

Investigating the Relationship Between High INR Readings (8 or above) and Covid-19

Author: Megan Blenkinship (Pre-Registration Pharmacist) Supervised by: Evonne Clarke (Senior Clinical Pharmacist)

Background

The anticoagulant medicine warfarin, is widely used and requires patients to have INR monitoring at Warfarin Clinics at least every 12 weeks (NICE, 2020). The adverse effects of warfarin include haemorrhage at high INR readings. A patient's response to warfarin is affected by many factors including diet, lifestyle, other medications and co-morbidities. On the 23rd March 2020, the UK entered a lockdown period due to the Covid-19 pandemic, which has been proposed to affect INR readings, either from infection of the virus or from the impact of the pandemic including; shielding, prolonged INR testing intervals, diet changes from stockpiling, patient illness, medication changes and lifestyle changes due to restrictions (Speed et al., 2020) (NHS, 2020).

Objective 1: To determine how many patients had INR readings ≥ 8 between March 23rd 2020 and 5th January 2021.

Objective 3: To determine whether INR readings ≥ 8 are more prevalent in specific patient groups during Covid-19.

Aim: To investigate the relationship between the incidence of high INR readings (at 8 or above) and Covid-19.

Objective 2: To determine what factors have affected patients' INR readings during the Covid-19 pandemic.

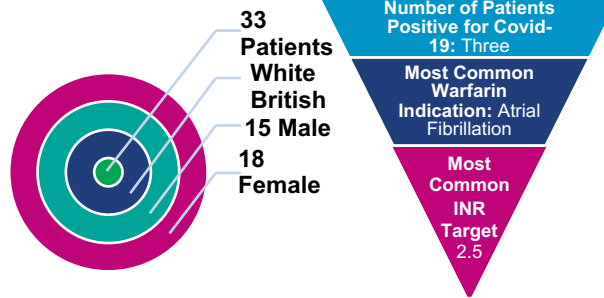
Objective 4: To determine how many patients who received INR readings ≥ 8 , tested positive for Covid-19.

Method

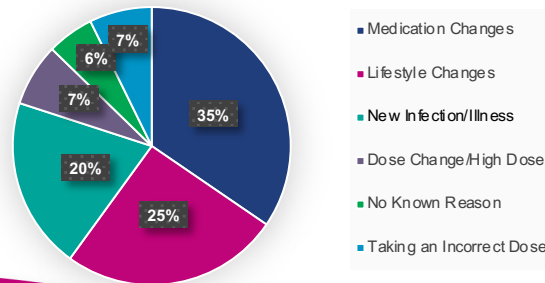
All warfarin patients both from clinics and domiciliary visits at the Trust, who had INR readings ≥ 8 between 23/03/2020 and 05/01/2021 were included in the study. Patients were identified using the report function on the anticoagulation clinic recording system: INR Star. Data was collected from INR Star and Inpatient Meditech records. The patient's INR reading, age, gender, warfarin indication, INR target, ethnicity, any Covid-19 test results and changes in diet, medication, lifestyle and patient co-morbidities were recorded. The study did not require ethical approval but was approved by the Departmental Research and Audit Group.

Results

Thirty-three patients aged between 28 and 91 years old, who all had an ethnicity of White British were investigated in the study. Over half of the patients ($n=20$) investigated in the study were aged 70 years old or older, showing significance with regards to INR readings.



Most patients had several factors affecting their INR reading, including; illnesses or infections, changes in their medications, lifestyle, diet and warfarin dose. Three patients had no known reason for their high INR reading. One of the most common medication changes was the commencing or the discontinuing of antibiotics, followed by changes to patient's analgesia and the administration of an incorrect warfarin dose.



Conclusions

The study results provide no conclusive evidence that raised INR readings are due to the Covid-19 pandemic. Current research on high INR readings during Covid-19 is limited, thus, further studies are needed to determine an association between the variables, in order to make valid interventions and to promote the need for increased INR monitoring during the pandemic.

- The study has shown some patient groups may benefit from increased INR monitoring.
- Most of the sample patients were aged over 70 years old, highlighting that older patients are more likely to have high INR readings.
- Patient's gender and ethnicity were found not to affect patient's INR readings in the study.
- Some patients with INR readings ≥ 8 reported lifestyle and diet changes, that they attributed to the pandemic.
- The effect of shielding, social distancing and delayed INR monitoring at clinics by 2 weeks is unknown and may have impacted INR readings.
- Only three patients received a positive Covid-19 test result prior to their high INR reading, thus, Covid-19 infection was not found to be significant in the study.

Recommendations

- INR monitoring could be assessed in all Covid-19 positive patients, not just warfarin patients, in order to get a larger sample size with different ethnicities and to determine an association between Covid-19 and high INR readings.
- Local results could also be compared to the rest of the UK and the amount of high INR readings could be compared to the same time period the previous year when the UK was not in the pandemic.
- In practice, positive reinforcement of safety netting during warfarin therapy, remains of high importance. Pharmacists must continue to confirm patient's warfarin doses and ensure they know their Warfarin Clinic details, to notify clinics of any changes to their medications, lifestyle or medical conditions, allowing healthcare professionals to assess the need for more frequent INR monitoring.

References:

1. NICE Excellence (2020) Oral Anticoagulants | Treatment Summary | BNF Content Published By NICE. [online] bnf.nice.org.uk. Available at: <<https://bnf.nice.org.uk/treatment-summary/oral-anticoagulants.html>> [Accessed 11 September 2020].
2. Speed, V., Patel, R.K., Byrne, R., Roberts, L.N., & Arya, R. A perfect storm: Root cause analysis of supra-therapeutic anticoagulation with vitamin K antagonists during the COVID-19 pandemic. *Thrombosis research*, 2020, 192, pp73-74.
3. NHS (2020) Clinical guide for the management of anticoagulant services during the coronavirus pandemic. Content Published By NICE. Available at: <<https://www.nice.org.uk/Media/Default/About/COVID-19/Specialty-guides/specialty-guide-anticoagulant-services-and-coronavirus.pdf>> [Accessed 5 March 2020].