433. Influenza A (H1N1): lessons after the epidemic

P4340

Delayed epidemic peak of pandemic influenza A (H1N1-2009) among hospital workers: The association between hand hygiene behavior and the consumption of disposable hand paper

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Introduction: Health care workers should wash their hand in the season of influenza virus infection. Since the frequent hand-washing behavior would result in the increased consumption in the disposable hand paper, the association firstly between the campaign by infection control team (ICT) and the consumption of disposable hand papers was investigated, and, then, that between the consumption and the number of patients with influenza-like illness (ILI) in the season of pandemic influenza H1N1-pnd 2009.

Result & discussion: ICT had given 6 alerting lectures and delivered 5 notices to all of the hospital workers prior to the pandemic to encourage the them for the frequent hand hygiene. As a probable result, the consumption of paper towel increased by 43% for three months from September to November. In parallel with the epidemiologic treand of the whole Japan, among 8,324 outpatients in total who were diagnosed with ILI in the observed period, 33% of them visited our hospital at October, forming a peak through the term. On the other hand, interestingly speaking, 208 hospital staffs suffered ILI in the season, while they formed a small peak at December, and significantly later than that of the out patients in October (P=0.0010).

Conclusion: Our observation indicated that the campaign by ICT was successful in delaying the peak of patients with influenza H1N1-pnd 2009 in the hospital workers, by encouraging them for the frequent hand hygiene behavior. Furthermore, the consumption of disposable hand paper can be an indicator of hand hygiene behavior.

P4341

Pneumonia and pandemic influenza virus A (H1N1/09). Immediate and remote results

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Aim: To assess the clinical presentation, treatment outcomes and long-term results for patients with community acquired pneumonia (CAP) during an Virus A (H1N1)/09 in 2009.
Methods: The study includes 250 cases of CAP, which developed in patients with influenza A/H1N1/09 of them men 54.8%. The average age of 45.0 years. Medication consisted of oseltamivir dose to oral 75-150 mg twice daily and cephalosporins III + macrolides II or respiratory fluoro-quinolones. After the end of inpatient treatment based on changes in the lungs according to high resolution CT (HRCT) was administered N-acetylcysteine (NAC) dose to oral 600 mg twice daily (n=41) for 92.0 (95% CI 86.2-97.7) days. Assessments included clinical symptoms, comorbidity, SpO2, laboratory tests, and X-raying.
Results: The median period of hospitalization was 15.2 days. The median SpO2 during hospitalization 87.0%, after hospital treatment 94.2%. 76.5% of patients had a 2-side lung. The fatality rate was 10.4%. SYRS was diagnosed in 49.6% of patients (fatality rate was 1.6%), severe sepsis and septic shock in 27.6% of patients (fatality rate was 34.8%). Fatality rate in patients with obesity was 30.0%, with COPD 16.3%. X-ray changes after hospitalization were 82.4% of patients, of whom 56.6% - infiltration of the lung tissue. After treatment with NAC X-ray of the variation persisted in 57% of patients, of whom 7.0% infiltration of lung tissue and 36.0% - the picture "matte".
Conclusion: CAP during an epidemiology outbreak of. Influenza A/H1N1/09 characterized by severe, requires intensive care and long-term observation.

P4342

H1N1 influenza – A second wave? The experience from a large teaching hospital in the UK

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Introduction: The new H1N1 influenza (pH1N1) virus largely ran its course by August 2010 as the WHO declared the pandemic to be over, fortunately without causing as much devastation as provisionally predicted. However the impact of the outbreak on our healthcare system was considerable. In the post -pandemic period, although the rates of pH1N1 have been reported to be lower the risk of severe illness caused by pH1N1 remains. This epidemiological study reflects our experience in a large teaching hospital of the significant morbidity and mortality associated with admission to hospital with H1N1 infection during the recent flu season.
Methods: We retrospectively analysed the electronic records for all patients admitted with H1N1 infection between 1st November 2010 and 31st January 2011 to identify patient demographics, length of stay, co-morbidity and outcome.
Results: 280 patients were identified (mean age 39.5) with an average length of stay of 6.35 days; mortality 4%. A third had no co-morbidities. Overall 37 (13.2%) of patients required respiratory support (18 intubated, 19 NIV/CPAP). This is comparable to the pandemic of 2009 when 10–30% of laboratory confirmed hospitalised patients required critical care. 11 patients died (mean age 55; time to death 8.3 days) of those 18% had no previous medical history; the rest had co-morbidities respiratory 45%, cardiovascular 18%, haematological malignancy 9%, obesity 9% and pregnancy 9%.
Conclusions: Although the virus seems to be taking on the behaviour of the seasonal flu our data suggests the threat of H1N1 continues and has a predilection for severe rapid disease in the young, healthy and same high risk groups as previously identified.

