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Observational study on early pulmonary complications following emergency abdominal surgeries in a tertiary care hospital in West Bengal

Anirban Hazra[1], Yogesh Chauhan[2], Premangshu Ghosh[3], Riddhisundar Samanta[4], Mohan Pradhan[5], Subhabrata Das[6]

[1]Senior Resident, [6]Professor, Department of General Surgery, Bankura Sammilani Medical College and Hospital, Bankura, [2]Senior Resident, Department of General Surgery, Institute of Post-Graduate Medical Education and Research and Seth Sukhlal Karnani Memorial Hospital, [3]Assistant Professor, Department of Pathology, ESI- PGIMSR Medical College and Hospital and ODC (EZ) Joka, Kolkata, [4]Clinical Tutor, [5]Senior Resident, Department of General Surgery, Deben Mahata Govt Medical College and Hospital, Purulia, West Bengal, India

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ABSTRACT

Background: Emergency surgeries account for half of all surgical deaths and one-third of all complications. Post-operative outcomes following emergency abdominal surgery are generally worse leading to different serious consequences and post-operative pulmonary complication (PPC) is one of the most common among them (incidence rate: 20–50%). The consequences of developing a PPC are serious with doubled health-care costs, longer hospital stays, and higher mortality rates when compared to elective surgery. **Aims and Objectives:** This study was done to estimate the incidence of early post-operative pulmonary complications, the influence of pre-existing pulmonary morbidity and related factors in the development of PPC; and the outcome of management of PPC. **Materials and Methods:** In this institution-based observational descriptive study, a total of 122 patients, who presented to the surgery emergency room and underwent emergency abdominal surgery (April 2021–May 2022), were followed up for the development of PPCs. The cure/complication rate after management was also assessed. **Results:** In this study incidence of PPC was around 39%, which is similar to the highest reported figures in other studies. Among PPCs most common PPC came out to be atelectasis (58%). Pre-operative pulmonary comorbidity, upper or upper versus lower abdominal incision, duration of operation, indication for operation, and type of anesthesia all influence the risk for PPC in this setting ($P<0.05$). **Conclusions:** The incidence of PPCs in this study is quite high. Pre-existing pulmonary comorbidities, incision sites above the umbilicus, general anesthesia, and prolonged duration of operation all significantly impact the development of PPC.

Key words: Post-operative complications; Emergency abdominal surgery; Risk factors and management of PPC

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INTRODUCTION

Globally, millions of people every year require urgent emergency abdominal surgery to resolve potentially catastrophic small bowel obstructions, gastrointestinal tract perforations, hemorrhage, invasive cancerous tumors, blunt force/penetrative trauma injuries, and peritonitis.[1] Emergency surgery accounts for approximately, only 11% of total surgical cases, yet, disproportionately, can contribute to half of all surgical deaths, and a third of

Address for Correspondence:
Riddhisundar Samanta, Clinical Tutor, Department of General Surgery, Deben Mahata Govt Medical College and Hospital, West Bengal, India. **Mobile:** +91-8001887925. **E-mail:** riddhisundar@gmail.com

all complications.[2] Post-operative outcomes following emergency abdominal surgery are generally worse when compared to elective surgery; the most common serious complication after emergency abdominal surgery is a post-operative pulmonary complication (PPC) with an incidence rate of 20–50%. Emergency surgery is the single greatest risk factor for a PPC, much greater than the risk attributed to other types of surgery and existing patient comorbidities.[3,4] Post-operative pulmonary complications (PPCs) are common after abdominal surgeries and the consequences of developing a PPC are serious with doubled health costs,[5] longer hospital stays, and higher mortality.[4,6,7] Although the provision of physiotherapy for emergency abdominal surgery patients is ubiquitous in high-income countries,[8] no clinical trials exist that have investigated the effect of physiotherapy on PPCs and overall recovery, in this high-risk, high-care burden cohort, over and above standard care.[9] Identification of the risk factors for predicting PPCs is essential to provide proper perioperative management. Importantly, chronic obstructive pulmonary disease (COPD) has been previously shown to be associated with PPCs. Previous studies have shown that the prevalence of PPCs and the post-operative mortality rate increased in patients with COPD following general and thoracic surgery.[6,7,10] While most studies historically focused on clinically symptomatic or severe-to-very severe COPD, recent findings suggest that early-stage COPD, characterized by mild airflow limitation, is far more prevalent.[8] Therefore, studies that assess the effect of mild-to-moderate COPD on PPC, are critical to provide well-guided and appropriate perioperative management to these patients. While multidisciplinary perioperative care bundles, including increased physiotherapy, show promise in reducing morbidity and mortality after emergency abdominal surgery, these findings require confirmation through randomized controlled trials. The specific contribution of physiotherapy within these bundles remains unclear, and its independent impact on outcomes is still unknown.[10]

