

Free Scientific Paper 1

Title **COVID-19 associated pulmonary aspergillosis (CAPA) case series in NHS Greater Glasgow and Clyde**

Authors Shadin Hassan, Mairi Macleod

Address Greater Glasgow and Clyde NHS, Glasgow, United Kingdom

Abstract

The aim of this study was to describe the patient's characteristics and clinical course of CAPA and to investigate possible association of Dexamethasone with CAPA incidence.

This is a retrospective descriptive study. All adult patients in GGC NHS with laboratory proven SARS-CoV-2 infection who subsequently had Aspergillus species isolated from their respiratory samples between 01/02/20 and 31/01/21 were included.

A total of 24 patients fulfilled the inclusion criteria. 79% of the cases were between October/2020-January/2021 coinciding with the second wave of COVID-19 and the increased use of steroids after the RECOVERY trial results. Based on the proposed screening and diagnostic algorithm for CAPA and Modified AspITU classification, 6 patients had likely/putative, and 2 patients had highly likely/probable CAPA, respectively.

Based on the CAPA algorithm, for 11 patients CAPA was not excluded and 5 considered colonization. Based on Modified AspITU, 10 considered query Putative CAPA and 6 colonization. 13 patients were males. The median age was 62. 46% of patients had underlying lung disease, 20% had previous exposure to inhaled steroids, 8% to Methotrexate, 4% to each of systemic steroids and Rituximab. 79% of patients received Dexamethasone and 12.5% received Tocilizumab for COVID-19. 75% of patients were in ITU at time of first Aspergillus isolation. 67% of patients received antifungal for CAPA.

CAPA remains an area of research. From our limited data, we observed an association between Dexamethasone use and incidence of CAPA. We also noticed a correlation between the number of samples with positive Aspergillus species culture from the same patient and the likelihood of CAPA diagnosis.

Free Scientific Paper 2

Title **A retrospective analysis of Klebsiella bloodstream infections in critically ill patients over a five-year period**

Authors William Ross¹, Nicholas Brown², Jumoke Sule², Fiona Cooke²

Addresses ¹Undergraduate Medical student, Pembroke College, University of Cambridge, Cambridge, United Kingdom. ²Clinical Microbiology and Public Health Laboratory (CMPHL), Addenbrooke's Hospital, CB2 0QW, Cambridge, United Kingdom

Abstract**Introduction**

This study aimed to identify *Klebsiella* spp. bloodstream infections (KBSIs) in critically ill patients, characterising potential risk factors and targets for intervention.

Methods

A retrospective analysis of blood cultures submitted to the Clinical Microbiology and Public Health Laboratory between 2015 and 2020, together with data from the Public Health England Data Capture System, was performed to identify KBSIs. Electronic patient records were reviewed for potential sources and risk factors.

Results

Klebsiella spp. were the second leading cause of Gram-negative BSIs in critically ill patients, after *E. coli* (82 KBSIs over five years). Almost two-thirds (62.2%) were nosocomial. Median age was 64.3 years (IQR: 50.2-71.2), 62.2% were male and case fatality rate was 22%. Comorbidities included 'Cardiovascular' (48.8%), 'Respiratory' (37.8%), 'Gastrointestinal' (37.8%), 'Endocrine' (35.4%) and 'Surgery' (35.4%). Common sources were 'Line' (36.6%), 'Urinary Tract' (25.6%) and 'Gastrointestinal' (11.0%). 54.3% of sputum/BAL, 33.3% of line and 14.9% of urine cultures grew *Klebsiella* within 2 weeks of a KBSI. Ventilator use (76.5%) and pneumonia (51.0%) were common prior to hospital-onset KBSIs. KBSIs numbers peaked in April-June 2020, coinciding with the first wave of COVID-19.

Discussion

This study presents a current overview of characteristics of KBSIs in critically ill patients. We speculate that the high rates of positive sputum/BAL and line cultures associated with nosocomial infections, signify pneumonia and subsequent line contamination as a potential cause of KBSIs. This could have important consequences in context of the COVID-19 pandemic and highlights the importance of intravascular catheter care in the prevention of KBSIs.

