

## Ileal intussusception as a cause of small bowel obstruction in adult with occasional finding of ECG pattern suspected for brugada syndrome: A clinical case in emergency

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### Abstract

The Authors reported a rare case of ileal intussusception in adults with suspected Brugada Syndrome. Intussusception is an invagination of a intestinal tract in itself; it can be divided into primary and secondary or organic and can cause intestinal obstruction. For diagnosis, the gold standard is represented by the abdomen CT scan with contrast where the characteristic relief is represented by a rounded mass with a 'Target Image'. Concomitant Brugada Syndrome, characterized by ST segment elevation on the ECG and which clinically may carry the risk of malignant ventricular arrhythmias with sudden death, may further complicate the approach to the patient who is a candidate for surgery, especially as regards the general anesthesia. In this case, the adoption of propofol has proven to be effective and safe. The multidisciplinary management and timely diagnosis allowed the successful outcome of the treatment and prognosis.

### Keywords

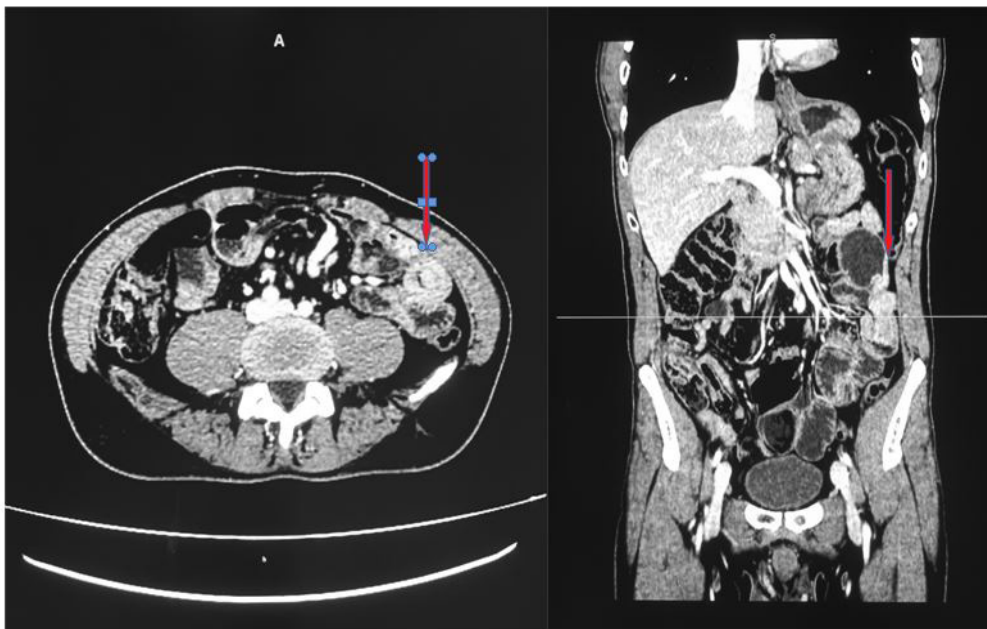
Ileal Intussusception; Brugada syndrome.

### Background

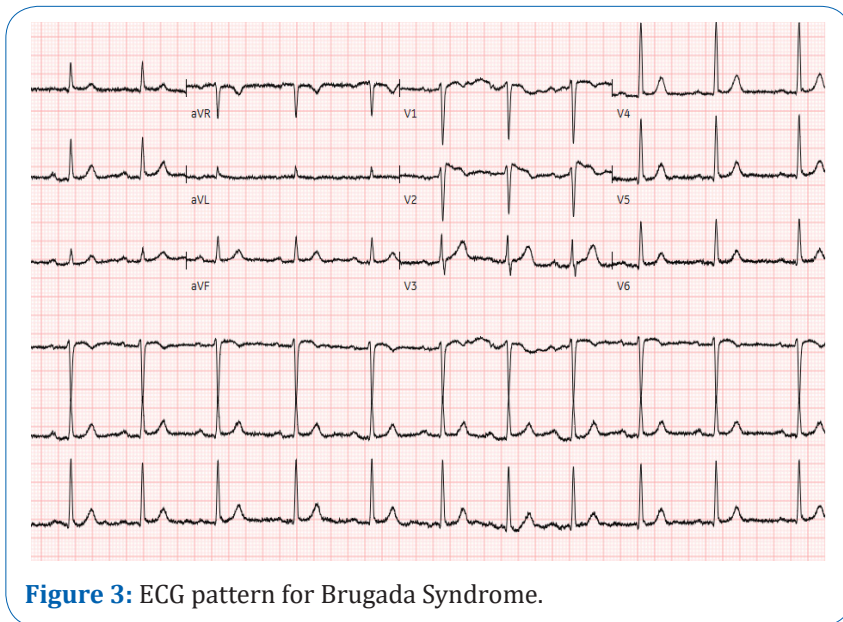
The Authors report a particular case of small bowel obstruction by ileal intussusception in adults associated with an occasional finding of a suspected ECG pattern for Brugada Syndrome. The patient underwent bowel resection under general anesthesia induced with propofol without showing particular problems. Timely diagnosis, with the help of cardiological and anesthetic support, allowed the successful outcome of the treatment and prognosis.