Aims and objectives

To address these problems, this study was conducted to estimate the incidence of early pulmonary complications following emergency abdominal surgeries. In addition, the influence of pre-existing pulmonary morbidity and various candidate risk factors were investigated to determine whether they were good predictors of PPCs.

MATERIALS AND METHODOLOGY

This institution-based observational descriptive (prospective) study was conducted in a rural-based tertiary care medical college hospital during the period of March 2021–August 2022 (IEC no: BSMC/aca 180; date: January 19, 2021). By "consecutive sampling method," a total of 122 patients were included in this study.

Inclusion criteria

All the patients (aged between 18 years and 60 years) who were admitted in the surgery ward, and underwent emergency abdominal surgeries during April 2021–May 2022.

Exclusion criteria

Patients unwilling to participate in the study, those undergoing gynecological or obstetric surgeries, patients requiring re-exploration due to respiratory complications from previous surgeries, individuals with known respiratory, cardiac, or other comorbidities, and patients of extreme age (<18 years or >60 years) were excluded from the study.

Study variables

Demographic profile of participants, pre-operative comorbidities, intraoperative indication of OT, duration and site of incision, post-operative features of PPCs.

Work plan

After obtaining ethical and other necessary clearances from requisite authorities, the initial 12 months of patients undergoing emergency abdominal surgery were followed up recording some pre-operative, and intraoperative data for the development of PPC and their incidence and association with certain variables were obtained.

Outcome definition and parameters

There are various definitions of early PPC[11] as

- Respiratory complications that occur within 48–72 h following surgery
- Conditions affecting the respiratory tract that can adversely influence the clinical course of the patient after surgery
- Any pulmonary abnormality occurring in the post-operative period that produces identifiable disease or dysfunction that is clinically significant and adversely affects the clinical course.

The primary outcome was the development of a PPC, including:

Pneumonia

The presence of new or progressive pulmonary infiltration on the chest X-ray is associated with at least two of the following signs: purulent tracheobronchial secretion, elevation of body temperature (above 38.3° C), and increase of leukocytes in circulation (over 25% above the base count).[12]

Atelectasis

Evidence of pulmonary atelectasis on the chest X-ray associated with acute respiratory symptoms, without fulfilling the criteria for pneumonia.

Pleural effusion

Excessive amount of fluid in the pleural space, detected by clinical examination and chest radiograph, requiring percutaneous intervention.

Acute respiratory failure

There is an acute deficiency in gas exchange in the lung, requiring mechanical ventilation. If patients with pneumonia developed respiratory failure, they would be included only in the group "acute respiratory failure."

Acute respiratory distress syndrome

Ventilated, bilateral infiltrates on chest X-ray, PaO_2:FIO_2 ≤300, minimal evidence of left atrial fluid overload within 7 days of surgery.[13]

Study tool and procedures

Pre-operative comorbidities, demographic variations, and intra-operative important variable data were noted. Post-operative period regular chest auscultation, SpO_2 monitoring, following tests done to know the development of PPC. Investigations such as blood hemoglobin level, total and differential count, chest X-ray (PA view), and pulmonary function test were done where indicated.

Ethical issue

This study was conducted after getting permission from the Institutional Ethical Committee (IEC no: BSMC/aca 180; date: 19-01-2021). Proper written informed consent from each patient or patient's attendants/relatives was obtained after explaining the study procedure to them in their own vernacular language.

RESULTS AND ANALYSIS

A total of 122 patients who underwent emergency abdominal surgery and fulfilled the inclusion criteria in the time frame mentioned above, were included in this study. Pre-operative demographic data were collected through interviews, intraoperative data taken from intraoperative notes, and postoperatively thoroughly clinically examined for the development of early PPC, and in patients with PPC, certain measures were taken to deal with it. These data were entered in Microsoft Excel and analyzed using IBM SPSS.