P4343

Risk factors of fatal outcomes in influenza A/H1N1-09 viral infection

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In 2009 a novel swine-origin influenza A/H1N1 virus was identified. In Zabaikalsky region from October to December, 2009 more than 120 000 people felt ill, 16 000 were hospitalized and 59 patients died.
The aim of this study was to describe clinical and morphological features of patients who died following confirmed A/H1N1-09 infection.
Methods: We reviewed medical records and autopsy reports of 35 pts who died in November and December 2009 in Zabaikalsky region, RF.
Results: Among 35 decedents there were 14 men and 21 women (age 39,8±12,5 years). Nobody was over 60 years old. Duration of the disease was 9,1±3,2 days. Tracheitis, laryngitis, bronchitis were noted in all pts. In one case larynx phlegmon had developed. 34 pts had bronchiolitis and pneumonia. Bacterial infection was detected in 51,4% cases (18 pts). All pts had one or more complications: 24 pts (68,6%) had acute respiratory distress syndrome (ARDS), 27 pts (77,1%) – disseminated intravascular coagulation (DIC), 18 pts (51,4%) – acute tubular necrosis, 7 pts (20%) – acute pulmonary embolism, 8 pts (22,9%) – septic shock. Myocarditis was noted in 5 pts (14,3%), pleuritis in 3 pts (8,6%), pericarditis in 4 pts (11,4%). Underlying medical conditions were present in 86% of cases. Obesity was noted in 62,8% (22 pts); COPD in 37% (13 pts); endocrine glands' pathology (diabetes mellitus and/or thyroid dysfunction) in 31,4% (11pts); chronic pancreatitis in 28,6% (10 pts), chronic kidney disease in 14,3% (5 pts); arterial hypertension in 14,3% (5 pts).
Conclusions: Risk factors of fatal outcomes in influenza A/H1N1-09 viral infection were age less 60 years, underlying medical conditions (particularly obesity) and complications, especially ARDS and DIC.

P4344

Early clinical abnormalities after H1N1 influenza pneumonia

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Rationale: The impact on lung function (LF) and quality of life (QoL) after a severe H1N1 Influenza pneumonia has not been determined.
Objective: To describe early abnormalities in LF and QoL according to the severity of pneumonia.
Methods: Clinical characteristics, and laboratory samples at the arrival to the emergency room were recorded in 135 patients with H1N1 Influenza moderate to severe pneumonia. LF and health related QoL questionnaires (HRQoL) were measured after two months of hospitalization. All subjects have no clinical antecedent of respiratory disability.
Results: Mean age was 40±11 years, 64% were males, Kyrbi Index (KI) was 243±55, the APACHE score was 11.5±5, 30% required mechanical ventilation (MV). 35% had FEV_1/FVC <0.70 or >0.85, 31% had PaO_2 <60 mmHg; 33% had TLco<85%p, 42% were hypoxemic after 6 Minute Walking Test (6MWT). Four Short-Form 36 (SF-36) domains had ≤70 score and 40% had a Saint George Respiratory Questionnaire (SGRQ) >30 points; 36% had in the SF-36 physical limitation domain (PLSF-36) a score ≤50; Those with MV had more affection in LF in comparison with those without MV (FVC 96±16 *vs* 104±16%p; TLC 89±12 *vs* 97±21%p; FEV_1/FVC 84±6 *vs* 81±7; TLco 81±22 *vs* 96±21%p; 6MWT 431±127 *vs* 508±97 meters; p<0.05). The HRQoL was worse in MV *vs* no MV [PLSF-36= 37.5 (0-81) *vs* 100 (50-100), p<0.05]. KI correlated with TLco (r=0.30), p=0.003; CURB-65 with TLco (r= -0.20), p<0.04. PLSF-36 correlated with TLco (r=0.42), KI (r=0.27) and CURB-65 (r= -0.32), p< 0.02.
Conclusions: After a severe pneumonia due to H1N1 influenza, one third of the patients had the LF and HRQoL affected. Patients who required MV had greater impairment in LF and in the HRQoL.

