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Case Report

Unmasking bowel obstruction in a Parkinson's patient: the influence of cognitive bias in frailty medicine

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Abstract

Recognising emergent acute pathology in the context of established chronic conditions can be challenging and is often overlooked due to cognitive biases in the physician's decision making. In the context of Parkinson's disease (PD), there is a large overlap between the non-motor symptoms of PD, common gastrointestinal symptoms amongst the elderly population, and symptoms associated with acute, severe GI pathology, which can result in diagnostic overshadowing. Here, a 68-year-old man with a background of PD reported nausea, constipation, and abdominal discomfort during routine frailty review by his general practitioner (GP). The patient reported these were common symptoms which usually resolved with laxatives. Aware of the potentially sinister nature of this presentation, the GP arranged transfer to the emergency department where CT subsequently revealed a closed-loop small bowel obstruction. This case highlights how frailty medicine is particularly susceptible to cognitive biases, which are commonly cited sources of medical errors.

Keywords: biases; frailty; general practice

Introduction

Frailty medicine is inherently complex, requiring healthcare professionals to navigate through a complexity of chronic conditions and atypical disease presentations. One critical but often understated component in this medical landscape is the influence of cognitive biases on the decision-making process. These biases can significantly skew clinical judgment, particularly when physicians rely too heavily on initial impressions and anecdotal experience. The presence of a dominant diagnosis can result in the misattribution of new symptoms, therefore masking the identification of co-existing conditions, particularly acute pathologies with similar presentations, in a phenomenon known as diagnostic overshadowing. In the discipline of frailty care, where the interplay of various diseases is the rule rather than the exception, the risk of diagnostic overshadowing due to cognitive biases is particularly high, resulting in potentially detrimental outcomes for the elderly. Indeed, such biases are commonly cited sources of medical errors, hence important to recognise [1].

Parkinson's Disease (PD) is a complex neurodegenerative disorder associated with many non-motor gastrointestinal symptoms, including sialorrhoea, dysphagia, heartburn, dyspepsia and constipation [2]. Median age of diagnosis is 60-years-old [3]. Constipation is a well-recognised symptom in PD, with a prevalence of between 40%–50% [4]. However, its prevalence in elderly populations is remarkably similar; 40% amongst ≥65-year-olds, increasing up to 50% amongst nursing home residents [5]. Acute causes of constipation are therefore particularly susceptible to diagnostic overshadowing in the PD population, given their age and existing significant comorbidity.

The challenge therein lies in differentiating GI symptoms of PD from serious underlying pathologies which, if not diagnosed and intervened early, can escalate into severe, even life-threatening situations. Such pathologies include appendicitis, bowel obstruction, ischaemia and/or perforation, colitis, GI haemorrhage, peritonitis, and volvulus. This report presents the successful navigation of cognitive bias pitfalls to recognise emergent small bowel obstruction in the context of PD, aiming to spotlight the complexities general practitioners face in managing chronic conditions among the elderly.

Case report

A 68-year-old patient with a history of PD was visited at home for a routine frailty assessment by his general practitioner. History-taking revealed the patient hadn't opened his bowels for five days, with associated abdominal discomfort, bloating and mild nausea for the last two days. The patient denied any systemic symptoms or changes in medication, diet or activities that might have correlated with the onset of the abdominal discomfort and constipation.

On examination, the patient appeared well-hydrated but slightly pale. Rigidity and tremor were observed, attributable to PD. Vital signs were within normal reference ranges. Abdominal

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Table 1. Selected results of blood tests performed on arrival at the emergency department. Significant results include a mild leucocytosis with neutrophilia and a raised lactate

Full Blood Count	Value	Urea & Electrolytes	Value	Liver Function Tests	Value
RBCs	6.35×10^{12}/l	**Na $^+$**	138 mmol/l	**ALT**	40 U/l
Hb	156 g/l	**K $^+$**	4.4 mmol/l	**Bilirubin**	16 μmol/l
WBCs	11.4×10^9/l	**Urea**	6.1 mmol/l	**ALP**	57 U/l
Neutrophils	9.6×10^9/l	**Creatinine**	96 μmol/l	**Albumin**	39 g/l
Platelets	149×10^9/l	**eGFR**	66 ml/min/1.73m^2	**Lactate**	3.8 mmol/l
				Amylase	83 U/l

RBC = red blood cell; WBC = white blood cells; eGFR = estimated glomerular filtration rate; ALT = alanine aminotransferase; ALP = alkaline phosphatase

examination revealed mild generalized tenderness focused on the umbilical region. However, there was no overt guarding or rigidity. Bowel sounds were present on auscultation.

The patient and his partner stressed that they weren't concerned, arguing that for the last 5 years he has regularly experienced episodes of constipation, up to 5 days in duration, which usually respond to Bisacodyl. In addition, he takes 1–2 sachets of Macrogol (13.8 grams each) dissolved in water twice daily and has been advised on adequate fibre intake, hydration, and physical activity to help manage symptoms. Given the patient's long-standing PD, they felt that the recent symptoms might simply be a part of the ongoing management challenges they were accustomed to facing. The doctor, however, explained that while this could be another episode of gastrointestinal symptoms secondary to PD, there could be a more serious underlying condition, particularly given the persistence of symptoms beyond the patient's normal episodes and failure to respond to the usual treatment. Thus, he arranged for the patient to be taken by ambulance to the emergency department.

