

Minutes of the Derby Medical Society Virtual Session - 10th December 2020

Attendees: 43.

Speakers:

Dr. Jon Cort

Consultant Anaesthetist
Chesterfield Royal Hospital

Dr. Mohamed Abdulla

Consultant Respiratory Physician
Chesterfield Royal Hospital

Evening Host:

Dr. Heather Kinsella - was invited to a meeting from Chesterfield in April 2020, where Dr. Jon Cort was talking about COVID.

Now during the second wave, it is interesting to learn more about COVID, pathology and patient's journey.

COVID at the Sharp End

Dr. Mohamed Abdulla:

Origin: COVID is believed to have started from Wuhan city, Hubei Province of China, well known for the wild life markets. The intermediary is believed to be the Pangolin, a mammal very valued in China for its meat.

Symptoms: SOB, persistent cough, fever, fatigue, other non-specific symptoms like brain fog. Emphasis was placed on loss of taste and loss of smell - clinically more specific to COVID.

Transmission: SARS-CoV 2 survives through social contact. It is transmitted through droplets generated by coughing, breathing, or touching surfaces, then carried to face/mouth/nose. It is highly infectious.

Pathogenesis: The SARS-CoV-2 spike protein binds to ACE 2 receptor, the host target cell receptor. The angiotensin-converting enzyme 2 (ACE 2) receptor is regulated by renin-angiotensin-aldosterone system (RAAS). The RAAS is inhibited by this binding and the body releases mediators like IL6, ferritin, macrophages, etc. increasing the inflammation, mainly in the lungs, but in other organs too, causing organ damage.

Investigations: FBC (looking for lymphopenia); CXR (peripheral interstitial changes); PCT (evidence of bacterial infection), D-dimer.

Lymphocytes are important. They decrease significantly throughout the illness, returning to a normal as the patient recovers.

The CXR normally shows peripheral changes, consolidations and ground glass changes. CT Pulmonary Angiogram can be used to detect Pulmonary Embolism, but it can reveal the peripheral changes COVID-specific.

The level of Procalcitonin increases in the context of a bacterial infection. In Covid the raise in PCT is an indicator of severity: the sicker the patient, the higher the PCT.

D-dimer is normally a test to look for Pulmonary Embolism. In Covid D-dimer can be high due to micro vascular thrombosis. If there is a rising trend in D-dimer and the patient is Oxygen-dependent, that is worrying sign and an indication for possible venous thromboembolism, and therapeutical anticoagulation becomes necessary.

Management: in outpatient setting - for patients not requiring respiratory support - monitoring the oxygen levels and symptom control (fever etc.). As inpatient: supportive - oxygen therapy and drug therapy: corticosteroids/Remdesivir.

Respiratory support: Low Flow Oxygen via nasal cannula, face mask, AIRVO, CPAP, BIPAP, IMV. In the first peak nasal high flow oxygen therapy was not offered because of lack of evidence, fear of aerosol generation and infection spreading among patients. Data from France have proven that high flow nasal oxygen therapy is effective, safe and not as aerosol generating as it was feared. Data from USA demonstrated that high flow nasal oxygen therapy is safer than a non-rebreathing mask or a Venturi mask in terms of aerosol generating.

The standard choice of anticoagulation is Low-Molecular-Weight Heparin - binds with COVID spike protein and down regulates IL-6, reducing inflammation.

The doses are variable, depending of patient status: the current practice is to use weight adjusted standard thromboprophylaxis in all patients; in radiologically confirmed VTE and in patients who are not well enough to have confirmatory imaging, deteriorating or with a rising D-dimer - therapeutic anticoagulation divided doses are used, considering the risk of bleeding.

Still-unanswered questions:

In confirmed or clinically likely VTE how long should we anticoagulate? Should we anticoagulate patients in Primary Care? Should we discharge these patients home on anticoagulation?

There is no evidence yet, it is a matter of clinical judgement.