In this study, it is observed that most of the study participants were of the age group of 21–30 years (29.5%) with an average age of 35.5 years and most participants were male (79%). More than half of the study population (59%) were smokers. Most of the patients (89.3%) do not have any pre-operative pulmonary comorbidity. Only 13 people among 122 have either asthma (six participants) or COPD (seven participants). As shown in Table 1, indications of most of the abdominal surgeries are peptic perforation (17.2%) and acute appendicitis (16.4%). Most of the patients (≥75%) underwent exploratory laparotomy with a midline incision, which included an upper midline incision (22.1%), mid midline incision (32.8%), and lower midline incision (25.4%). More than half of the study participants (59%) underwent surgery under general anesthesia and most of the surgeries (55.7%) took a duration of more than 2 h. Among 122 study populations, 48 developed PPC. Among these most (22.95%) developed atelectasis and the rest of the complications were few in number, as mentioned in Table 1. Most of the patients were successfully managed with analgesic, incentive spirometry, and chest physiotherapy (64.6%).

As shown in Tables 2 and 3, there was no statistically significant association between the age group and gender of the participants with an incidence of post-operative pulmonary complications ($P>0.05$).

Conversely, as per Table 4, 10 patients (asthma: four patients and COPD: six patients) out of 13 patients with pre-operative pulmonary comorbidity developed PPC, and 38 among 109 patients with no previous pulmonary comorbidity developed PPC. Thus, there was a higher occurrence of PPC among patients having pre-existing pulmonary complications, and this was statistically significant ($P<0.05$).

As shown in Table 5, two major groups, i.e., perforative peritonitis, SAIO, and post-operative adhesion without peritonitis were compared for the development of PPC (as the rest of the groups are too small to take under consideration). No statistically significant association between the indication of surgery and the development of PPC was found ($P>0.05$).

As per Table 6, there was a statistically significant association of the site of incision with the development of PPC ($P<0.05$). Upper midline incision has more chance of developing PPC.

Table 7 shows that half of the patients with general anesthesia developed PPC. The incidence of the same among those with spinal anesthesia was lower (24.5%). Hence, general anesthesia had more association with the development of PPC than spinal anesthesia ($P<0.05$).

As per Table 8, more than half of patients developed PPC whose OT duration was more than 2 h; only 22.2% of the patients with OT duration <2 h developed PPC. This difference was found to be statistically significant ($P<0.05$), indicating that prolonged duration of operation definitely increases the chance of PPC, irrespective of indication.

Table 1: Distribution of study population according to indication of surgery, incision site, type of anesthesia, duration of surgery, incidence of early post-operative pulmonary complication, and management needed for developed PPC

Distribution of study population on various parameters	Frequency	%
Indication of surgery		
Abdominal TB	06	4.9
Acute appendicitis	20	16.4
Appendicular perforation	12	09.8
Blunt trauma of the abdomen	09	07.4
Ileal perforation	18	14.8
Peptic perforation	21	17.2
Post-operative adhesion	06	4.9
Subacute intestinal obstruction	16	13.1
Miscellaneous	14	11.5
Incision site		
Upper Midline	27	22.1
Mid Midline	37	32.8
Lower midline	31	25.4
McBurney's gridiron	22	18.0
Paramedian	01	0.8
Rooftop	01	0.8
Type of anesthesia		
General anesthesia	72	59.0
Spinal anesthesia	49	40.2
Combined general+spinal anesthesia	01	0.8
Duration of surgery		
Group A (<2 h)	54	44.3
Group B (>2 h)	68	55.7
Incidence of early post-operative pulmonary complication		
Atelectasis	28	22.9
Pleural effusion	07	5.73
Pneumonia	05	4.0
Acute exacerbation of COPD	01	0.8
Acute exacerbation of asthma	01	0.8
Pneumonia with respiratory failure	03	2.4
Respiratory failure	03	2.4
No post-operative complications	74	60.7
Management needed for developed PPC		
Antibiotics	05	10.4
Analgesic+incentive spirometry+chest physiotherapy	31	64.6
Bronchodilator	02	4.1
Mechanical ventilation	04	8.5
Mechanical ventilation+bronchodilator	01	2.1
NRBM Mask	02	4.1
Pleurocentasis	03	6.2