P4345

RNA interference against influenza A (H1N1) virus

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Influenza virus is a RNA virus which causes human and animals to suffer influenza, leading to acute upper respiratory tract infection. The existing vaccines and drugs have limited role in the treatment of influenza virus subtype H1N1. We prepared the small interfering RNA targeting RNA polymerase (PA) gene of influenza A (H1N1) virus and studied its effect of inhibiting virus replication. We designed and synthesized three pairs of siRNA targeting PA gene of influenza A (H1N1) virus, as well as constructed expression plasmid pS-PA646, pS-PA841 and pS-PA1537, being transfected into MDCK cells and chicken embryos respectively and infected with influenza virus subtype H1N1, to detect effects of siRNA on inhibiting influenza virus replication. We conducted viral HA titer determination, real-time RT-PCR.

Effects of specific siRNA on the proliferation of H1N1 in MDCK

Groups	HA 48 h	HA 72 h	Inhibition rate
MDCK	64	256	0
pS-PA646	45±2	256±4	27–33%
pS-PA841	50±4	180±5	15–28%
pS-PA1537	12±2	32±4	78–84%

The results show that in the designed 3 pairs of siRNA, pS-PA1537 can inhibit the replication of influenza A (H1N1) virus in MDCK cells and chicken embryos, laying the foundation for the development of therapeutic agents resistant H1N1.

P4346

Clinical features and outcomes of patients hospitalized with influenza A virus (H1N1) infection in a hospital of the south of Spain

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Aim: To describe the characteristics and outcomes of patients hospitalized H1N1 influenza infection.
Methods: Retrospective analysis of the medical records of patients hospitalized with H1N1 infection in our hospital (August09/April10). All patients underwent nasopharyngeal PCR swab for H1N1. Results are expressed as mean ± standard deviation for quantitative variables.
Results: 93 patients (18.34%) were positive for influenza A virus. The clinical features, risk factors and outcomes are available in the tables.

Table 1. Risk Factors

Any risk factor	66 (71%)	Pregnant women	8 (8.6%)
Smokers	24 (25.8%)	Cancer	5 (5.4%)
Chronic lung disease	35 (37.6%)	Obesity	22 (23.7%)
Diabetes	16 (17.2%)	HIV	2 (2.2%)
Arterial hypertension	17 (18.3%)	Immunosuppressive therapy	5 (5.4%)
Heart disease	16 (17.2%)		

Table 2. Clinical features and outcomes

Age	39.67±20.7	Average ICU stay	15.9±11.1 days
Male / Female	43 / 50	Intubation	10 (10.8%)
Average hospital stay	8.5±11 days	Average Mechanical Ventilation	16.1±15.3 days
ICU admission	12 (12.9%)	Death	4 (4.3%)

The presenting symptoms were fever (89.2%), cough (92%), dyspnea (65.5%), digestive problems (26.9%), myalgia and headache (53%). 52.2% had community acquired pneumonia on admission. Major complications during hospitalization were (15.6%): respiratory insufficiency (50%), Acute Respiratory Distress Syndrome (8.9%), pneumothorax (3.3%), pleural effusion (1.1%) and multisystem organ failure (3.4%).
Conclusions: Patients hospitalized for H1N1 infection are mainly middle-aged. Pneumonia and/or decompensate co-morbidities were the main causes of hospitalization. The most common risk factor was the chronic lung disease.