Drug treatment: The standard of care is now Dexamethasone 6 mg once a day, oral or IV.

Remdesivir used to be administered at the beginning of the second peak. However, the "Solidarity trial", published by the WHO, showed absolutely no benefit in terms of mortality, no shortening in the length of patient's illness and it is expensive. It can be still used in certain patients, but it is not a standard practice anymore.

Corticosteroids are recommended for patients who are oxygen-dependent. If given corticosteroids whilst they don't have oxygen requirements, their condition can worsen.

LONG COVID - used to be a social media term, but is has been medicalised. Also called "Post-COVID" syndrome. It implies various manifestations in different patients: some patients describe post-critical illness symptoms, others experience fatigue and brain fog (post-illness fatigue). Others may have permanent organ damage or can have a "roller-coaster" of variable symptoms: SOB, brain fog, lack of concentration.

Prevention/vaccination: Social distancing, washing hands etc. are important in controlling the virus. There are currently 3 successful vaccines: Pfizer/BioNTech vaccine (Belgium), over 90% effective, Moderna and Oxford vaccine (yet to be approved). Pfizer vaccine - no safety concerns, but safety and additional efficacy data continuously collected. Moderna (USA) - 92% effective. Oxford vaccine - mixed result, but appears safe from the published data. There was a case of transverse myelitis, however not fully confirmed as due to the vaccine. The overall effectiveness was >70%, 60% after 2 full doses, and 90% after half dose followed by full dose (according to the results published in Lancet)

Vaccination challenges: UK doctors poll (before the companies released the data) - 4/10 not keen to accept the vaccine (56% due to safety concerns). Public poll - 26% would refuse, 53% concerned about safety. Also, there is a strong Anti-vax campaign.

There were 2 cases of allergic reactions from the Pfizer vaccine, which have increased fear in patients.

Dr. Jon Cort

A take home message: National Institute for Health research advocates that if an Oxford trial participant wants to have the Pfizer vaccine, it should not be denied, especially people in higher risk groups, healthcare or care workers.

Chesterfield Royal Hospital has been one of the most successful trial hospitals in the NHS for COVID-19.

The two major trials at Chesterfield Royal Hospital have been "Recovery" and then "REMAP-CAP" which is specific to ITU.

Currently there are 33 positive patients in the hospital, nine of which of those are in ITU.

Normally Chesterfield Royal Hospital has 7 beds in ITU and 8 beds in HDU, two separate wards. In the COVID context, there is a non-Covid ITU, with both amber and in green patients, and two Covid ITU.

So there are 24 critical care beds when normally there are 15.

Patients admitted into hospital can be on a green pathway or an unknown pathway, which is called "amber". They have a Covid PCR test on days 1, 3 and five and every five days thereafter.

If patients need admission, without symptoms of Covid, they are still considered to have Covid until they have two swabs on days one and three.

Many patients that require emergency surgery don't have time to get to day three.

In the Critical Care Unit, if there is an aerosol generating procedure happening or a patient needs aerosol generating procedures (high flow nasal oxygen), then the whole room immediately turns into a red area. All staff at all times have to wear full FFP three gear. This slows down care.

Considering the staff is insufficient and the average length of stay in critical care ward for proven Covid is between 3 and 4 weeks, it is difficult to clear the back log, even if the numbers are starting to fall. Currently there are 390 non-Covid patients in the hospital and 500 beds. 742 patients with Covid have been discharged and unfortunately a total of 204 deaths have happened the hospital.

Ill patients are coming in this time as well as patients with Covid. So there has been an enormous strain, which turned into operational difficulties:

There are 12 operating theatres in Chesterfield Royal: 1 trauma theatre, 1 maternity theatre and 1 general surgery emergency theatre. Only another 2 theatres are operating, out of the normal 12. That is how much organisational capacity have been lost. As soon as that ward shuts to Covid it's going to open for winter bed pressures. So that doesn't help much either.