PPC: Post-operative pulmonary complication, COPD: Chronic obstructive pulmonary disease

Table 2: Distribution of study populations according to age groups and post-operative pulmonary complications

Age	PPC	No PPC	Total
≤20	6	7	13
21–30	12	24	36
31–40	14	18	32
41–50	9	15	24
51–60	7	10	17
Statistical inference	Chi-square=1.116, P=0.891719		

PPC: Post-operative pulmonary complication

Table 3: Distribution of the study population according to gender of the patients and its correlation with PPC

Sex	PPC	No PPC	Total
Male	37	59	96
Female	11	15	26
Statistical inference	Chi-square=0.1216; P=0.727316		

PPC: Post-operative pulmonary complication

DISCUSSION

The study was conducted on 122 patients (male 96, female 26; average age 35 years) who attended surgery E.R. in Bankura Sammilani Medical College and Hospital with complaints which mandated immediate emergency surgical intervention. After admission demographic data and routine history were elicited, with emphasis on smoking habit and history of pre-operative pulmonary comorbidity. After this data were collected regarding

Table 4: Distribution of study population according to PPC in respect to pre-operative pulmonary comorbidity

Pulmonary comorbidity	PPC	No PPC	Total
Asthma	4	2	6
COPD	6	1	7
NO	38	71	109
Statistical inference	Chi-square=9.1013; P=0.01056		

PPC: Post-operative pulmonary complication

Table 5: Distribution of study population according to PPC in respect to indication of surgery (Main two)

Indication of Surgery	PPC	No PPC	Total
Perforative peritonitis (peptic+ileal+appendicular perforation)	20	31	51
SAIO+post-operative adhesion	7	15	22
Statistical inference	Chi-square=0.3609; P=0.548017		

PPC: Post-operative pulmonary complication

Table 6: Distribution of study population according to site of incision and PPC

Site of Incision	PPC	No PPC	Total
Above umbilicus (UM+MM+Rooftop)	33	35	68
No above umbilicus extension (LM+lower paramedian+McBurney)	15	39	54
Statistical inference	Chi-square=5.4312; P=0.0395074		

PPC: Post-operative pulmonary complication

Table 7: Distribution of study population according to development of PPC in respect to type of anesthesia during surgery

Type of anesthesia	PPC	No PPC	Total
General anesthesia	36	36	72
Spinal anesthesia	12	37	49
Combined general and spinal anesthesia	0	1	1
Statistical inference	Chi-square=8.605; P=0.01353468		

PPC: Post-operative pulmonary complication

operative indication, site of incision, duration of OT, and type of anesthesia. Postoperatively, the patient was followed up thoroughly, by clinical examination, chest X-ray, blood count, pulse-oximetry, and ABG and managed accordingly.

It has been estimated by Weiser et al., that worldwide, >230 million major operations occur annually.[14] The reported incidence of PPCs in major surgery ranges from <1% to 23%.[15] Prasad et al., (2019) observed that PPCs range

Table 8: Distribution of study population with PPC in respect to duration of surgery

Duration of Surgery	PPC	No PPC	Total
Group A (<2 h)	12	42	54
Group B (>2 h)	36	32	68
Statistical inference	Chi-square=11.902; P=0.00056074		

PPC: Post-operative pulmonary complication

from 9% to 40% in various non-thoracic surgeries.[16] Lawrence et al., and several other studies have found pulmonary complications to be more common than cardiac complications[17] and post-operative respiratory failure to be the most common PPC.[18] In our study, the incidence of PPC was around 39% (48 out of 122) which is similar to the highest reported figures in other studies. The difference could be attributed to the inclusion of elective cases in most previous studies, unlike our study, which primarily focuses on emergency cases. Elective cases are generally well-optimized to manage existing comorbidities, whereas emergency cases often lack such preparation. Moreover, our patient population largely comes from economically disadvantaged backgrounds with limited access to quality health care, making them more prone to untreated or poorly managed chronic conditions, such as pulmonary diseases.

