woman first authors increased by about 10%.[4] Another article demonstrated that in the years 1954–2017 in Canada, there was a slow rise in authorship with 22% woman first authors and 22% woman last authors in 2017.[2]

There are several limitations to this study. Only the general anaesthesia journals with the highest impact factor were included; differences in woman authorship may be present in lower-impact factor or in subspecialty journals. We were unable to confirm gender for a small percentage (0.6%) of the authors. We were unable to identify individuals with non-binary gender, or gender that did not align with their names or appearance. We focused on the first and last authors assuming that the first author was the junior author and the last author was the senior author, but this may not be true in some countries. We used name and appearance to classify gender, which is likely to misclassify non-gender conforming individuals. For a small number of authors (~5%), we used naming databases and websites, which may also resulted in some misidentifications. Finally, journals that asked for the highest degree only may have affected the classification of degrees.

To conclude, we have found that woman authorship in anaesthesia has increased significantly over the past decade, mostly driven by an increase in the number of woman first authors. However, the proportion of woman last authors is significantly less than the representation of women in the field and has not increased in the past decade. Our data suggest that resources should be invested on overcoming barriers for junior woman investigators to rise to senior ranks.

Declarations of interest

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Appendix A. Supplementary data

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Transient involuntary fixation on a second language following exposure to general anaesthetics

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Editor—In 2005, we reported a patient who, during recovery from a general anaesthetic, was unable to speak his native language, English, despite attempts to do so to communicate with his English-speaking carers, and found himself able to speak only in his second language of Spanish.[1] This language disturbance spontaneously resolved without sequalae once he had fully recovered from anaesthesia. Given recent published interest in this phenomenon, the appearance of

Table 1 Known cases of transient fixation on a second language associated with anaesthesia or sedation. GA, general anaesthesia.

Case no. and source	Age (yr), sex	First language (L1)	Second language (L2)	Age when L2 was learned	Event	Self-knowledge of event
1. Ward and Marshall[5] (1999)	54, M	English	Spanish	In school about 14 yr	Spoke L2 for 1 h postoperatively; GA	Denied being able to speak L2
2. Cosgrove[6] (2000)	70s, M	English	Hindi	In army during World War II	Switched to L2 whilst counting aloud to 30 during induction; GA	Denied being able to speak L2
3. Akpek and colleagues[7] (2002)	Adult, M	Turkish	English	Adult	Wrote and spoke L2 for 24 h postoperative; GA	Surprised he had spoken and written L2
4. Webster and Grieve[1] (2005)	55, M	English	Spanish	37 yr	Spoke L2 postoperative for 10 min; GA	Working knowledge of L2; remembers speaking it
5. Frizelle[8] (2005)	Adult, M	French	English	Adult	Spoke L2 during spinal procedure under sedation	Non-fluent L2; unaware he had spoken it
6. Personal correspondence with Dr Margot Rumball	77, M	English	Japanese	20s	Spoke L2 postoperative for 40 min; GA	Fluent in L2; aware he was speaking it
7. Ivashkov and colleagues[9] (2016)	52, M	English	French	As a child	Spoke L2 postoperative for less than 1 h; GA	Did not recall speaking L2, which he never used
8. Ivashkov and colleagues[9] (2016)	28, M	English	Spanish	In primary school	Spoke L2 for 10 min; GA	Never used L2
9. Pollard and colleagues[4] (2017)	64, M	English	Norwegian	Adult	Spoke L2 postoperative for 5 h; GA	Non-fluent in L2; unaware he had spoken it
10. Personal correspondence with patient	20, M	Mandarin	English	16 yr	Spoke L2 postoperative for 10 min; GA	Fluent in L2; remembers speaking it

subsequent cases, and new understanding of the effects of anaesthetic agents on consciousness, we thought readers of the *British Journal of Anaesthesia* may find an overview of this phenomenon interesting.[2–4]

We are now aware of 10 cases, where adult patients of all ages have found themselves capable of speaking only their second language during sedation or recovery from anaesthesia, yet are typically capable of understanding their first language.[1,4–9] Cases are shown chronologically in Table 1. Written informed consent was obtained from the two patients from whom we collected data (Cases 4 and 10 in Table 1). Cases 6 and 10 were supplied to us by correspondence after the publication of our case report.[1] While counting aloud during induction, one patient switched from his first language (English) to Hindi as his level of consciousness reduced,[6] another spoke in his second language for the duration of a spinal procedure under sedation,[8] and the remainder of patients fixated on their second language for minutes to hours while recovering from general anaesthesia.[1,4,5,7,9] The language faculties of all patients recovered spontaneously without sequelae. However, patients often seem surprised, or even denied, that they spoke (or even wrote) in their second language once fully recovered (Table 1). Most intriguingly, two patients denied being able to speak their second language at all, having not spoken it voluntarily for many years.[5,6] And in a further four cases, the patients claimed that they were either non-fluent in their second language or that they had never used it since learning it years before.[4,8,9]