Free Scientific Paper 3

Title **Clinical Outcome of Shielded Patients Who Have Been Infected With COVID-19 in Barnsley Borough- June 2020**

Authors Dina Mahmoud¹, Muhalab Yousif²

Addresses ¹Barnsley Hospital NHS Foundation Trust, Barnsley, United Kingdom. ²Pinderfield General Hospital, Wakefield, United Kingdom

Abstract**Background**

Severe acute respiratory syndrome – coronavirus-2 has caused a pandemic that put the life of extremely vulnerable people who are eligible for shielding from COVID-19 at a greater risk. The UK government had advised those vulnerable people to start shielding by 21st of March 2020.

Methods

This study is a retrospective review of 74 patients who had laboratory confirmed covid 19 disease (tested between 31/03/2020-13/05/2020) and identified by Barnsley hospital information database as eligible for shielding. The reviewed cases were evaluated for clinical outcome, reasons for shielding, demographic distribution, place of residence and history of recent hospital stay.

Results

74 patients [median age 76.4 , males – 53%] were included, of which 48.6% [n=36, median age 81.5] had died. 43 out of all 74 patients had COPD (chronic obstructive pulmonary disease) and 24 [56%] of them had died. 24 patients [32.4%] lived in care homes. 19 out of all 74 patients were in-patient after 21st March for reasons other than COVID19 and diagnosed with COVID19 following discharge from hospital.

Conclusion

The study describes notably higher mortality from COVID19 in the shielding group, particularly in elderly patients and those with pre-existing COPD diagnosis. This group must be given priority when offering vaccination. The study has also revealed the need to adopt strict infection control measures to minimise infection transmission in care homes. Introducing a quicker way of testing on admission to hospital (e.g., point of care testing) would facilitate efficient triaging and bed allocation, which could subsequently reduce the risk of nosocomial infection.

Free Scientific Paper 4

Title **HIV in postpartum women: still a turbulent time**

Authors Rebecca Cooper¹, Paul Collini^{1,2}, Julia Greig²

Addresses ¹University of Sheffield, Sheffield, United Kingdom. ²Sheffield Teaching Hospitals, Sheffield, United Kingdom

Abstract**Introduction**

The postpartum period can be a difficult time for women living with HIV (WLWH), affecting engagement with care. We repeated our 2000-2011 audit of postpartum medication adherence and engagement with care for WLWH against BHIVA guidelines.

Methods

We retrospectively reviewed clinical records of WLWH who delivered their baby between June 2013 and December 2019. We recorded antiretroviral (ARV) management before, during and for 12 months after pregnancy; CD4 count and viral load (VL) at booking, 36 weeks' gestation, delivery, 1 and 12 months postpartum. We categorised any psychological and social problems and recorded timing of mental health assessments and follow-up appointments.

Results

There were 72 pregnancies involving 61 women, median age 35 years, 44 African. 70/72 (97%) continued with ARVs after delivery for whom VL data were available for 61 (85%). 49/61 (80.3%) had an undetectable VL (vs 64% in 2012). Of the 12 with a detectable VL, 5/12 (42%) had virological failure (>400 copies/ml). 32 (44%) missed at least one HIV clinic follow-up appointment (vs 27% in 2012), of whom 9/32 (28%) had a detectable VL. Social or psychological problems were noted in 47%, 10/12 (83%) with detectable VL and 20/32 (63%) that had missed an appointment.

Discussion

The same psychological and social difficulties as 10 years ago are still impacting HIV care. We are currently conducting a qualitative research study to help determine what measures can be taken to lessen their impact on their HIV care, through interviews with postpartum WLWH.

