

How does defensive medicine cause harm to patients in the healthcare environment?

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Abstract

This paper aims to explore defensive medicine (DM) in order to raise awareness of how it can cause harm. DM describes methods that healthcare professionals may use to avoid litigation. Raising awareness should hopefully deter healthcare professionals from these behaviours, such as over-prescribing antibiotics and ordering unnecessary tests, and achieve a better standard of care for patients. Improving this standard of care is something that healthcare professionals should always strive towards; however, they may stray from this as they adapt to the pressures of evolving healthcare practices. This topic is important as defensive practices are often carried out by healthcare professionals without realising the consequences. Sometimes it can be harmless, but often investigations are performed in medicine which reveal incidental findings. These could include blood test or scan results that may be harmless and unrelated to the patient's presentation. They often warrant unnecessary investigations and treatments due to concerns of low-risk differentials which may be best left untreated. At times, these approaches can cause unnecessary harm and should be avoided in the patient's best interests.

Abbreviations

AMR - Antimicrobial resistance

COVID-19 - Coronavirus (Sars-CoV-2) disease of 2019

CS - Caesarean section

DM - Defensive medicine

EmCS - Emergency caesarean section

OBGYN - Obstetrics and gynaecology

UR - Uterine rupture

WHO - World Health Organisation

Introduction

Sekhar and Vyas define defensive medicine (DM) as "departing from normal medical practice as a safeguard from litigation".¹ Examples of DM include ordering unnecessary investigations, and overuse of or mistreatment with antibiotics. A study of 800 doctors in Pennsylvania highlighted the lack of clinical reasoning in some of these decisions, with 92% of participants ordering diagnostic tests for assurance.¹ Recent legal pressures on healthcare professionals have contributed to an increased use of defensive methods, but many of these have been suggested to cause harm inadvertently.¹ This paper will explore DM in obstetrics and microbiology and analyse the evidence behind the ways DM can cause harm to patients. This will be explored through post-surgical caesarean section (CS) complications and antimicrobial resistance (AMR), respectively, as their modern relevance allows significant evidence to be available.

Defensive medicine and the rise in caesarean sections

It is suggested in recent studies that obstetrics and gynaecology (OBGYN) physicians are at high risk of litigation, with a study in France recording an average of 2.4 claims per OBGYN physician.² Saudi Arabia, being a less developed country, recorded that 24.6% of malpractice claims were towards OBGYN physicians.³

This cannot indicate a global trend of litigation against OBGYN physicians but highlights its presence in contrasting socioeconomic settings.

The rise of defensive practices is reflected in an Israeli study of 117 OBGYN physicians, in which 87% revealed they are "more likely to offer Caesarean section, even in the absence of clear medical indication".⁴ There is a limitation that those surveyed encompass only 10% of all Israeli OBGYN physicians;⁴ however, this population may be suggestive of a trend of defensive CS use. The existence of defensive CS use is also seen in European countries, such as Romania, with 70% of 73 participants admitting to using CS defensively and 86.3% commenting on fear of litigation.⁵ Although UK data is limited, a study by Bourne *et al.* has indicated that between 10-30% of 5116 surveyed OBGYN doctors have carried out a form of DM.⁶ Although the rates of defensive CS in UK studies are vastly smaller than in the Romanian study, UK studies tend to have lower response rates, possibly due to the risk of litigation and its potential impact on the NHS.^{5,6}

CS is commonly used to avoid antenatal complications associated with breech presentation,⁷ such as neonatal morbidity, hence being a lower risk option to external manipulation of the foetus or attempting a natural vaginal birth.^{8,9} As an invasive procedure, CS leads to uterine scarring and carries an increased infection risk. The uterine scar can tear in subsequent pregnancies, which can result in severe complications.⁷ A study in the Netherlands reflected uterine rupture (UR) to be over six times more likely in vaginal birth after CS than in vaginal birth without a previous CS birth.¹⁰ A 2012 UK case-control study, including over 600 participants who gave birth over a 13 month period, also highlighted an incidence of 2.1 URs per 1000 vaginal births post CS compared to 0.3 per 1000 vaginal births in those who elected for another CS.¹¹ Albeit a rare complication, UR can result in emergency hysterectomy and stillbirth; however, fortunately, URs often avoid maternal mortality,^{12,13} with case fatality rates reported at 1.3% in the UK study by Fitzpatrick *et al.*¹¹ Furthermore, 15/159 women with UR had emergency hysterectomies, and 18 stillbirths occurred (at a rate of 124/1000 live births compared to the standard UK rate of 7.5/1000) as a result of UR.¹¹ It cannot be concluded that the risk of maternal mortality is low in all settings as it may be much more likely in developing countries. Overall, the potential complications of UR inflict physical harm on the mother alongside psychological harm, the latter being associated with the loss of an unborn child and the negative impact on one's body image following hysterectomy.¹⁴ Not all individuals experiencing hysterectomy will feel this way; however, due to the associated risks of CS, it can be argued that the practice of defensive CS may cause more harm than it reduces when CS is not medically indicated.