P4347

The changing distribution pattern of H1N1 infection in adults in 2010-2011

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Background: Since the emergence of H1N1 influenza in 2009, the World Health Organization (WHO) identified that patients with co-morbidities, pregnant women, and those over 65 years are at high risk of severe complications.
Aims and objectives: To characterise adult patients admitted with H1N1, particularly those with pneumonia, or those requiring intensive care unit (ICU) admission.
Methods: H1N1 positive inpatients from December 2010 to January 2011 were studied using electronic patient records, medical notes and the PACS system. Co-morbidities are recognized as per WHO guidance.
Results: In total 76 patients were admitted with H1N1, 32 male and 44 female with a median age of 39 years (range 18-79). 71 were under 65 years, 28 had no co-morbidities and 9 were pregnant.
35 patients with H1N1 had radiological evidence of consolidation, 8 were associated with a pleural effusion and 3 required a chest drain. 29 of 35 were under 65 years and 16 had no co-morbidities. None of the 35 patients with pneumonia were pregnant.
Of the 35 cases with H1N1 pneumonia, 19 were escalated to the ICU (14 male and 5 female) with a median age of 43 years (range 26-53). In 8 out of the 19 ICU patients there were no co-morbidities; within this group 1 died of acute lung injury with multi-organ failure.
Conclusions: Our study highlighted that patients under 65 years, particularly males without co-morbidities had an increased risk of severe H1N1 infection compared to those in 2009. This patient group should therefore be considered for vaccination against H1N1; however larger studies are required to characterise this group.

P4348

H1N1: The co-infection conundrum

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Background: Bacterial co-infection is known to increase the severity of H1N1 influenza. Past pandemics have been associated with *Staphylococcus aureus* which can lead to severe infection. Increasingly co-infection with *Streptococcus pneumoniae* has been recognised with H1N1 influenza.
Aims: To evaluate the causative organism's associated with co-infection; in association with the H1N1 winter outbreak of 2010-2011, and the impact on clinical course.
Method: A patient cohort with proven H1N1 influenza admitted between December 2010 and January 2011 were retrospectively studied, using electronic patient records and paper medical notes. Bacterial co-infection was identified by positive result from blood, respiratory secretion or pneumococcal urinary antigen test.
Results: Out of a total 76 H1N1 positive cases blood, respiratory sample and urinary antigen testing was performed in 53 patients. Co-infection was detected in 12 of 53.
Of 12 co-infection cases: 5 (42%) were *Streptococcus pneumoniae*, 2 *Pseudomonas aeruginosa*, 1 *Streptococcus sanguis*, 1 *Coliform/Proteus*, 1 *Stenotrophomonas*, 1 *Escheria coli* and 1 Coagulase negative *Staphylococcus*.
9 of those with co-infection required escalation to the intensive care unit (ICU), (19/76 in total were admitted to ICU). 4 had *Streptococcus pneumoniae*, 1 *Pseudomonas aeruginosa*, 1 *Coliform/Proteus*, 1 Coagulase negative *Staphylococcus*, 1 *Stenotrophomonas* and 1 *Escheria coli*.
Of the 9 admitted to ICU with H1N1 and co-infection, 6 were < 65years. 3 had no co-morbidity.
Conclusion: Our study highlights that co-infection with H1N1 is likely to increase the severity of disease course; including young adults and those without co-morbidity. This illustrates the importance of investigating H1N1 cases for concomitant infection in all groups.

P4349

Platelets and influenza A (N1H1)

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Introduction: In January 2011 we had two pacients with Influenza A(H1N1) in our clinic and both of them had moderate thrombocytopenia. Therefore we decided to observe the abnormalities of thrombocytes during Influenza A(H1N1) pandemia.
Materials and methods: Retrospective study based on medical records of 21 consecutive patients admitted in our clinic (November 2009- January 2010) for pandemic A(H1N1) and respiratory failure. Twelve patients had underlying diseases: obesity (6), diabetes mellitus (3), BPOC (2), asthma (1), HTA (1), TBC+SIDA (1). There were seven exitus (30%).
Results: From 21 patients (11 female) nine (42,95%) patients had thrombocytopenia. In four of this nine cases (44.4%) thrombocytopenia was accompanied by low mean platelet volume (under 7 fL).
The degree of thrombocytopenia was moderate (96000-110000/microL) and it was correlated significantly with the degree of inflammation measured by the serum C-reactive protein concentration. Also, all these patients had elevated levels of LDH and serum transaminases.
Conclusions: Influenza A(H1N1) virus can induce a lower number of platelets. This virus can impair even platelets functions: in four cases thombocytopenia coupled with low mean platelet volum (MPV), elongated APTT and elevated levels of D-dimers, which can suggest an impact of Influenza A(H1N1) on coagulation.
The platelet count can evaluate and monitor the efficiency of treatment: the thrombocytes count is the first parameter that returns to its normal levels in cases with a good evolution.
The evolution of number and mean volum of thrombocytes can be predictors of evolution of infection with Influenza A(H1N): from seven exitus three pacients had thrombopenia with low MPV.

