

## CASE REPORT

## An Unexpected Cause of Sudden Death Reported as a Case of Adverse Event Following Immunization (AEFI)

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### Abstract:

Adverse event following immunization is any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. Here we had a case where a 20-year-old male, who had taken second dose of Covishield vaccine and presented with complaints of fever, vomiting and abdominal pain. He was managed conservatively, but he collapsed and died at home, the next day. Autopsy revealed it as a case of small bowel volvulus with complications like gangrene and peritonitis. Volvulus of small intestine is a rare condition; non-specific clinical features and laboratory investigations make it difficult to diagnose. Coincidence with vaccination perhaps complicated the diagnosis in this case, which needed to be dealt as a surgical emergency.

**Keywords:** Adverse event; Immunization; Covishield; Small bowel volvulus.

### Introduction:

Adverse event following immunization (AEFI) is any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. Majority of events thought to be related to the administration of a vaccine are actually not due to the vaccine itself - many are simply coincidental events, others are due to human, or programme error. It is not possible to predict every individual who might have a mild or serious reaction to a vaccine, although there are a few contraindications to some vaccines. By avoiding the contraindications, the risk of serious adverse effects can be minimized.<sup>1</sup> According to the WHO, common side effects expected after COVID-19 vaccination are pain/tenderness at injection site, headache, fatigue, myalgia, malaise, arthralgia, pyrexia, chills and nausea; very rare events of demyelinating disorders have been reported but without causal relationship being established.

### Case Report:

A 20-year-old male who took second dose of Covishield vaccine, was taken to the casualty of nearby taluk hospital following complaints of fever, vomiting and abdominal pain. He was given symptomatic treatment and sent home, and advised to consult surgery outpatient department on the next day. Early morning on the next day, he collapsed in bathroom at home and was brought dead to the casualty. His body was kept for medicolegal autopsy as an alleged case of death following vaccination, and brought to the Department of Forensic Medicine at Government TD Medical College, Alappuzha. RTPCR test for COVID-19 was done prior to autopsy and found to be negative. On autopsy, white froth was

seen at nostrils and mouth. No injuries were present. Air passages contained frothy fluid. Lungs were congested and edematous (right-364gm; left-346gm). Both chest cavities contained straw coloured fluid (right-130ml; left- 60ml). Loops of small intestine (122cm distal to duodenojejunal junction, up to 94cm proximal to ileocecal junction) were distended, dark red in color and friable.

A portion of small bowel loops were seen twisted along the axis of its mesentery such that a tight constricting ring was formed at the base of those loops.

Peritoneal cavity contained 600ml of blood-stained fluid and emitted a disagreeable smell. Stomach and proximal part of small intestine contained bile-stained mucoid fluid emitting feculent smell, mucosa was pale. All other internal organs were congested. Segments of affected bowel, whole of dissected heart and tissue bits from all other major organs were subjected to pathological study. Histopathology report revealed: (a) Sections of small intestine – necrosis, extensive areas of hemorrhage and congested vessels, (b) Kidney – acute tubular necrosis, (c) Brain, Lungs – congestion and (d) All other organs – normal morphology. Cause of death was thus concluded as, death due to gangrene and peritonitis following volvulus of small intestine.

### Discussion:

Small bowel volvulus (SBV) is a rare condition where small bowel twists around its own axis. The word 'volvulus' originates from the Latin word "volvere" which means "to roll or twist". Volvulus of the small bowel is rare; sigmoid colon is the commonly affected part. This condition is more commonly seen in children than the adults. This twisting of intestine can lead to partial or complete mechanical obstruction, which may or may not interfere with its blood circulation.<sup>2</sup> Due to its non-specific clinical features, the preoperative diagnosis of SBV is difficult. SBV can be broadly divided into primary and secondary variety based on the aetiology. In primary variety, there are no pre-existing anatomical abnormalities. In secondary SBV, there are precipitating factors like congenital abnormalities, bands, adhesions, and tumors. Abdominal pain is the most common

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Figure 1. Dilated and gangrenous bowel loops.



Figure 2. Volvulus of small bowel loops.

presenting feature. Severity of the pain depends on the level of vascular occlusion rather than the level of intestinal obstruction. Other presenting features include nausea or vomiting, distension and peritoneal irritation; these may be present all together or in any combinations.<sup>3</sup> Laboratory investigations are neither sensitive nor specific for the diagnosis of SBV. Patient may develop hypokalemic hypochloremic alkalosis if he has severe vomiting. Raised count of white blood cells may result due to systemic inflammatory response or sepsis following release of intestinal bacteria into the blood stream. Bowel ischemia is indicated by metabolic acidosis with elevated serum lactate levels.<sup>4</sup> Plain abdominal radiograph may reveal non-specific signs of bowel obstruction.<sup>5</sup> Rarely such radiograph may show dilated bowel loops with a spiral nebula in the mid abdomen,<sup>6</sup> or mass effect in the mid-abdomen and whirled appearance of bowel,<sup>7</sup> or distended stomach, duodenum and small intestine proximal to the transition point with a collapsed appearance or lack of gas shadow in the distal bowel loops,<sup>8</sup> which are all suggestive of SBV. USG is sensitive in infants, but it is less useful in adults as it is operator dependant. If it is successful, it shows either a whirlpool sign or classical barber pole sign.<sup>9</sup> CT scan is the investigation of choice; the bowel wrapping around the superior mesenteric artery shows the typical whirl pattern characteristic of SBV.<sup>6</sup> This is a surgical emergency, and once suspected there is no room to consider conservative management. Emergency laparotomy is indicated as there is high risk for gangrene.<sup>10</sup> Supportive measures include intravenous fluid supplement, insertion of Ryle's tube and venous thromboembolism prophylaxis.<sup>11</sup> Definitive diagnosis can only be made on exploratory laparotomy. Mortality in small bowel volvulus is very high when associated with necrosis of the bowel;<sup>2</sup> it varies from 5 to 35% in non-infarcted cases, and as high as 42 to 67%.<sup>6</sup> Prognosis of primary SBV is better because the majority of the patients are young, hence more physiologically fit

and perforation is uncommon.<sup>10</sup>

#### Conclusion:

This case was approached as a case of adverse event following immunization. Autopsy revealed it as a complicated case of SBV, which is undoubtedly a surgical emergency. Lesson to be learned here is that symptoms following immunization should not prevent us from anticipating unrelated medical/surgical conditions with similar manifestations, which might turn fatal if not diagnosed and managed promptly.

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