If there are patients who need one of those two precious theatres, they have to self isolate and have PCRs shortly before coming into the hospital. And not only them, but their entire household, which is causing a huge social inconvenience. That's the elective pathway.

Take home message: this wave is different.

Every case is discussed at MDT, considered in the rounds, and validated by the divisional leadership team before they go on the green list.

On the first day of the vaccination program Chesterfield Royal vaccinated more people than any other secondary care organisation of the seventy trusts that are currently vaccinating.

A strategic decision was made to vaccinate on that day staff only, starting in the highest risk groups, the shielding groups and then those with a greater propensity to be infected, such as BAME staff. Of a such short notice, as when the vaccine arrived, it had to be used rapidly, because is no longer minus 70 and it only has a five day shelf life. 975 doses were provided.

Over 75 healthcare workers in the care home setting were vaccinated, also intending to vaccinate 47 at the highest risk over 80 olds that could be brought into the hospital.

The normal PTSD rate, with anxiety phenomena, for someone that's been an adult in a critical care unit is about 15-20%. In the Covid patients the rate is over 50%.

The inpatients that don't come to critical care are similarly afflicted. The history of being poorly on high flow nasal oxygen, plus/minus being ventilated, watching people being ventilated, is distressing and it's made even worse by limiting visitations.

Ventilation should be avoided if possible. Series of histological studies have shown terrible lung inflammation and the lungs are like butter at post-mortem, so you don't want positive pressure to ventilate them, unless you absolutely have to. The thrombosis levels are huge.

From the "Recovery" and "REMAP-CAP" trials the results of convalescent plasma are expected to arrive before Christmas and to have at least one significant subgroup that has a positive result.

The quality of convalescence plasma this country is using is over 100 times better than the other studies. Some of the drugs in these studies you are in theory able to prescribe. Is advisable not to be prescribing people cultures when they've got a suspicion of COVID.

The only way we can beat this rancid vile disease is with high-quality adaptive centrally controlled research.

Questions:

Q1: (Dr. Heather Kinsella) - In which way is wave two different?

A: (Dr. Jon Cort) - For multifactorial reasons. Younger people are more affected, the great majority have central obesity syndrome, hypertension and type II diabetes. Last time it was an older cohort. The other reason is that last time no one came to A&E, we have had a general Intensive Care Unit last time. Now we still have that background activity as well on top. Staff is really tired, is exhausted, and we have had more deaths in proportion to admissions.

Q2: (Dr. John McIntyre, Paediatric Consultant) - Regarding the pathophysiology - why infants and young children seem to have no serious illness in this pandemic?

A: (Dr. Jon Cort) - Some of them have had serious and very severe form of Kawasaki type phenomena in the first wave. The occurrence is less in children probably due to ACE inhibitors young children have got. You don't express large amounts of ACE for regulation of your endothelium until you reach puberty, and it's a specific entry point on the ACE2 receptor.

(Dr. Mohamed Abdulla) - It all starts when the Covid spike protein binds the ACE receptors, it up-regulates, but the kind of lymphocyte depletion we see in adults you don't tend to see in kids. If you can maintain a lymphocyte count, they attempt to calm down the inflammations and that helps to fight off the SARS-COV 2 generated inflammatory response. Children tend to not deplete the lymphocytes and they are able to maintain T cells and B cells, generate an immune response more quickly and bring the virus under control, and that's probably part of it, but we don't know the precise answer to that.

Q3: (Dr. Ian Scott) - Do you have experience of dealing with any pregnant females in your cohort of the Covid patients?

A: (Dr. Jon Cort) - We have a flow, a pathway in place for that, as recommended by the Royal College of Obstetricians and Gynaecologists, including limited attendance of partners during birth. We've had no major sequelae from parturients in the hospital this far, but is very difficult in the throes of labour to manage to keep everybody involved safe.

Q4: (Dr. Ian Scott) - Is there a coordinated plan to document these patients and to look at how the virus is or is not transmitted to the foetus?