P4350

General characteristics of pneumonia cases developed during H1N1 epidemic in Turkey and prognostic factors

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Aim-method: This multicentric study took place in Turkey to evaluate general characteristics of pneumonia developed during H1N1 epidemic between Nov-2009

and Jan-2010 and to evaluate prognostic factors. Patient data were collected from centers agreed to participate in the study retrospectively by means of standard forms.
Findings: From 14 different centers, a total of 264 cases were included in the study. Of the patients, 51.1% were female, 48.9% were male. Mean age was 47.5±18.6 yrs. H1N1 were positive in 57.4% of cases. Nineteen patients (7.2%) were pregnant or had a new birth. On admission, 28 cases (11%) were confused and 7 (2.8%) were unconscious. Of the patients, 32.6% were treated in ICU and IMV/NIMV was performed in 29.7%. The length ICU stay was 2.9±6.2 and total hospital stay was 12.0±9.4 days. These periods were significantly longer in the H1N1-positive patients. Mortality rate was 16.8% (43-cases) (23% in H1N1-positive and 8.4% in negative patients, p=0.004). Mortality was significantly higher in H1N1-positive patients, those with dyspnea, cyanosis, confusion/unconsciousness, diastolic hypotension, and those with higher respiratory (≥30) and hearth rate (≥100) on application. Again, patients who died had significantly higher rate of peripheral blood neutrophils, lower platelet counts, higher BUN levels and lower SaO2 levels.
Conclusion: This study showed that pneumonia, developed during H1N1 epidemic in our country, had resulted in a high mortality. Mortality was especially higher in H1N1-positive patients, those with dyspnea, cyanosis, confusion/unconsciousness, diastolic hypotension and those with higher respiratory rate and hearth rate.

P4351
Prognostic factors of survival among adult patients admitted in the ICU due to severe H_1N_1 pneumonia
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Background: Data on the mortality of H_1N_1 pneumonia among patients admitted in the Intensive Care Unit (ICU) vary.
Aim: To describe the characteristics of the adult patients who were admitted in three ICUs of a major Greek hospital due to H_1N_1 virus pneumonia and to identify predictors of survival.
Methods: 25 patients with H_1N_1 pneumonia (72% male; 28% female; 49.7±15 years old) who were admitted in the ICU between October 2009 and February 2011, were retsrospectively studied. Severity of disease scores, comorbidities, disease complications, time of diagnosis and treatment effect were recorded. Mann-Whitney test and x^2 test were used for statistical comparisons.
Results: At ICU admission, APACHE II score and CURB-65 score were 15.8±4.9 and 2.4±0.9 correspondingly, while 40% of patients presented with ≥2 major complications (ARDS, acute renal failure, myocardial ischemia or shock). Obesity, immunocompromise, coronary heart disease and diabetes mellitus were present in 36%, 32%, 24% and 24% of patients correspondingly, while 44% of them were smokers. The detection of pharyngeal smear antigen took place in 5.5±3.7 days, oseltamivir initiation in 6.2±3.9 days and ICU admission in 7.3±6.8 days, since the establishment of the disease. H_1N_1 infection was fatal for 72% of patients.The improvement of the radiologic pattern after oseltamivir initiation ($p<0.001$) and the absence of septic shock ($p<0.001$) were the only factors associated to survival.
Conclusions: The mortality of patients admitted in ICU due to H_1N_1 virus pneumonia was high. Although oseltamivir administration was beneficial in some cases, there was a delay in the diagnosis of the disease and the initiation of treatment.