Roizen and Fleisher and several others have reported that atelectasis in abdominal surgery may exceed 15–20% and can be more in obese patients with persistence for longer periods postoperatively.[7] Canet and Mazo[18] in their study showed that the most common PPC was pneumonia. In our study the most common PPC is atelectasis 58% (28 out of 48 PPCs); this incidence being quite higher than in other studies, may be due to the higher incidence of diaphragmatic splinting by ileus and effusions in emergency cases, inadequate post-operative analgesia and no scope for pre-operative optimization.

In our study, we did not find either age or gender to have any major effect on PPC development (Tables 2 and 3). This agrees with the findings of studies conducted by McAlister et al.[19] However, Tran et al., and some other studies reported that age has consistently been a risk factor for PPC.[20]

Significant diaphragmatic dysfunction with marked VC reduction for up to 1 week following upper abdominal surgery has been demonstrated in various studies.[21,22] Most studies reported that the likelihood of development of PPC is inversely proportional to the distance of the incision from the diaphragm. Similarly, our findings indicate that upper abdominal incisions are associated with a higher risk of PPC compared to lower abdominal incisions.

Saied et al., in their study, showed that PPC increases with increasing duration of anesthesia.[23] General anesthesia affects various aspects of respiratory function, so it might seem intuitive that using central or peripheral regional anesthesia (RA) instead would lower the incidence of PPCs. Studies by Arozullah et al., have shown that even for the same procedure, GA is an independent risk factor for PPCs compared with RA.[3]

Limitations of the study

Despite sincere efforts, our study has a few lacunae. The sample size is relatively small and it is a single-institution study which is bound to impact results; also, only early PPCs could be evaluated. Overall, the recent, prolonged pandemic too had a negative impact on the proper conduct of the study.

CONCLUSION

The study reports a high incidence of PPCs, reaching 39%, which aligns with the uppermost rates documented in the literature. Significant factors contributing to the development of PPC include pre-existing pulmonary comorbidities, the site of the surgical incision (upper abdominal and above umbilical incisions), the use of general anesthesia, and prolonged surgical duration. Conversely, patient-related factors such as the indication for surgery, age, and gender did not show a significant impact on PPC occurrence. Importantly, early PPC cases were effectively managed with non-invasive interventions, including analgesics, incentive spirometry, and chest physiotherapy.