Furthermore, CS itself carries significant psychological impacts such as post-traumatic stress. The likelihood of a negative impact is significantly increased in emergency CS (EmCS),¹⁵ which may arise in the context of UR. A 2019 systematic review, including 22 countries, found that 55% and 73% of women in Sweden and Australia, respectively, experienced significant stress or trauma during or after EmCS.¹⁵ This delivery method was also suggested to impact early relationships and breastfeeding with offspring, with a participant in one study in a 2019 review seeing breastfeeding as a necessity to make up for "failing to provide their daughter with a normal birth".¹⁶ This theme of failure emerges again when discussing maternal birth

experiences of EmCS, alongside themes of helplessness and fear, with a participant in a separate study in this review feeling a sense of failure with themselves and betrayal in "being cheated" of their ideal birth experience.¹⁷ Finally, three studies within this review reported low self-esteem after EmCS with two of these also commenting on themes of emotional vulnerability and regret.¹⁸⁻²⁰ The systematic review on the whole has some, albeit recognised, limitations including cultural differences, small sample sizes and often unidentified indications for EmCS.¹⁵ As a result of these limitations, the effects and relevance of the above conclusions may be disputable in the context of DM and UR.¹⁵ Nonetheless, the potential impact of EmCS on maternal mental health is important to consider as a risk of DM.

Therefore, it is important that provisions for psychological support of mothers who have had CS are considered moving forward in the field of OBGYN.

Defensive medicine's contribution to antibiotic resistance

In the World Health Organization's (WHO's) 2014 report, 5/6 regions recorded *Staphylococcus Aureus* and *Escherichia Coli* to be resistant to the standard antibiotics for treatment in 50% or more of patients with these infections.²¹ There is the limitation that not all member nations contributed to the data, so the results may not be fully representative, but they highlight a worrying statistic. The use of broad-spectrum antibiotics can kill both invading pathogens and our body's useful commensal bacteria, due to their cellular similarities. Any surviving bacteria, pathogenic or commensal, can spread resistance genes and proliferate a population of resistant bacteria.²² The disruption of commensal bacteria may also cause some to become pathogenic.²² Overall, this may make the antibiotics used ineffective in future.

As the understanding of AMR has grown, antibiotic use has been strictly regulated. People with common infections are typically no longer prescribed antibiotics, and infections requiring antibiotics are taken in a moderated way to limit resistance risk.²³ Despite this, a study of 661 infectious disease and clinical microbiology specialists from 74 countries recorded that 85% of these specialists adopted defensive behaviours towards their own patients and 76.4% advised others to adopt DM behaviours. Defensive behaviours included: "prescribing unnecessary broad-spectrum antibiotics" and "prolonging antibiotic treatment durations".²⁴ The defensive use of antibiotics poses a risk to patients as it promotes resistance which may reduce the options for treatment of bacterial infections. This indirectly causes harm to patients as these defensive actions increase the difficulty of treatment for hospital patients in the future and may lead to prolonged suffering. This is not true for all bacterial infections as there are many options for treatment, and some bacteria are yet to develop resistance, so there is not an immediate risk to the world population. However, a continuation of current trends poses risk as global deaths due to AMR have been predicted to rise to 10 million deaths a year by 2050.²⁵