P4352
Radiologic manifestations of patients with H1N1 infection
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Purpose: Swine flu influenza is a very contagious respiratory infection and WHO has raised the alert level to phase 6 (pandemic). The aim of this study was to evaluate the chest X-ray and CT scan of patients with documented influenza A (H1N1) virus infection
Material and methods: 31patients (16 men and 15 women), with H1N1infection confirmed by RT-PCR were included. 31 patients had available chest X-rays and of these 10 had CT scans. The initial radiography obtained from the patients was reviewed regarding pattern (consolidation, ground glass, nodules and reticulation), the distribution (focal, multifocal, and diffuse) and the lung zones involved. CT scans were also reviewed for the same abnormalities. The patient files were studied. LDH and CPK level was available for 22 and 24 patients respectively.
Results: The mean age was 37.97±13.9 years. 17 (54.8%) patients had Co-existing condition (8 Respiratory, 5 cardiovascular, 2 Immunodeficiency, 2 Cancer, 4 others). 12 (38.7%) patients required ICU admission. 5 (16.1%) patients died.8 (25.8%) had normal initial radiographs. The most common radiographic abnormality was consolidation (12/31; 38.7%) in the peripheral region (11/31; 35.5%) followed by peribronchovascular (10/31; 32.3%) which was most commonly observed in the lower zone (left 61.3%; right 45.2%). The patients admitted to the ICU were more likely to have two or more lung zones involved ($p=0.005$). 11 (35.5%) patients had pleural thickening or effusion.
Conclusion: In patients with the novel swine flu the most common radiographic abnormality observed in our center was consolidation in the lower lung zones. Patients admitted to ICU were more likely to have two or more lung zones involved.

P4353
The H1N1 influenza pandemy and pneumonia in Iceland 2009-2010: A one year follow up study
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Background: The influenza A (H1N1) pandemy in 2009 caused in a minority of infected severe pneumonia and respiratory failure.
Aims: To characterise patients admitted to our hospital with H1N1 influenza A infection and pneumonia and at one year follow up.
Methods: Patients with positive tests for H1N1 influenza and pneumonia with flulike illness and no other known pathogen were contacted 6 and 12 months after admission. Clinical examination with specific questionnaires (SI-36, HAD and St. George questionnaires) along with spirometry were performed to collect information on pulmonary symptoms, pulmonary status and health-related quality of life. Radiographs were reviewed and repeated when abnormal.
Results: 84 patients (42 women and 42 men) were admitted with influenza associated pneumonia. Th mean age was 51 years and mean BMI 33. The mean total hospital stay was 10 days. 50% of the patients required high-flow oxygen, and 25% of patients were admitted to the Intensive Care Unit. There was one death during the initial hospitalisation due to sequelae from H1N1.
44 patients participated in the follow up study. After 6 months only 3 patients had residual radiographic changes. Pulmonary function after 6 months in the patients admitted to the ICU were: FVC 102%, FEV1 100%, TLC 85% and DLCO 81% of predicted. Currently we are evaluating patients at the 1 year follow up including health-related quality of life.
Conclusions: The H1N1 pandemy in Iceland resulted in pneumonia with considerable morbidity. Our preliminary results indicate that the physiological and radiographic sequele are minor.

P4354
Pneumonia in H1N1 influenza infection
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Introduction: As we entered the post 2009 H1N1 influenza pandemic period, the Centres for Disease Control and Prevention reported that a third of H1N1 deaths were attributed to co-infection with common pneumonia causing bacteria.We performed a study of all the H1N1 positive admissions to a large teaching hospital during the most recent flu season in 2010/11 with the aim of looking at radiological diagnosis of pneumonia and its relation to morbidity and mortality.
Methods: We retrospectively analysed the electronic records and radiology for all patients admitted with H1N1 infection between 1st November 2010 and 31st January 2011.Complications and respiratory support (invasive or non-invasive) were used as markers of morbidity.
Results: 280 (mean age 39.5) patients had laboratory confirmed H1N1 infection. 96 (34.3%; mean age 44.5) had radiological pneumonia (48 unilateral, 48 bilateral);mortality 8.3%. 36 (37.5%) had no co-morbidities. Of all those that died with H1N1 8/37 (21.6%) had pneumonia. 11.5% had complications:5 effusion/empyemas,4 ARDS and 2 pneumothorax.31.3% required respiratory support.Bilateral radiological pneumonia conferred higher risk of death (7/8) and respiratory support (22/30; invasive 63.6%, non-invasive 36.4%).All those that had both bilateral pneumonia and complications (n=8) required respiratory support of which 3 died. 26% had positive sputum cultures-most common pathogens being haemophilus influnzae, streptococcus pneumonia, klebsiella and candida.50% of those requiring respiratory support had positive sputum cultures.
Conclusion: Pneumonia in H1N1 infection is common. Bilateral pneumonia is a risk factor for the need for respiratory support and death. Development of respiratory complications confers further risk of morbidity.