## Clinical Case

A Patient M.M., 57 year old male, with a positive history of *Helicobacter Pylori* related erosive gastroduodenitis, celiac disease and unspecified mesenteric adenopathy; he has no cardiovascular risk factors and has a silent family history of heart disease or sudden death. The patient comes to our Emergency Unit for a flare up of abdominal pain in the epi-mesogastric area for a few days (recurrent symptoms for 2 years), does not have urinary irritant disorders and is suffering from chronic constipation. Abdominal CT scan with contrast documents a pathological over-distension of some loops of the small bowel in the center of the abdomen with hydro-aerial levels, associating, adjacent to the extended loops, a 'target image' with a jump of caliber compatible with invagination (Figures 1 & 2); in addition, lymph nodes of increased size are evident at the root of the mesentery and there is abundant liquid effusion in the pelvis. Complete blood tests were found to be substantially normal. The ECG demonstrated a sinus rhythm with an isolated elevation ST in V2, with 'a saddle' appearance, suggestive for occasional detection of a suspicious ECG pattern for Brugada Syndrome (Figure 3). Rapid Ag-RDTs and molecular tests for SARS CoV - 2 were negative. On the basis of the clinical and tomographic data, following a cardiological and anesthetic examination, the patient underwent general anesthesia with propofol, exploratory laparotomy with ileal resection for multiple stenosis conditioning intestinal obstruction and restore of intestinal continuity with ileo - ileal latero - lateral anastomosis. Histological diagnosis demonstrated ischemic necrosis of the involved ileal wall. The patient was discharged on the ninth postoperative day in good general condition.



**Figure 1,2:** Ileal Intussusception.



**Figure 3:** ECG pattern for Brugada Syndrome.

## Discussion

This abdominal pathology was described by Paul Barbette in 1674 and later, in 1789, it was called 'intussusception' by John Hunter; some Authors support that the first description was made by Hippocrates [1,2]. Intussusception is defined as a circumferential introflection of a portion of the intestine within the contiguous segment, or an invagination of a intestinal tract in itself, developing in an antegrade direction being supported by peristalsis. This pathology is distinguished into primary or secondary depending, respectively, on whether the causal pathological factor cannot be defined or whether this factor is recognized [3]; in some cases, it is not excluded that ileal intussusception may also be related to the celiac disease [4]. In adults, intussusception is mostly associated in 90% of cases with a definite or organic cause; the primitive form is rare, can cause invaginations in multiple sites, can be symptomatic and asymptomatic, and can often be destined for spontaneous resolution. It has an approximate incidence of 1% of the intestinal obstructions [5,6]. The symptoms occur mainly with discontinuous episodes of colic-like abdominal pain, with nausea, hyporexia and weight loss, while the hive closed to stool and gas is not a constant. Symptoms can also continue for months until the acute episode of small bowel obstruction [7]. In an emergency, from the diagnostic point of view, gold standard is the abdomen CT scan with contrast for high diagnostic accuracy; the characteristic relief is represented by a rounded mass with a 'target image' with a hypodense central area as herniated mesenteric fat in the adjacent intestinal segment [8].

As for the Brugada Syndrome, instead, the pathology is cardiac and is typical of men, it is genetically determined and predisposes to the risk of malignant ventricular arrhythmias with sudden death in subjects with a structurally healthy heart. The symptoms can range from complete asymptomaticity, to syncopal episodes not preceded by prodrome, to heart-pounding or nocturnal enuresis, the latter in the course of nocturnal arrhythmic syncope and sphincter release [9]. The electrocardiographic features of suspicion are right bundle branch block with ST segment elevation (2 mm) in any right precordial lead; the latter may have 'a saddle' or 'a curtain' appearance depending on whether the pattern is suspicious or certainly diagnostic of Brugada Syndrome; together with this exam it is necessary to perform an echocardiogram, to exclude

cardiomyopathies, or, if time permits, to resort to further tests such as the stress test and 24 hour Holter ECG or pharmacological test with flecainide [9]. As reported by some Authors, in subjects with Brugada Syndrome and for whom surgery is indicated, general anesthesia induced and / or maintained with the use of propofol, even with the use of volatile anesthetics for maintenance of anesthesia, has proved to be an effective and safe practice and has also been shown to be able to modulate the epicardial arrhythmogenic substrate [10].

## Conclusion

Intestinal intussusception in adults is a rare disease and in the reported case multiple points of small bowel stenosis were found, probably intermittent over time up to intestinal obstruction. With regard to the pathogenesis, it could be a primitive form even if the sharing of the celiac disease of which the patient is affected is not to be excluded. A further clinical and management aspect that added to the ileal obstruction due to invagination was the finding of a suspicious ECG pattern for Brugada Syndrome which can further complicate the approach to the patient who is a candidate for surgery, especially for regarding narcosis by intubation. The adoption of propofol for the induction and maintenance of general anesthesia has proved effective. The multidisciplinary management and timely diagnosis allowed the good outcome of the clinical case and favored its good prognosis.

## Declarations

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**Authors' contribution:** ZW: Planned work, conducted the literature search and produced the report.

MM and KA and MA: Reviewed literature and produced the report.

PM and GM and FS: Helped in contributed to produce the report.

ZW and VG: Final revision before delivery.

All authors have reviewed the final report and approve its publication.

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