Even as recent as 2020, DM behaviours have arisen in the Coronavirus (Sars-CoV-2) disease of 2019 (COVID-19) pandemic, raising concern for acceleration of AMR. Despite COVID-19 being a viral disease, a review of COVID-19 cases in Asia reports that antibiotics were used to cover co-existing bacterial infections in 70% of cases, although only 10% had confirmed bacterial co-infections.²⁶ The fear and uncertainty surrounding this relatively new disease, and its associated rapid clinical decline in some patients, was likely a source of many lapses of clinical reasoning which may have had lasting effects on AMR.²⁷ However, there is a lot to learn from this pandemic regarding antibiotic stewardship; this term describing the supervised safe use of antibiotics.²⁵ The pandemic has shown how the achievability of

stewardship can change in the face of crisis. Under the strain of this new health challenge, the priority of AMR fell and only begins to rise again as the world recovers. The WHO suggests improved awareness of AMR could contribute to the management of DM in microbiology.²¹ As new research emerges, it is likely the COVID-19 pandemic will be a great source of awareness and will motivate earlier intervention of microbiology policy and guidance if such another health crisis arises. Tackling it indirectly by reducing the incidence of infection is also suggested.²⁸ In summary, DM cannot be argued as a cause for AMR but its contribution to AMR poses additional and unnecessary risks to those bacterially infected in the future.

Discussion and conclusion

The cases discussed here are linked by being examples of positive DM, where a practitioner causes involuntary harm whilst attempting to prevent it. This may occur out of compassion, although cases in favour of convenience are where the issue of DM lies. One management option for this is tort reform. Tort reform is a collection of changes to civil justice law through which legal governing bodies aim to reduce the risk of litigation against doctors and discourage the need for DM practices. With this reform in place, legal bodies can attempt to limit patients making unjustified claims and place financial caps on the amount that can be claimed by victims of malpractice.^{29,30} It is suggested that it may “significantly reduce... use of high-cost tests and treatments that do little to benefit patients.”²⁹ In a systematic review of 37 articles, tort reform on non-economic damages, such as the psychological impacts of malpractice, was found to decrease DM practices and healthcare spending but did not affect quality of care. Otherwise, there was insufficient evidence on other types of tort reform.³⁰ However, the evidence base for tort reform is limited and lacks explicit data; trialling of tort reform in a range of countries may explore the potential benefit and risks of its use, and further research should expand the evidence base.

I believe that other potential recommendations to address DM surround education and support.

Regarding education, it is clear from the evidence base that the understanding of the risks of these defence practices is quite high. However, this is underrepresented in clinical practice which may be due to limited awareness or priority of DM and its risks. Education may be beneficial for three audiences; firstly, educating medical students as part of the curriculum should act as a deterrent but also encourage them to be stewards to deter others; secondly, educating healthcare professionals during ward teaching, through application of clinical guidelines, and in their reflective practice should ensure that their stewardship and knowledge develops in training; and finally, education of the public in this practice should allow them to be more involved in shared decision making through allowing them to discuss these risks. This may be a source of controversy, but if delivered with reliable data and not with a fear-mongering manner it should act as a source of some empowerment for patients.

Regarding support, it is suggested that DM may arise in situations of uncertainty. I believe this could be addressed through two means; the first, which may come with education, is to destigmatise and encourage discussion of DM between healthcare staff. This could help reduce feelings of helplessness by normalising discussion of these legal concerns. Secondly, advice on ethical and medicolegal matters should be made more accessible. This could be through introducing on-site advisors or by raising awareness of what is currently available by inviting representatives of local or national medicolegal bodies to discuss their support services. This should discourage DM practices by encouraging healthcare professionals to discuss their concerns more readily before making unwise decisions that lack clinical reasoning. There is a limitation that this article only indicates the long-term

risks of DM, although there is remaining uncertainty as to the risks of DM in the short term. I believe that the short-term risks are a topic of concern as they may require more immediate action. It would be beneficial to analyse the evidence surrounding these short-term risks of DM, as publicising this may contribute to reducing their incidence. In addition, this review does not explore the patient perspective of DM. This is an important area for further research in order to contextualise the impacts of this practice.

In summary, the evidence suggests that DM may cause harm to patients in the healthcare environment through exposing them to long-term complications for the benefit of positive outcomes in the short term and reduction of legal liability. By straying from clinical guidelines or typical clinical reasoning, healthcare professionals can provide themselves and patients reassurance and a greater sense of wellbeing. In situations of uncertainty, healthcare professionals may feel helpless and as a result may not consider the long-term impacts of their actions when making decisions to relieve their uncertainty. Importantly, this does not suggest that these individuals are immoral people but may often be individuals who themselves are scared in the same way that patients may be in uncertain situations. Therefore, introduction of structured education and support surrounding DM and associated ethical and legal concerns may provide an effective solution to a topic that is unnecessarily taboo in nature.

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