P4355
A study to analyse the clinical profile and outcome of hospitalised patients with H1N1 and the factors influencing the outcome
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This was an observational study conducted in Institute of chest diseases, Calicut medical college,India between August 2009 and August 2010. All patients whose

throat swabs were positive for H1N1 by Real time PCR and belonged to category C (severe disease)according to the clssafication by Ministry of health and family welfare were included in the study.
Out of the 110 confirmed cases, 38 (35%) were males and 72 (65%)were females.Of the 72 female patients 42 were pregnant and majority, (83%)were in the third trimester.Most of the patients were in the age group 20-30yrs (59%). Total no. of deaths were 10 (9%). Pregnancy was not associated with increased mortality (4.8%and 11.8%, P value.215). Initiation of Oseltamivir within 48 hours was associated with significant reduction in mortality (1.3% and 29%, P value<.001).

Table 1. Statistical analysis

	Mortality %	P value
Pregnant	4.8%	0.215
Non pregnant	11.8%	
Comorbidities Present	16.7%	0.09
Comorbidities Absent	6.3%	
Oseltamivir within 48 hrs	1.3%	<0.001
Oseltamivir after 48 hrs	29%	

Presence of associated co morbidities were not associated with any increase in mortality rate (16.7% and 6.3%, P value.09)

P4356
Biomarker profiles of BALF in ALI/ARDS due to pandemic (H1N1) 2009 influenza
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Background: The outbreak of the 2009 pandemic influenza A (H1N1) virus was identified as a Pandemic. However, the clinical and epidemiologic characteristics of the novel influenza were not sufficiently elucidated.
Methods: Patients who were hospitalized because of the novel influenza infection were enrolled in the study between August 2009 and December 2009 at Shinshu University Hospital. Furthermore, the patients with acute lung injury (ALI)/acute respiratory distress syndrome (ARDS) due to influenza A infection were collected. The patients' condition, laboratory data, the respiratory management, and oxygenation were analyzed. Bronchoalveolar lavage (BAL) was performed on admission.
Results: Nine patients were hospitalized and treated with anti-viral therapy such as oseltamivir. Five of 9 patients showed ALI/ARDS. Three of the 5 patients were treated with mechanical ventilation. Only one patient died in the intensive care unit because of the refractory hypoxemia due to the deterioration of a co-infection. BAL was performed in 3 patients and all of them showed alveolar hemorrhage. The IL-6, IL-8, KL-6, SP-D, thrombomodulin and HMGB-1 levels in BAL fluid were elevated higher than the serum. The serum concentration of KL-6 and SP-D were elevated on day 3 and 7 in the dead patient only.
Conclusion: This study showed lung injury due to 2009 pandemic influenza A (H1N1) virus was formed by the direct ALI/ARDS without a cytokine storm. This suggested that the influenza virus directly injured the lung.

P4357
Glutathione peroxidase-1 as a therapeutic target in influenza A virus-induced lung disease
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Introduction: Oxidative stress and reactive oxygen species (ROS) are implicated in influenza A virus-induced lung inflammation and damage. Current therapies primarily target viral infection and replication, with little attention directed at the host immune response. The antioxidant enzyme glutathione peroxidase-1 (GPx-1) has a protective role against various diseases involving ROS.
Aim: To study the role of GPx-1 in influenza A virus-induced lung inflammation.
Methods: Male WT (C57BL/6) and GPx-$1^{-/-}$ mice were infected with 1×10^4 PFU of HKx31 (H3N2) influenza A virus. Viral titre, BALF and lung inflammation, body weight, pro-inflammatory chemokine (MIP-1α, MIP-2, KC) and protease (MMP-9) expression were assessed 3 and 7 days post infection.
Results: WT mice infected with HKx31 had significantly more BALF total cells, macrophages, neutrophils and lymphocytes at day 3 and 7 than naïve WT animals (n=5-8, P<0.05). However, GPx-$1^{-/-}$ mice infected with HKx31 had significantly more BALF total cells and neutrophils than infected WT mice (P<0.05). Viral titre was significantly reduced in GPx-$1^{-/-}$ mice at day 3 compared to WT mice (P<0.05). Infected GPx-$1^{-/-}$ mice lost similar amounts of weight to infected WT mice. Gene expression analysis revealed that GPx-$1^{-/-}$ mice had more whole lung MIP-1α, KC and MIP-2 than WT mice at day 3 and 7. Infected GPx-$1^{-/-}$ mice had more active MMP-9 protease in BALF and greater peribronchial inflammation and bronchial inflammatory cell exudates than infected WT mice.
Conclusions: These data indicate that GPx-1 reduces some aspects of influenza A virus-induced lung inflammation, which may improve overall outcomes of influenza infection.