A: (Dr. Jon Cort) - Yes, there is, data has been collected.

Comment: (Dr. John McIntyre, Paediatric Consultant) - From a paediatric and neonatal perspective, we are part of a national survey. Each week all the paediatricians across record any cases of neonatal complications of Covid. We are not seeing any real significant vertical transmission from mum to foetus. The problems of post delivery transmission did not seem to end in serious neonatal disease either, so even Covid positive mums in their normal care of babies are not causing significant neonatal complications.

Q5: (Dr. Stuart Holloway) - Is there any evidence for the use of Montelukast in patients with Covid?

A: (Dr. Mohamed Abdulla) - There is no data to suggest that Montelukast is beneficial in Covid infections.

(Dr. Stuart Holloway) - This is a drug that is readily available in primary care. Can it be used in care homes to reduce the severity of the illness?

(Dr. Mohamed Abdulla) - We don't have the data to suggest that it is beneficial. It may be because it has not been tried. Our asthmatic patients have been pretty immune from getting serious disease in Covid. They have actually been taken off the list of high-risk group of patients, and a lot of these patients tend to be on the Montelukast. We don't know if this is the reason.

Q6: (Dr. Stuart Holloway) - We found that the Dexamethasone helps, which is again readily available. Do we have to wait for the evidence, for a drug that is very well tolerated, to use it?

A: (Dr. Mohamed Abdulla) - There is no standard proof for that, it could be worth discussing with the patient, explaining Montelukast is well tolerated, the harmful effects are really low, so it might be beneficial trying it. The response should be carefully monitored.

Q7: (Dr. Ian Shand - retired GP) - Is there any evidence that pre-existing medication history affects their liability of developing illness?

A: (Dr. Jon Cort) - There are no known therapeutic agents or pharmaceutical agents that are thought to be a trigger or a causative agent for severe disease.

(Dr. Mohamed Abdulla) - Lymphopenia is associated with severe disease. I advise against the lymphocyte depleting therapies, whilst we are up in the peak, unless the patients are self isolating or have been vaccinated.

Q8: (Dr. David Young - retired GP) - MHRA have stipulated to observe patients after the vaccines for 15 minutes. Will that become a logistical problem?

A: (Dr. Jon Cort) - The vaccine that we are administering now is an unique, it's an R.N.A. fragment enveloped in a nano-lipid particle, which is a completely different delivery model. We were observing people for 15 minutes afterwards, in a chair, away from the vaccination hub, but in an area close enough to skilled staff and equipment. That's how Oxford was designed as well, so when Oxford comes online, which is inevitable, that's the same trial architecture they have used as well.

Q9: (Dr Helen Lever) - Do steroid joint injections present a risk of severe disease, especially in old people?

A: (Dr. Mohamed Abdulla) - Evidence shows that local steroid injections do not increase the risk of patients developing Covid-SARS 2 infection or severe disease.

Q10: (Emma Poynton-Smith) - What would your advice be about getting vaccination for anybody who has had Covid in the last couple of months, is it worthwhile or we are just wasting a vaccine?

A: (Dr. Jon Cort) - 28 days after having had Covid, recovered and systemically well, the recommendation of Public Health England is to have the vaccine.

(Dr. Mohamed Abdulla) - We don't really know for how long the anybodies actually stay at a protective level in people who have had Covid infections.

Q11: (Dr. Ian Scott - retired Gynaecologist) - Should individuals who have recovered from Covid but show post viral symptomatology be given a vaccine?

A: (Dr. Mohamed Abdulla) - These patients might feel they have not recovered. If they have a bad experience with bad side-effects, and get an infection coincidentally after a flu vaccine, it becomes difficult to convince them to have it again. They still think they have got some sequelae of that vaccine. Our recommendation should be they should have it, as long as they have no ongoing temperature, no organic pathway that we can identify, they're not lymphopaenic.

