclude entities such as stroke, myasthenia gravis, etc. re-

sulted negative: cranial magnetic resonance imaging, blood test including antibodies acetylcholine receptor and thoracic computerized tomography scan (Figure).

### Discussion

We describe a case of confirmed food-borne botulism probably linked to home-made conserved beans, together with another suspected but non-confirmed case, meaning a domestic outbreak.

Botulism is nowadays a very rare disease, even though, to bear in mind because of its potential fatal prognosis. Subjected to mandatory declaration in Spain, in order to investigate for possible outbreaks, clinical suspicion is essential to treat early and to avoid morbi-mortality.

BoNTs are classified into seven serotypes, from A to G. The confirmatory microbiological diagnosis of botulism is based on the detection of botulinum toxin in serum, stool –as in our case–, gastric aspirate and/or food. The presence of *C. botulinum* in food may be useful but not confirmatory for the diagnosis, since the botulinum spores are very widely distributed. In Spain, these tests are performed in a reference laboratory at the National Center of Microbiology.

In recent decades, few cases and outbreaks have been reported in the literature, e.g. in Finland [2] caused by spoiled tinned olives. In Spain, we also found reports of cases in Guadalajara [3], in the Community of Madrid [1] and in Barcelona, the latter involving two simultaneous outbreaks in 2012 [4]. A recent article reviewed the disease in France from 1875 to 2016 [5]. Type B toxin is the most prevalent, and food tinned at home is the main cause of food-borne botulism, although in half of the incidents exactly which contaminated food was the cause remains unknown, as is the case here.

It is also interesting to mention the cases of botulism related to inhaled cocaine, both in our country [6] and in France [7], in the early years of the 21<sup>st</sup> century,

Dysautonomic involvement has been described in botulism, and as a consequence of other pathogens [8]. In the cases described here, this consisted of arterial hypotension, which improved in case 1 during the first week of hospitalisation and in case 2 over another 15 days, during which the patient repeatedly visited the emergency department. In case 1, mydriasis, ophthalmoparesis, dysphagia and finally tetraparesis were subsequently improved.

With regard to specific treatment with antitoxin serum, it was not indicated in our case, given the delay between the onset of symptoms and hospital admission. The clinical course was favourable with supportive medical treatment and the condition resolved completely within six weeks. This recovery occurred, as classically described, gradually and in the reverse order in which the different symptoms had appeared.

Another point of interest in our case was the positivity we found of ice pack test, as usually described in myasthenia gravis, but also in botulism [9]. This easy and available test might be useful for diagnosis, together with clinical and electromyography findings as in our case [10].

Except for the notification to every possible patient's relative/meal sharing, no public Health measures were needed. The suspicious food sample was already lacking at hospital admission, so the food-borne botulism linkage could not be established. Only the patient 1 and 2 we described here -with no other people living at their home- ate the suspicious sample referred.

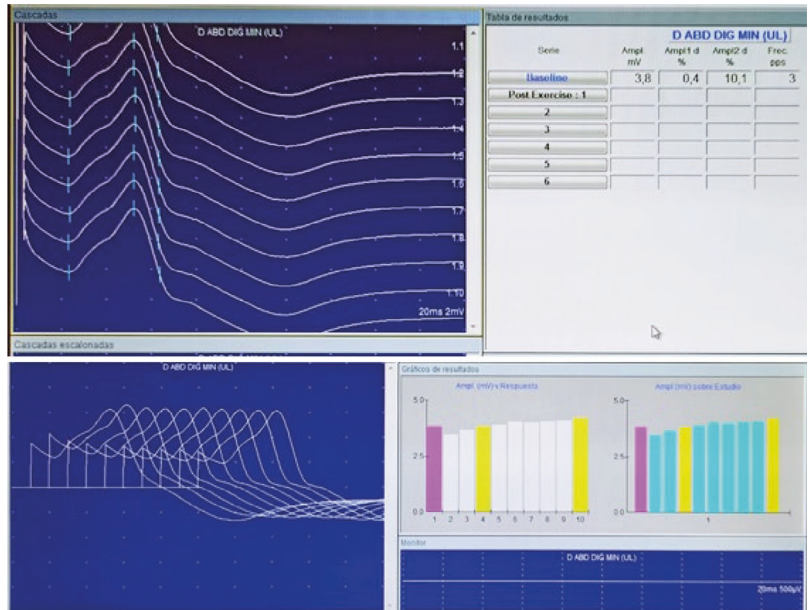
## Conclusion

Albeit rare, *C. botulinum* is still present in our society. We consider awareness and clinical suspicion of botulism essentials to achieve a favourable outcome.

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**Figure.** EMG showing an incremental motor response after repeated high-frequency nerve stimulation, suggesting a presynaptic transmission defect, as described for botulism.



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## Botulismo alimentario durante la pandemia por el SARS-CoV-2. Descripción de un caso y de un posible brote familiar en Barcelona

**Introduction.** El botulismo es un síndrome neuroparalítico hoy en día infrecuente, potencialmente fatal, causado por neurotoxinas de *Clostridium botulinum*. El origen es alimentario en el 25% de los casos.

**Caso clínico.** Describimos el caso confirmado de botulismo alimentario en una paciente atendida en nuestro hospital en septiembre de 2020 y la sospecha de un segundo caso en un familiar de la paciente, no confirmado éste por las pruebas de laboratorio. La instauración en pocos días de una afectación bilateral de pares craneales, incluyendo disfagia, disnea y

disartria, junto con midriasis y tetraparesia graves, precedida de diarrea, constituyó la presentación clínica en el primer caso; mientras que en su familiar cursó con síntomas inespecíficos y transitorios. Constatamos disautonomía consistente en hipotensión arterial en ambos casos. Teniendo en cuenta la situación pandémica en aquel momento, se descartó repetidamente la infección por SARS-CoV-2 antes de plantear alternativas diagnósticas. La neurotoxina B de *C. botulinum* fue detectada en las heces de la paciente, confirmando el diagnóstico de botulismo, que relacionamos con la ingesta de una conserva casera de alubias. Se completó el diagnóstico diferencial del cuadro descartando otras posibles etiologías.

**Conclusión.** La sospecha clínica temprana, confirmada con los hallazgos de laboratorio y neurofisiológicos y que llevaron al manejo específico de la paciente, fueron cruciales para la evolución favorable. No fue necesario aplicar medidas de salud pública, a excepción de la notificación a sus allegados de la contaminación detectada. Conocer la existencia de esta patología puede contribuir a su pronóstico.

**Palabras clave.** Botulismo alimentario. Caso clínico. *C. botulinum*. Midriasis. Neuroparalítico. Tetraparesia.