P4358
Long-term outcomes after viral pneumonia caused by influenza A (H1N1)
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Objectives: To evaluate the sequelae of viral (H1N1) pneumonia at 3,6,12 months follow-up.
Methods: We evaluated 22 survivors of the influenza A (H1N1) virus pneumonia at 3, 6, and 12 months after discharge.
At each visit, the patient was interviewed; underwent a physical examination, pulmonary-function testing, chest radiography, 6MWT and a quality-of-life evaluation.
Results: At discharge all patients had abnormal chest radiographs, DLCO values below 80% of predicted (50,7±21,6%) and 6MW distance was shorter than in normal controls in the same age-groups (498,5±34,2m).
There was significant difference between the intubated and non-intubated patients in lung function (FVC 57,7±10,6% vs 101,9±10,2% p=0,01 TLC 72,0±7,1% vs 106,5±7,6% p=0,01 DLCO 29,5±3,9% vs 64,9±5,8% p=0,01 respectively) but there were no significant difference with respect to their in exercise capacity and quality-of-life evaluation at discharge.
After the discharge between the intubated and non-intubated patients revealed a continuing significant difference in lung diffusing capacity at 3, 6, and 12 months (DLCO 62,1±5,8% vs 85,7±3,2% p=0,01 DLCO 67,8±5,2% vs 89,0±2,2% p=0,01 DLCO 67,9±7,4% vs 92,2±1,5% p=0,01 respectively).
After discharge 11 patients received oral N-acetilcystein 1800 mg/day and inhaled heparin (15-20 000/day) for 3 months. At 3 months there was no significant difference in DLCO (71,5±17,4% vs 83,4±7,8% p=0,3) and a distance 6MWT (533±12,6m vs 618±39,4m p=0,08) in favor of patients recieved N-acetilcystein and inhaled heparin.
Conclusions: Our results show significant impairment of DLCO in survivors of the influenza A (H1N1) virus pneumonia. There was significant difference between the intubated and non-intubated patients.

P4359
Observation of pregnant women (PW) after severe pneumonia (P) with influenza A/H1N1 virus infection in 2009-2010: Long-term results
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Aim: To analyze consequences of P in PW.
Material, methods: Observation during 1 yr of 6 women who had severe viral-bacterial P associated with virus A/H1N1 in term of gestation (G) 21-33 wks. All pts were in need treatment in ICU due to ARDS. 1 woman had a live baby vaginally at G term 29 wks in ICU. Rehabilitation was performed. Blood tests (BT), spirometry, SaO_2, lung CT were controlled.
Results: At discharge from ICU: pts were dominated by moderate respiratory failure, restrictive type of PLT violation; mean SaO_2 91.2±2.1%; CT: local lung tissue compactions, hypoventilation areas; BT: mild anemia, moderately elevated ESR. All pts' condition had improved during observation. BT was normalized for 1-2 months. After 1 yr 1 pt kept dyspnoea on severe exertion only; PLT indices had improved (Tabl.1), mean SaO_2 97.6±1.4%. CT: 2 pts without pathology after 9 months, 4 pts had only compaction of interlobar pleura and pleural-costal, pleural-diaphragmatic adhesions after 1 yr. 5 pts gave birth vaginally at G term 36-39 wks. All babies are alive, without abnormalities in development.

Table 1

Indices	After 1 month	After 6 months	After 9 months	After 12 months
FVC, % of predicted	74.7±2.8	82.9±2.5	90.7±2.4*	94.4±2.3*
FEV1, % of predicted	79.6±2.6	79.8±2.8	82.7±2.3	87.1±2.4*
FEV1/FVC, %	88.4±2.7	74.9±2.7*	76.8±2.1*	76.3±2.4*

*p Wilcoxon <0.05.

Conclusions: Severe P associated with virus A/H1N1 leads to structural and functional changes of respiratory system. Lung tissue compactions and reducing lung ventilation had undergone regression for 9-12 months. PW with P require prolonged observation and monitoring PLT, SaO_2 and lung CT.