Transient fixation on a second language associated with anaesthesia can also reoccur. Over the course of 3 yr, our patient underwent a series of five surgical procedures under general anaesthesia lasting from 30 min to 2 h, with uneventful recovery in all,[1] except that he fixated on his second language in Procedures 1 and 5 (Case 4 in Table 1 relates to the first event in this series). Consulting his hospital records, we could find no discernible differences between the procedures or anaesthetics where fixation on a second language occurred compared with those in which it did not. Other evidence also suggests that fixation can reoccur during sedation or anaesthesia. Despite claiming that he could no longer speak his second language, the wife of the patient in Case 1 recalled that her husband had in fact spoken Spanish on a previous occasion after a general anaesthetic.[5] In addition, the patient in Case 8 admitted that he had previously fixated on his second language during bouts of excessive drinking, in which he was hospitalised.[9]

We asked our patient and another who contacted us (Table 1; Case 10) to answer some questions describing their experiences of being able to verbalise only in their second language.[1] Both expressed an experience of finding it difficult to 'organise sentences' or 'get words out' in their first language. Our patient (Case 4) found it frustrating trying to make himself understood to his English-speaking carers while able to verbalise only in Spanish, and recalls the relief he felt when a Spanish-speaking nurse recognised what he was saying and was able to reply.[1] The patient in Case 10 spoke to his girlfriend in English (his second language), which she understood but found amusing, as they had never spoken in English to each other before (Table 1).

In all currently known cases of this fixation phenomenon, the patients are males, which may suggest sex differences in the way that languages are encoded in the brain.[4] Also, in all cases, the patient's second language was learned after the sensitive period for language had ended (after an age of ~5 yr). This is known to result in the second language being stored in more disparate and numerous locations in the cortex, including outside of Broca's area.[10–12] How might the differences in the neural structures responsible for first and second languages result in fixation on the second during anaesthesia? Recent work on the effects of anaesthesia on consciousness itself may provide clues. The modern study of the neurophysiology of consciousness began in the 1990s, and some of the most evidence-based models currently propose that consciousness is an information network with a small-world topology.[13,14] Small-world networks contain areas of highly ordered local connectivity, which are in turn connected to each other through long-distance connections. Such networks contain hubs, where many long-distance connections coincide. In the brain, anaesthesia appears to work by shutting down the activity of such hubs, effectively halting global information transfer in the cortex, and thus yielding a state of unconsciousness.[2,13] Broca's area is known to be the primary hub for the production of first languages. We might therefore speculate that this hub could be disabled during sedation or recovery from general anaesthesia, while sparing the more numerous areas associated with a second language. This could potentially explain why patients involuntarily fixate on their least practised language during such episodes, and also why it is that patients often do not remember speaking in their second language, given the impairment of conscious awareness. It should be noted that the transient fixation phenomenon described here differs substantially from the more widely known foreign accent syndrome (FAS), in which individuals speak their first language, but with a novel or foreign accent. FAS typically occurs after cerebrovascular injury, such as stroke, is more common in women than in men, usually occurs in monolinguals, and can persist for years.[15]

Although this transient fixation phenomenon is rare, an increased awareness of it in perioperative practitioners may avoid expensive and unnecessary evaluations, such as neuroimaging procedures. Further systematic study of this phenomenon may tell us much about the nature of language, consciousness, and anaesthesia.

Declarations of interest

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Identification of lung overdistension caused by tidal volume and positive end-expiratory pressure increases based on electrical impedance tomography

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Editor—Overdistension can occur after an increase in PEEP even under lung-protective ventilation. It is unknown if such overdistension is caused by PEEP itself or by tidal breathing at higher PEEP. Lung-protective ventilation requires low tidal volume (V_T) (6–8 ml kg^{-1} ideal body weight) and adequate PEEP. Ultra-protective lung ventilation with very low V_T (e.g. 4 ml kg^{-1}) is usually limited to patients receiving extracorporeal membrane oxygenation (ECMO). Whether V_T is low enough to avoid lung overdistension is unknown. An increase in PEEP may also introduce regional overdistension.[1] A bedside tool to identify overdistension is warranted.

Electrical impedance tomography (EIT) is used to optimise PEEP at the bedside to avoid regional lung overdistension and collapse.[2] Here we introduce a simple EIT-based method to identify (1) whether lung tissue is overdistended after PEEP increase and (2) whether the overdistension is caused by V_T or PEEP changes.

In the scenario of PEEP increase (e.g. recruitment manoeuvre, PEEP titration, or assessment of lung recruitability),[3,4] tidal impedance variation and the changes in end-expiratory lung impedance (ΔEELI) were normalised to volume for all pixels of the lung regions (regions with tidal impedance variation >20% of the maximum). Regional compliance was calculated according to Eq. (1).

$$C_{EIT,i} = TV_i/\Delta P, \quad (1)$$

where TV_i corresponds to tidal impedance variation for pixel i (ml) and ΔP is the driving pressure (mbar).

Step 1. Confirm if C_{EIT} at high PEEP is higher or lower than C_{EIT} at low PEEP

For any lung regions with $\Delta C_{EIT}<0$ (high PEEP minus low PEEP), regional overdistension occurs. $\Delta C_{EIT}>0$ represents regional recruitment. This assessment can be performed