Free Scientific Paper 5

- Title** **The diagnostic challenges of neuroparasitological infections: the experience of the Hospital for Tropical Diseases (London) neuroparasitology multidisciplinary team between 2015 – 2020**
- Authors** Emily Martyn¹, Laura Nabarro¹, Gauri Godbole^{1,2}, Hadi Manji³, Hans Rolf Jager^{4,3}, Peter L. Chiodini¹
- Addresses** ¹The Hospital for Tropical Diseases, London, United Kingdom. ²Public Health England, London, United Kingdom. ³National Hospital for Neurology and Neurosurgery, London, United Kingdom. ⁴UCL Institute of Neurology, London, United Kingdom

Abstract**Introduction**

In the UK, neuroparasitological infections are rare but important diagnoses. Diagnostic delay can result in significant morbidity. The Hospital for Tropical Diseases (HTD) runs a neuroparasitology multidisciplinary team meeting (MDT) consisting of two consultant parasitologists, neurologist and neuroradiologist, both with specialist interests in neuroinfection, and registrars, working closely with the reference parasitology service. Clinical history, imaging and laboratory results are reviewed to recommend a differential diagnosis and management plan.

Methods

We reviewed MDT records between 1st October 2015 and 31st August 2020. We collected data on demographics, referring specialties, travel history and exposures, final diagnoses and MDT outcomes.

Results

Overall, 162 patients were discussed in 51 MDTs. Referrals were made by 54 different hospitals, 3 outside the UK. The median age was 40 (IQR 29,53) and 45% were female. Parasitic infections accounted for 43%, including neurocysticercosis (75%, 52/69), hydatid (9%, 6/69), neuroschistosomiasis (6%, 4/69) and non-HIV associated cerebral toxoplasmosis (3%, 2/69). Non-parasitological diagnoses included other infection (e.g. HSV, cryptococcus), ADEM and malignancy. The MDT recommended further investigation in 28% (45/162) including imaging, serological tests or brain biopsy. For 8% (13/162) treatment was recommended under the home team, 9% (15/162) were treated as an HTD outpatient, 4% (7/162) were admitted for anti-parasitic treatment at HTD. In 5 patients with neurocysticercosis, unnecessary brain biopsy was avoided.

Discussion

The HTD neuroparasitology MDT consults on complex neuroinfections from around the UK. Specialist review helps establish or exclude parasitological diagnoses, leading to appropriate parasitological treatment, saving patients from invasive procedures such as brain biopsy.

Free Scientific Paper 6

Title **Urinary antigen testing for respiratory infection during COVID-19: the microbiologist as a diagnostic steward**

Authors Tom Williams¹, Luke Blagdon Snell^{1,2}, Jonathan Edgeworth^{1,2}, Geraldine O'Hara¹

Addresses ¹Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. ²King's College London, London, United Kingdom

Abstract

The use of antimicrobials in the management of community-acquired COVID-19 is commonplace but evidence for coinfection with common bacterial pathogens to justify their use is lacking. We undertook a retrospective review of all respiratory cultures, blood cultures and urinary antigen tests in COVID-19 patients looking for co-infection with *Streptococcus pneumoniae* and *Legionella pneumophila*, and specifically to judge the utility of urinary antigen testing. 2674 GSTT patients were included who had a positive RT-PCR test for SARS-CoV-2 performed at GSTT between 03-March-2020 and 31-Jan-2021 and who had at least one other microbiology sample for review.

Reviewing respiratory cultures (n=2224) and blood cultures (n=5557), *Streptococcus pneumoniae* was cultured in five respiratory samples from five (5/2674, 0.2%) patients. A pneumococcal urinary antigen test was performed on one of these patients and was negative.

316 pneumococcal urinary antigen tests were performed, with only two (0.3%) positive tests, neither of which had *Streptococcus pneumoniae* isolated by respiratory or blood culture. All 351 legionella urinary antigen tests were negative. The total cost for processing these urinary antigen tests is estimated at around £30,000. A lower proportion of patients had pneumococcal urinary antigen testing in the second wave (125/1600, 8%) compared to the first wave (178/1074, 17%; χ^2 p<0.01), after new guidelines were introduced to recommend against their use.