Emergency doctors arranged blood testing (Table 1), which revealed a raised white cell count with neutrophilia and a raised lactate level. Erect chest radiograph was unremarkable. Abdominal radiograph showed dilation of small bowel (Fig. 1) raising the suspicion of a bowel obstruction. A CT abdomen and pelvis with contrast revealed that a section of distal jejunum/proximal ileum had twisted on itself forming a 30 cm closed-loop obstruction with no evidence of perforation. There was no definite bowel ischaemia but there was associated mesenteric fat-stranding.

A nasogastric tube was inserted for decompression while preparations for emergency laparotomy were made. The 30 cm loop of small bowel was resected and a jejunoileal anastomosis formed. The patient's recovery was remarkable for a prolonged post-operative paralytic ileus, but, thanks to timely management, avoided a life-threatening bowel perforation and eventually returned to baseline.



Figure 1. Plain abdominal radiograph with visible small bowel dilatation.

Discussion

This case report explores the diagnostic processes involved for a 68-year-old patient with a long-standing diagnosis of PD presenting with a relatively innocuous presentation: a five-day history of nausea, abdominal discomfort and constipation on a background of recurrent similar episodes, likely non-motor symptoms of his PD, which usually resolve using over-the-counter laxatives. Such "routine" gastrointestinal issues were actually indicative of a life-threatening small bowel obstruction.

An important consideration in frailty medicine is the association between cognitive biases and diagnostic errors. A systematic review of 6810 physicians revealed that common cognitive biases, such as overconfidence, the anchoring effect, and information and availability biases, contributed to diagnostic inaccuracies in up to 77% of case scenarios studied [6]. Furthermore, an alarming 71.4% of the studies reviewed associated these biases with therapeutic or management errors, emphasizing a cascade effect where initial diagnostic missteps propagate through to patient management [6].

The diagnostic process, in this case, was navigated with an awareness of the potential for cognitive biases, which could easily lead to misdiagnosis or delayed treatment (Table 2). There was a risk of diagnostic overshadowing since the patient's symptoms were attributable to his known PD. Reassurance from the patient and partner that the symptoms were routine and usually self-limiting could have reinforced this bias, potentially leading to premature closure in diagnostic reasoning. However, the doctor maintained vigilance for atypical presentations, which are common in frail elderly patients, and conducted a thorough assessment. Effective communication emerged as a foundational element of good medical practice in this account: while empathetic listening is an important part of clinical practice, striking a balance with objective assessment ensured they felt listened to and understood the potential gravity of the situation.

The diagnostic process was a multi-faceted approach consisting of careful history taking, physical examination and investigation results. This approached mitigated the effects of confirmation bias, as one approach in isolation could result in findings

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Table 2. Diagnostic process and cognitive bias mitigation. This table outlines the types of cognitive biases that could have influenced each stage of the diagnostic process and the strategies employed to mitigate these biases. By systematically addressing these potential biases, we aimed to ensure a comprehensive and accurate diagnostic approach, ultimately leading to the correct diagnosis and timely treatment for the patient

Diagnostic Stage	Potential Cognitive Bias	Description	Mitigation Strategy
Initial Assessment	Anchoring Bias	Over-reliance on initial diagnosis of PD to explain symptoms.	Considered a broad differential diagnosis; did not solely attribute symptoms to PD.
Patient & Partner Reassurance	Confirmation Bias	Tendency to prefer information that confirms existing beliefs.	Maintained objective assessment despite patient's reassurance.
Physical Examination	Availability Heuristic	Bias towards diagnoses that are more readily recalled.	Comprehensive examination, avoiding assumptions based on most common or recent diagnoses.
Diagnostic Testing	Overconfidence Bias	Excessive trust in one's clinical skills and judgment.	Relied on objective investigations like blood tests and imaging to support clinical findings.
Final Diagnosis	Premature Closure	Accepting a diagnosis before it has been fully verified.	Avoided rushing to a conclusion; used a systematic approach to confirm the diagnosis.
Treatment Plan	Framing Effect	Being influenced by how information is presented or framed.	Discussed treatment options considering both risks and benefits, avoiding bias from framing effects.

that can be easily dismissed as attributable to background chronic conditions. In this case, the diagnostic process consisted of a careful balance between considering the known chronic condition of the patient and remaining open to other acute pathologies. This balance was achieved by acknowledging and addressing cognitive biases at each step of the diagnostic process, avoiding the potential peril of cognitive biases.

Conclusion

Recognising and addressing cognitive biases in frailty medicine is paramount. This case report highlights the need for comprehensive assessment of frail patients to avoid potential diagnostic overshadowing and provides vital insights into the complexities and best practices for managing similar clinical scenarios in the future.

Conflict of interest

No conflicts of interest.

Funding

None declared.

Ethical approval

No ethical approval required.

Consent

Informed written consent was obtained from the patient to ensure that his medical history, clinical presentation, and related medical data could be used for educational and scientific purposes as well as publication in scientific journal. All patient-specific information presented in this case report has been carefully de-identified to comply with ethical guidelines and patient confidentiality standards. The consent process was conducted in accordance with the Declaration of Helsinki.

Guarantor

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