Q12: (Dr. Sukhdev Singh Girm) - What's the guidance for a patient who missed the second dose, either through illness or just forgetting, what's the window of opportunity of getting the second dose?

A: (Dr. Jon Cort) - There isn't one. Between day 21 and 28 all the vaccines are harmonised. People will get reminders by text, letter, email, phone call. If someone doesn't have it, if they forget or decline, at the moment there are no plans for anything else.

(Dr. Mohamed Abdulla) - Considering the immunogenesis of the vaccine, the first dose of the vaccine is priming your immune system to generate a response and the second dose we are calling "booster dose". It is recommended to be given any time after 28 days.

Q13: (Dr. Fuad Abid) - For people who have positive antibodies, should they wait for them to become negative to have the vaccine?

A: (Dr. Cort) - We are trying to generate an IgM response, to give the memory to the body. The generic decision is that they should still have it.

Q14: (Sian Hopper) - The MHRA was recommending people with vaccine allergies, food, peanut allergies, not to have the vaccine. Is that likely to remain the case or will it change as time is going on and more people had a vaccinations.

A: (Dr. Cort) - I can guarantee that it will be changing rapidly.

Q15: (Dr. Stuart Holloway) - Leicester General and Glenfield are not in the first phase of receiving the Pfizer vaccine, despite the fact that Leicester has clearly been in lockdown. Is this based on sound evidence, is it based on politics and marginal seats, is it based on influence of Chief Executive Officers? Are we going to have a Covid vaccination certificate, as we do a yellow fever certificate, which might act as a passport in due course for individuals to access various services?

A: (Dr. Jon Cort) - From a political and Chief Executive perspective, that has had nothing to do with it, on the basis that the Chief Executives are very powerful and well regarded individuals. I'm no politician, I don't know how we were allocated and that has not been forthcoming from Public Health England. Regarding the certification, it has been stipulated repeatedly by our government that there will not be a Covid passport.

Q16: (Dr. Ian Scott) - Individuals have been persuaded to buy pulse oximeters on the basis that some of the Covid patients have been unaware of the drop in their oxygen saturations, while not feeling particularly dyspnoeic. This could affect, worry them, and might be a form of instrumental exploitation of individuals and cause confusion and problems. What do you feel about that and what evidence there is for it?

A: (Dr. Mohamed Abdulla) - Is really distressing the patients. It not only adds to their fear of catching Covid, but also more stress if they accidentally note a low reading for any reason. It can be a really work-generating instrument in the wrong hands. We can put them through a lot of unnecessary investigations. I often advise not to buy these devices online. There are patients with organic pathology in their lungs, where we want to monitor the Oxygen saturation, but that's very rare. I would routinely not recommend them to buy pulse oximeters.

Q17: (Dr Helen Lever) - One of my patients was about day 12 in the illness, out of hours have recorded a saturation of about 90% but they left him at home and advised to get a pulse oximeter. His wife rang me at work. He had horrible hypoxia of 82% and he wouldn't have actually sought help without those saturations. So in selected cases with very sensible patients it has actually helped us in primary care to determine who needs to be reviewed and who needs to go in. I think it's got his limitations, but I think it helps.

A: (Dr. Mohamed Abdulla) - Patients who have got pulmonary fibrosis, as their disease advances can do serial readings which can help determine the need for LTOT (long term oxygen therapy). I don't think we should routinely be recommending them, but in selected cases, it has a role.

Comment: (Dr. Heather Kinsella) - Nationally the recommendation is to monitor all patients over 65 who have had Covid, and high risk ones under 65, who have got Covid. 2000 oximeters will be given out in Derbyshire.

Dr. Heather Kinsella: Thanks given to Dr. Cort and Dr. Abdulla for their presentation and for donating their speaker fees to the Food bank. Thanks given to audience.

Next meeting is the **DMS Annual Presentation Evening**, on the **13th January 2021**.

Register