We found little evidence of coinfection with *Streptococcus pneumoniae* or *Legionella pneumophila* in our cohort. Our data does not support routine urinary antigen testing in community-acquired COVID-19. Infection specialists have a role in diagnostic stewardship to prevent unnecessary testing.

Free Scientific Paper 7**Title** **Nasal washes vs nasopharyngeal swabs for the detection of respiratory pathogens****Authors** Matthew Flynn**Address** Queen Elisabeth University Hospital, Glasgow, United Kingdom**Abstract****Background**

Respiratory virus testing is frustrated by low sensitivity, estimated as low as 70%. One cause for this may be the method of sampling used. The question of which method of sampling yields pathogens with optimal sensitivity between nasopharyngeal swabs, nasal washes and aspirates was answered systematically, using new methodology for rapid reviews.

Methods

Cochrane interim guidance for conducting rapid reviews and the PRISMA protocol for combination of metanalysis and narrative synthesis. The study used the QUADAS-2 tool for risk of bias Revman and Rayyan QCRI software, and was registered with PROSPERO. Sensitivities were compared head-to-head against a consensus standard of positivity by either method as the gold standard. Insufficient, cross sectional and anatomical site-pooling methodologies were excluded.

Results

Of 13 eligible studies, 9 included infants, 6 included children under the age of 16 and 4 included adults. 8 had 'high' risk of bias, and 5 had 'high' applicability concerns. There were no statistical differences in pooled sensitivities between collection methods for 8 different viruses, and neither with use of PCR, immunofluorescence nor culture. In one study, Influenza H1N1 favoured nasopharyngeal swabs, with aspirates having 93.3% of the sensitivity of swabs ($p > 0.001$).

Conclusions

The chain of sampling, from anatomical site to laboratory results, features different potential foci along which sensitivity may be lost. A moderate body of evidence exists that use of a different sampling method between swabs and aspirates will not yield more respiratory pathogens. A new rapid reviews protocol helped answer this question in a 3 month period.

Free Scientific Paper 8

Title **Is there a role for inpatient influenza vaccination programmes?**

Authors Johanna Kellett Wright¹, Rajeka Lazarus²

Addresses ¹North Bristol NHS trust, Bristol, United Kingdom. ²University Hospitals of Bristol and Weston, Bristol, United Kingdom

Abstract**Introduction**

Patients with chronic liver disease have much higher mortality associated with influenza compared to other risk groups (1). Influenza vaccine uptake is much lower in adults with chronic liver disease (37.3%) compared to adults aged over 65 (72.4%) or other risk groups (44.9%) (2). Hospital-based interventions for inpatients have been shown to increase uptake (3).

Vaccination records of patients admitted to a Hepatology ward were reviewed retrospectively to understand what proportion were eligible but did not receive annual influenza vaccine through current services.

Methods

Data was collected for inpatients 26th September 2020 to 29th November 2020. GP records were used to check vaccination status within the window 01/09/2020 to 28/02/2021. Patients not registered with a local GP or deceased were excluded. We compared the rates of vaccination between at risk groups.

Results

134 were eligible for influenza vaccination and inclusion. 95 (70.9%) were not immunised at the time of admission. 36 (29.1%) went on to be immunised in the same influenza season, leaving 59 (44.0%) of individuals not receiving a vaccine at all.

Discussion

Vaccination rates are below the 75% target. Most patients, who were eligible at the time of admission, never received an influenza vaccination. An inpatient influenza vaccination programme could utilise this missed opportunity to increase vaccine uptake.