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REFERENCES

1. Fischer SP, Bader AM and Sweitzer BJ. Miller's Anaesthesia. 7th ed., Ch. 34. New York: Churchill Livingstone; 2010. p. 1019-1022.
2. Rock P and Rich PB. Postoperative pulmonary complications. Curr Opin Anaesthesiol. 2003;16(2):123-131.
   https://doi.org/10.1097/00001503-200304000-00004
3. Arozullah AM, Khuri SF, Henderson WG, Daley J and Participants in the National Veterans Affairs Surgical Quality Improvement Program. Development and validation of a multifactorial risk index for predicting postoperative pneumonia after major noncardiac surgery. Ann Intern Med. 2001;135(10):847-857.
   https://doi.org/10.7326/0003-4819-135-10-200111200-00005
4. Licker MJ, Tschopp J and Diaper J. Perioperative lung protective strategies. J Pulmonar Respirat Med. 2012;2:2.
5. Dindo D, Demartines N and Clavien PA. Classification of surgical complications: A new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg. 2004;240(2):205-213.
   https://doi.org/10.1097/01.sla.0000133083.54934.ae
6. Choudhuri AH, Chandra S, Aggarwal G and Uppal R. Predictors of postoperative pulmonary complications after liver resection: Results from a tertiary care intensive care unit. Indian J Crit Care Med. 2014;18(6):358-362.
   https://doi.org/10.4103/0972-5229.133882
7. Roizen MF and Fleisher LA. Anaesthetic implications of concurrent disease. In: Miller R, editor. Miller's Anaesthesia. 7th ed., Ch. 35. New York: Churchill Livingstone; 2010. p. 1103-1111.
8. Smetana GW. Preoperative pulmonary evaluation. N Engl J Med. 1999;340(12):937-944.
   https://doi.org/10.1056/NEJM199903253401207
9. Milner A. Reducing postoperative pulmonary complications in non-cardiothoracic surgery patients. South Afr J Anaesth Analg. 2011;17:27-30.
10. Toori KU, Khan JS, Nomani AZ, Hussain SW and Hashmi S. A prospective study of factors predicting PPC in patients undergoing non cardiothoracic surgery under general anaesthesia in developing country. Anaesth Pain Intensive Care. 2012;16:252-256.
11. Kelkar KV. Post-operative pulmonary complications after non-cardiothoracic surgery. Indian J Anaesth. 2015;59(9):599-605.
    https://doi.org/10.4103/0019-5049.165857
12. Fàbregas N, Ewig S, Torres A, El-Ebiary M, Ramirez J, de La Bellacasa JP, et al. Clinical diagnosis of ventilator associated pneumonia revisited: Comparative validation using immediate post-mortem lung biopsies. Thorax. 1999;54(10):867-873.
    https://doi.org/10.1136/thx.54.10.867
13. Blum JM, Stentz MJ, Dechert R, Jewell E, Engoren M, Rosenberg AL, et al. Preoperative and intraoperative predictors of postoperative acute respiratory distress syndrome in a general surgical population. Anesthesiology. 2013;118(1):19-29.
    https://doi.org/10.1097/ALN.0b013e3182794975
14. Weiser TG, Regenbogen SE, Thompson KD, Haynes AB, Lipsitz SR, Berry WR, et al. An estimation of the global volume of surgery: A modelling strategy based on available data. Lancet. 2008;372(9633):139-144.
    https://doi.org/10.1016/S0140-6736(08)60878-8
15. Miskovic A and Lumb AB. Postoperative pulmonary complications. Br J Anaesth. 2017;118(3):317-334.
    https://doi.org/10.1093/bja/aex002
16. Prasad MK, Sahay S, Varshney RK and Jheetay GS. Evaluation of risk factors for postoperative pulmonary complications after elective open upper abdominal surgery in chronic obstructive pulmonary diseases patients. J Med Soc. 2019;33:47-51.
17. Lawrence VA, Cornell JE, Smetana GW and American College of Physicians. Strategies to reduce postoperative pulmonary complications after noncardiothoracic surgery: Systematic review for the American College of Physicians. Ann Intern Med. 2006;144(8):596-608.
    https://doi.org/10.7326/0003-4819-144-8-200604180-00011
18. Canet J and Mazo V. Postoperative pulmonary complications. Minerva Anestesiol. 2010;76(2):138-143.
19. McAlister FA, Bertsch K, Man J, Bradley J and Jacka M. Incidence of and risk factors for pulmonary complications after nonthoracic surgery. Am J Respir Crit Care Med. 2005;171(5):514-517.

https://doi.org/10.1164/rccm.200408-1069OC

20. Tran D, Rajwani K and Berlin DA. Pulmonary effects of aging. Curr Opin Anaesthesiol. 2018;31(1):19-23.
https://doi.org/10.1097/ACO.0000000000000546
21. Ford GT, Rosenal TW, Clergue F and Whitelaw WA. Respiratory physiology in upper abdominal surgery. Clin Chest Med. 1993;14(2):237-252.
22. Dureuil B, Cantineau JP and Desmonts JM. Effects of upper or lower abdominal surgery on diaphragmatic function. Br J Anaesth. 1987;59(10):1230-1235.
https://doi.org/10.1093/bja/59.10.1230
23. Saied NN, Helwani MA, Weavind LM, Shi Y, Shotwell MS and Pandharipande PP. Effect of anaesthesia type on postoperative mortality and morbidities: A matched analysis of the NSQIP database. Br J Anaesth. 2017;118(1):105-111.
https://doi.org/10.1093/bja/aew383

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Work attributed to:
Bankura Sammilani Medical College and Hospital, Bankura, West Bengal, India.

Orcid ID:
Dr. Anirban Hazra - https://orcid.org/0009-0007-1344-6422
Dr. Yogesh Chauhan - https://orcid.org/0009-0000-0039-1118
Dr. Premangshu Ghosh - https://orcid.org/0009-0008-6273-2932
Dr. Mohan Pradhan - https://orcid.org/0009-0006-0870-9403
Dr. Riddhisundar Samanta - https://orcid.org/0000-0002-4624-4233

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