H1N1 influenza pneumonia and bacterial coinfection

ABSTRACT

The model described by Bewick et al seems to be able to distinguish between H1N1 influenza-related pneumonia and non-H1N1 community acquired pneumonia (CAP) based on five criteria. However, bacterial infection in the influenza group has not been accurately excluded. Therefore, this model could misidentify these patients and lead to an inappropriate treatment. We conducted a prospective observational study to compare mixed pneumonia vs viral pneumonia. In the mixed pneumonia group patients were older, had higher levels of procalcitoin and higher scores of severity. In our cohort the model proposed by Bewick et al would not identify patients with coinfection.

Bewick et al recently published a model that identifies H1N1 influenza-related pneumonia based on five criteria. The model seems to be able to distinguish between H1N1 influenza-related pneumonia and non-H1N1 community acquired pneumonia (CAP). However, in the H1N1 influenza-related pneumonia cohort, there is no available information about the diagnostic testing procedures applied to identify bacterial infections associated with influenza.

Mixed infection due to the influenza virus and bacterial pathogens has been well described in the pandemics that occurred in the last century. In fact, in the last pandemic period, the incidence of bacterial infection in association with the 2009 H1N1 influenza was up to 20%. Remarkably, this percentage is probably an underestimate of the real figure. There are important methodological limitations in the pandemic reports, mainly, bacterial diagnostic tests were not performed in all patients and most patients received antibiotics close to the time of culture collection.

Bewick et al recognise that C reactive protein levels and leucocyte counts are affected by bacterial infections. It has been previously reported that clinical presentation, severity and outcome differs between purely viral pneumonia and coinfected patients. It is possible that the accuracy of the present model could be lower in coinfected patients and therefore it could misidentify patients with bacterial and influenza infections. It is common practice to treat with antiviral drugs and antibiotics those patients with CAP even when only influenza has been identified. However, in the group of patients with viral and bacterial infection, a lower sensitivity to detect influenza with the reported model could result in a delay in the initiation of antiviral treatment. This fact is crucial, as early antiviral treatment in severely ill patients with pneumonia has been associated with shorter length of stay, duration of ventilation and better survival rates.

We have recently conducted a prospective observational study of patients with CAP. The aim was to determine the aetiology of CAP among patients admitted to hospital and to compare the clinical and laboratory features of patients with mixed pneumonia (bacterial and viral pneumonia) versus those with viral pneumonia. Mixed pneumonia and viral pneumonia were diagnosed in 25 and 22 patients, respectively. Patients with mixed pneumonia were older (74 vs 56 years, p<0.001), had higher levels of procalcitoin (5.5 vs 0.8 ng/ml, p=0.03) and higher scores of severity indices. In this cohort, the diagnostic prediction model proposed by Bewick et al, probably, would not identify patients with coinfection.
PET—CT in lung cancer: data discrepancies

The Danish study of positron emission tomography (PET)—CT versus conventional staging (CS) in non-small cell lung cancer has been reported twice now \(^1,2\) and corrected once.\(^3\)

However, there are discrepancies in numbers between the manuscripts,\(^1,2\) which is surprising given the small number of patients (n=159) and centres (n=5). Was endoscopic ultrasonography done in 42 or 47 of 98 PET—CT patients, and in 35 or 47 of 98 CS patients? Was fine-needle aspiration done in 36 or 40 PET—CT patients, and in 24 or 29 CS patients?\(^2\) Was fine-needle aspiration positive in 16 or 19 PET—CT patients? Was mediastinoscopy positive in 10 or 12 CS patients? Can the authors explain the discrepancies and show how any reconciliation of the numbers affects the findings of each manuscript?

While the total downstaging in both groups was comparable (62% vs 71%, p=0.19), the implied downstaging in the PET—CT arm as a result of modalities other than PET—CT was significantly lower (41% vs 71%, p=0.001). One would have expected the proportion of patients experiencing downstaging based on non-PET—CT investigations to be similar in both groups in a randomised study. It is possible that the apparent superiority of PET—CT is simply the result of inadequacy of non-PET—CT investigations in the CS arm.

Our concern is that the conclusions in both manuscripts have hinged upon small differences in the PET—CT and CS groups, which could simply be due to analytical errors or technical deficiencies of the sort described above. We respectfully suggest that the accuracy of the primary data from this important study be verified independently by the journals.

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Contributors JMP and JM both critically analysed the manuscripts in question and co-wrote the response.

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Authors’ response

We thank Drs Paredes and Mehta for their comments on our work on positron emission tomography (PET)—CT in the staging of lung cancer.\(^2\) As correctly pointed out by Drs Paredes and Mehta, there is a discrepancy in the number of patients undergoing endoscopic ultrasonography (EUS) in the two reports from our institution.\(^3\) Although both reports concern the staging of patients with non-small cell lung cancer, they address the proportion of patients experiencing endoscopic ciliation of the numbers affects the results. Our findings confirm that PET—CT is an important part of preoperative staging of patients with non-small cell lung cancer, but it also underscores, as stated by Drs Paredes and Mehta and in the Discussion section of our paper, the need for a complimentary well-considered use of invasive mediastinal staging. Finally, we would be happy to welcome both Drs Paredes and Mehta to our department for a discussion of our data.

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CORRESPONDENCE

Severity scales in community-acquired pneumonia: what matters apart from death?

Chalmers et al\(^1\) and Loke et al\(^2\) present excellent meta-analyses of the value of various tools in predicting mortality from community-acquired pneumonia (CAP). There is a continuing fallacious belief, however, that only patients at high risk of death are at high risk of complications. Of the 47 studies identified by Chalmers and Loke, only 16 made any assessment of the value of these scores in predicting the need for critical care. These are presented in


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