Free Scientific Paper 9

Title **Implementing Opt-Out HIV Screening in the Ambulatory Assessment Unit: A quality improvement project**

Authors Josh Morton, Alex Bunn, Martine Altidor, Sameul Mills, Sarah Evans, Monique Andersson, Mridula Rajwani

Address Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

Abstract

Patients infected with HIV benefit from early diagnosis, allowing initiation of highly effective treatment to reduce the risk of complications and onward infection. Current NICE guidelines recommend routine screening in all individuals accessing healthcare where the population prevalence exceeds 2/1000^{1,2}. The prevalence of diagnosed HIV is 1.23/1000 in Oxfordshire. Despite this, over 30% of patients are diagnosed late with a low CD4 count. In this quality improvement project (QIP), we set out to normalise HIV testing in the ambulatory assessment unit by adopting an opt-out testing approach. Our aim was to screen 90% of patients per month by December 2020.

Methods

The QIP was first established in November 2018. The second was embarked in 2019, but impeded by the recent pandemic. Our third cycle was from September 2020 to December 2020. The percentage of AAU patients undergoing HIV screening was recorded each month by trust data analysts.

Key interventions implemented include:

- Distribution of poster prompts
- Creation of a medical referral 'autotext' template
- Education of nursing/healthcare assistant staff
- Introduction of a multidisciplinary group of "HIV champions"

Results

Following our interventions, the monthly rate of routine HIV screening in the Ambulatory Assessment Unit has increased from 23% in November 2018 to 79% in December 2020.

Discussion

The fourth PDSA cycle began in February 2021. We hope to increase screening by addressing any barriers identified by the 'HIV champions', and would later evaluate the impact of screening by assessing the number of n

Clinical Papers A

Title **Progressive skin ulceration in a febrile returning traveller**

Authors Dominic Sparkes, Clare Leong, Michael Wilson, Andrew Carmichael

Address Addenbrooke's Hospital, Cambridge, United Kingdom

Abstract without diagnosis

Two weeks prior to admission, while in Cape Verde, a 66-year-old man developed a fever and a necrotic ulcer on his right leg following an insect bite. He was treated with intravenous Flucloxacillin for 24 hours, but he developed an abscess at the intravenous cannula site on his left forearm. On his return to the UK, he underwent an incision & drainage of the abscess which yielded sterile fluid. During the next ten days the incision site progressively deteriorated and became necrotic, the right leg ulcer enlarged, and fever and rigors despite treatment with intravenous Piperacillin/Tazobactam plus Clindamycin for five days.

Two years earlier he had been treated with skin grafting for a non-healing ulceration on his left leg, and was noted to have a persistent unexplained macrocytosis (MCV 108).

His current investigations revealed haemoglobin 98, MCV 110, neutrophil count 4.7, elevated CRP (276), elevated procalcitonin (1.12), and elevated LDH (586); his platelet count, renal function, liver function, serum folate and vitamin B12 were all normal, and a CT scan of his chest/abdomen/pelvis was unremarkable.

A unifying diagnosis was made, for which treatment was started and diagnostic investigations were performed.

Clinical Papers B

Title **Led astray by serology**

Authors Amy Edwards, Cristina Suarez, Jonathan Lambourne

Address Barts Health NHS Trust, London, United Kingdom

Abstract without diagnosis

A 27-year-old man of South Asian ethnicity presented with abdominal pain, nausea and constipation. Eight months earlier he had undergone myeloablative, haplo-identical, allogeneic stem cell transplantation (SCT) for acute lymphoblastic leukaemia. Immunosuppression had been stopped 4 months before presentation; he had continued prophylactic aciclovir, co-trimoxazole and phenoxymethylpenicillin.

He was febrile and abdominal imaging revealed oedematous pancreatitis and non-obstructive cholecystitis. Despite fluids and antibiotics (co-amoxiclav, gentamicin), he deteriorated and two days later, a painless, non-pruritic rash emerged, spreading from the face to trunk and limbs. He also developed profuse diarrhoea, melaena and anaemia.

His abdomen was soft with generalised tenderness and active bowel sounds. A diffuse rash affected face, trunk and limbs, sparing palms and soles. Lesions were dark, 1-4 mm haemorrhagic vesicles over an erythematous base. Pigmented, ulcerating lesions were noted over the hard palate. An endoscopy showed multiple gastric ulcers.

