



A CASE OF AGRICULTURAL BIO PRODUCT POISONING WITH MULTIORGAN FAILURE: REPORT FROM RURAL CRITICAL CARE IN INDIA

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ABSTRACT

The bio-product term refers to all products originated on renewable biological resources. Agricultural bio products are primarily used in fertilization, plant growth stimulation or biological control. Thus far, no cases have been reported regarding intentional poisoning with Bio products. We are reporting successful management of a patient presenting with deliberate self-harm using bio product (FOUR) for agriculture use. In conclusion, we suggest that clinicians in rural areas should be made aware of these unusual poisoning with Bio product and appropriate therapy without delay results in better outcome.

KEYWORDS: Bio product, ARDS (Acute respiratory distress syndrome), Hemodialysis.

BACKGROUND

According to the National Crime Records Bureau (NCRB); state of Tamil Nadu, West Bengal, Andhra Pradesh, Maharashtra and Karnataka have registered a consistently higher number of suicidal deaths during the last few years and together accounted for 56.2% of the total suicides reported in the country. Bio products or bio-based products are materials, chemicals and energy derived from renewable biological resource. Regarding agricultural bio products, these are used in fertilization, plant growth stimulation or biological control, and their active ingredients can be plants, algae, extracts, microorganisms or active metabolites. FOUR is a naturally derived bio product which makes the plants grow healthy and also improves the plant defense mechanisms against different pests in all crops. It consists of fermented hydrolyzed proteins 25%, Carriers 20% & Filler media 55% (Figure 2). We are reporting successful management of a patient presenting with multiorgan failure following deliberate self-harm using bio product.

CASE REPORT

A 54-year-old male patient, presented to Emergency department with Altered sensorium, Shock and respiratory failure following alleged consumption of 100ml of organic Bio product, FOUR (Figure 1). He has no other co morbid medical conditions.

On examination he was afebrile, encephalopathic (GCS: 10/15), spontaneous breathing was labored with severe

tachypnea+ (40/min), and maintaining saturation of 90% on 10L O₂/ min, severe dehydration with hypotension (60/40 mmHg) and tachycardia (140/min). Chest auscultation revealed bilateral crepitations.

His investigations revealed abnormal Hemogram with Hemoglobin: 15.5gm%, PCV: 43, Platelet count: 1,65,000 & TC of 18,600 and liver function tests. Coagulation profile was normal with PT: 18, APTT: 36 & INR: 1.5. His chest x-ray revealed bilateral non homogenous opacities and ABG with 12L O₂ showed severe hypoxemia with mixed respiratory & metabolic acidosis (PH: 7.09, PaO₂: 60, PaCO₂: 55, base excess of -16.2, bicarbonate of 10). consistent with ARDS, 2D echo (FATE) showed IVC: 1cm, mildly dilated RA& RV & fair LV function with EF: 45-50% and very high lactate levels (90mg%).

He was initially resuscitated with crystalloids, Gastric lavage and was later shifted to ICU for further management.

In the ICU, his respiratory failure & encephalopathy worsened, necessitating intubation & ventilation as per ARDSnet protocol and chest x-ray revealed bilateral non homogenous opacities and ABG showed severe hypoxemia with PF ratio of <100, consistent with severe ARDS. He developed refractory hypotension requiring multiple vasopressor supports, severe metabolic acidosis, not responding to sodium bicarbonate infusion, hence Hemodialysis (Slow low efficiency Dialysis: SLED) was initiated.

Next few days (2nd to 4th day), he was continued to be ventilated as per ARDSnet protocol, hemodynamically stable with resolving metabolic acidosis and weaned off pressor supports on 4th day. He underwent two more episodes of Hemodialysis.

Subsequently, (5th-6th day), his vitals were stable, metabolic acidosis and acute kidney injury were resolved & was Extubated on the 5th day and transferred to ward on 6th day.



Fig.1



Fig.2

DISCUSSION

It is believed that the most dramatic increase in suicide mortality will be observed in third world countries because of socioeconomic and behavioral factors. Thus far, no cases have been reported regarding intentional poisoning with Bio products and literature search revealed no case reports or evidence related to such kind of poisonings.

This case report shows clear relationship between Bio product toxicity and multiorgan failure. There were no warning signs or antidote mentioned on the product label (Figure 2). The manufacturing company (Srikar Biotech)

was contacted but no additional information could be sought.

Our case reported here was clinically diagnosed to have Multiorgan failure secondary to Bio product (FOUR) poisoning. A diagnosis of ARDS was made on the basis of chest X-ray findings and the PaO₂/FiO₂ ratio, in accordance with ARDS berlin definition^[10] and accordingly ventilated as per ARDSnet protocol.^[11]

The use of extracorporeal techniques to remove toxins is justified if there is an indication of severe toxicity.^[3] During hemodialysis (HD), toxins and other solutes are cleared from the blood by diffusion against a steep concentration gradient through a semipermeable membrane into dialysate*. In our patient, Hemodialysis (Slow low efficiency Dialysis) not only helped in clearing the toxins but also in managing severe metabolic acidosis refractory to medical management.

The good prognosis of the patient could be attributed to minimal delay in administering necessary treatment and good supportive care.

In conclusion, we suggest that clinicians should be made aware of these unusual poisonings and appropriate therapy without delay results in better outcome, including in a rural critical care setting.

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