Methylprednisolone was commenced for possible acute Graft-Versus-Host Disease, and disseminated infection was treated empirically with piperacillin-tazobactam (gut translocation, ecthyma gangrenosum), ivermectin (disseminated strongyloidiasis, given his background) and aciclovir.

An extensive infection screen was completed, including skin and palatal lesion swabs for bacterial culture and viral PCR, and a skin biopsy sample was submitted for microbiological and histological examination.

Take-home messages:

1. Unusual infections may still occur despite appropriate prophylaxis.
2. Immune reconstitution post-SCT is highly variable.

Clinical Papers C

Title	Atypical presentation of an uncommon pathogen
Authors	<u>Amada Sanchez-Gonzalez</u> , Hannah Fox, Manjusha Narayanan, Julie Samuel, Ulrich Schwab, Christopher Duncan
Address	Newcastle Hospitals NHS Foundation Trust, Newcastle, United Kingdom

Abstract without diagnosis

Establishing a definitive diagnosis of infection with this microorganism can be challenging due to its rarity, its diverse clinical presentation and the limitations in cultivating it. Only two cases of laryngeal infection have previously been reported, both in immunocompromised patients. We describe the case of a 67-year-old seemingly immunocompetent wildlife photographer, with an extensive travel history to Asia and Central America, who presented with an 8 month history of hoarse voice and odynophagia. An initial CT had revealed the presence of a laryngeal “mass” suggestive of malignancy, but several biopsies showed granulomatous inflammation. These were not sent for microbiological investigation. Empirical high dose steroids -started due to concerns of airway compromise- did not significantly improve his symptoms. Further laryngeal biopsies led to the isolation of a fungal mold (*Chaetomium* spp) of uncertain relevance. Voriconazole was initiated but not tolerated. A repeat biopsy was arranged: Fungal cultures were negative, however histological examination revealed a pathogen through Gram stain. This microorganism was further isolated on mycobacterial culture media and confirmed by PCR. Speciation was inconclusive. Tailored treatment was continued for 6 months with good clinical and radiological response. Treatment was discontinued at the patient's request, but within two months he relapsed with worsening dysphagia and odynophagia accompanied by weight loss. He was found to have developed a further post-cricoid collection with associated necrosis. Once he completed 12 months of treatment, life-long secondary prophylaxis ensued. He remains well with no further recrudescence.

This case illustrates the many challenges in the diagnosis and treatment of this microorganism.

Clinical Papers D

Title **Purple Haze: An unusual cause of cavitating Pneumonia**

Authors Phillipa Jane Burns, Kate Adams, Patrick Lillie, Alex Richards

Address Hull University Teaching Hospitals, Hull, United Kingdom

Abstract without diagnosis

A 40-year-old man, recently recalled to prison, was referred to hospital after presenting to the prison infirmary with right sided chest pain, fever, weight loss and haemoptysis.

The initial presentation raised suspicion of Tuberculosis prompting referral to infectious diseases. Radiological investigations revealed bilateral cavities in the upper apices of both lobes with enlarged and prominent hilar.

The patient had a previous hospitalisation, four years prior to this episode, with a Staph aureus bacteraemia predicated by an infected groin injection site.

During this admission he revealed he had recently self-lanced a recurrent dental abscess causing pus to pour from his nose, suggesting aspiration of dental pus may have occurred. Owing to his past history, and current clinical presentation, the differential diagnosis was wide.

He was treated with Clindamycin, but this failed to reduce his CRP or alleviate his chest symptoms.

Sputum culture failed to identify a pathogen, necessitating a bronchoalveolar lavage to be undertaken. Extended cultures revealed a pathogen and the patient recovered after initiating appropriate therapy.

Further discussion with the patient identified an additional risky enterprise; that he was reluctant to reveal at the time of admission. Careful history taking, using colloquial language, may glean a more accurate social history for complex infection patients.