



Infection by H1N1 flu virus revealing T-cell acute lymphoid leukaemia: about two cases

Guillaume Lefevre, Jean-Christophe Ianotto, Adrian Tempescul, Philippe Lemoine, Gaelle Guillerm, Christian C. Berthou

► To cite this version:

Guillaume Lefevre, Jean-Christophe Ianotto, Adrian Tempescul, Philippe Lemoine, Gaelle Guillerm, et al.. Infection by H1N1 flu virus revealing T-cell acute lymphoid leukaemia: about two cases. *Annals of Hematology*, 2010, 90 (9), pp.1111-1112. <10.1007/s00277-010-1132-9>. <hal-00615410>

HAL Id: hal-00615410

<https://hal.science/hal-00615410v1>

Submitted on 19 Aug 2011

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

**Infection by H1N1 flu virus revealing T-cell acute lymphoid leukaemia:
About two cases**

Guillaume Lefevre^{1,*}, Jean-Christophe Ianotto^{1,*}, Adrian Tempescul¹, Philippe Lemoine²,
Gaelle Guillermin¹, Christian Berthou¹

¹ Institut de Cancéro-hématologie, Département d'Hématologie, Hôpital Morvan, CHRU Brest, France.

² Département de Pédiatrie, Hôpital Morvan, CHRU Brest, France

* The two authors contributed equally to this work

Keywords:

H1N1 influenza virus, oseltamivir, T-cell acute lymphoid leukaemia, lymphopenia

Running title:

H1N1 flu at diagnosis of T-ALL

Corresponding author:

Dr IANOTTO Jean-Christophe, MD

ICH, Hopital MORVAN, Avenue FOCH, CHRU BREST, FRANCE

E-mail: jcianotto@hotmail.com

Tel : 0033298223333

Fax : 0033298223839

Dear Editor,

We present here two exceptional cases of young patients who developed pulmonary infections due to the H1N1 flu, which revealed the presence of T-acute lymphoid leukaemia. In late 2009, a 16-year-old woman, and two weeks later, a 12-year-old boy were admitted to our hospital for pulmonary syndrome associated with high fever. The clinical presentation was similar for both patients: asthenia, high fever, cough, rhinorrhea and dyspnoea, but no thoracic pain. The two patients needed oxygen therapy. Chest x-rays of both patients showed bilateral interstitial syndrome and right basal condensation. CT scans confirmed the bilateral alveolar condensation syndrome with an air bronchogram, ground glass opacities and numerous fuzzy nodules (Figure 1). The two CT scans revealed multiple mediastinal adenopathies and a large thymus. The H1N1 flu virus was suspected because of the epidemic in the winter of 2009. The diagnosis was confirmed by real-time PCR using the H1SWL test (M-CNR Pasteur gene) with the Lightcycler 2.0 (Roche) and broncho-alveolar lavage fluid from the girl and nasal liquid from the boy. Due to the high fever and neutropenia, the patients were immediately treated with antibiotics and cefotaxime (ciprofloxacin and cefotaxime for the girl; cefotaxime, josamycin and amikacin for the boy), but with little success. After the diagnosis of H1N1 flu infection, we used oseltamivir at the recommended dose of 75 mg per day (from day 3 for the first patient and day 1 for the boy). The symptoms disappeared a few days after beginning the oral treatment, and oxygen was no longer needed. Oseltamivir treatment was stopped after 5 days.

During this time, we observed cytopenias in the haemograms of both patients. For the girl and boy, the haemoglobin levels were 77 and 44 g/L, platelets were 224 and $61 \times 10^9/L$, white blood cells were 17.1 and $1.9 \times 10^9/L$, and neutrophils polymorphonuclear were 0.34 and 0.42 $\times 10^9/L$, respectively. Blood exams showed the presence of medium-size blasts quantified at 14.5 and $0.8 \times 10^9/L$ for the girl and boy, respectively. We observed 3% of circulating CD4+

T-cell lymphocytes for the girl and none for the boy. The LDH levels were 585 and 728 UI/L, respectively. C-reactive protein was 34 and 202 mg/L. The diagnosis of T-ALL was made based on examination of the bone marrow: the infiltration of blasts was higher than 90%, with sizes ranging from medium to large; the nucleo-cytoplasmic ratio was elevated; the cytoplasm was hyperbasophil with no granulations. Examination of the blasts using flow cytometry confirmed that they were of T-cell origin. The karyotypes were normal. The final diagnosis of type II T-ALL was made for both patients. When the pulmonary symptoms disappeared, we introduced chemotherapy using the same induction therapy for both patients: corticosteroids alone for the first week and thereafter corticosteroids together with vincristine, daunorubicine, cyclophosphamide and asparaginase. Intra-theal injections of chemotherapy were given 3 times during induction, and no meningeal localisation of virus was observed. The presence of the H1N1 influenza virus did not influence the progress of the chemotherapy protocol. The girl was resistant to corticosteroids at day 8 and to chemotherapy at day 15. The boy was sensitive to both corticosteroids and chemotherapy. The two patients were in complete haematological remission at the end of the induction phase. They followed their therapy, and no additional lung infections occurred. They are still in complete remission and in treatment today.

The cases described here are exceptional because in all previously reported cases of H1N1 influenza in leukemic patients, the virus infection appeared during the aplastic phase secondary to chemotherapy. There is only one reported case of the H1N1 flu in a patient with hemopathy: a 67-year-old man who developed an H1N1 infection during a chemotherapy (cyclophosphamide, vincristine and prednisolone) treatment for CLL and died after 4 weeks [1].

In the cases reported here, the two patients had deep lymphopaenia at the time of diagnosis, which was probably present for many weeks. The first sign of T-ALL was the presence of an H1N1 flu virus pulmonary infection, which was observed during the winter pandemic of this virus. The association between lymphopaenia and the H1N1 flu virus has been previously shown, with a higher mortality in the patients with low count. No secondary infections were observed, and neither patient experienced ARDS, perhaps due to the neutropaenia, despite the fact that previously reported deaths were mostly due to ARDS [2,3]. The only recommended treatment for the H1N1 virus is oseltamivir, and this treatment is highly effective [4-7]. We confirmed the efficacy in immuno-compromised patients. In these two cases, the occurrence of the H1N1 flu virus did not result in modification of the treatment nor the results of the chemotherapy as the two patients were alive 7 months after the diagnosis and in complete haematological remission. These cases suggest that H1N1 virus infections could be masking other conditions in immuno-compromised patients, and they confirm that oseltamivir is effective in these patients.

No conflict of interest.

References

1. Van der Vries E, van den Berg B, Schutten M. Fatal oseltamivir-resistant influenza virus infection. *N. Engl. J. Med.* 2008;**359**:1074-1076.
2. Perez-Padilla R, de la Rosa-Zamboni D, Ponce de Leon S, *et al.* INER Working Group on Influenza. Pneumonia and respiratory failure from swine-origin influenza A (H1N1) in Mexico. *N. Engl. J. Med.* 2009;**361**:680-689.
3. Lafe MD, Simon RH, Flint A, *et al.* Adult respiratory distress syndrome in neutropenic patients. *Am. J. Med.* 1986;**80**:1022-1026.
4. Al Hajjar S, McIntosh K. The first influenza pandemic of the 21st century. *Ann. Saudi Med.* 2010;**30**:1-10.
5. Maritz J, Maree L, Preiser W. Pandemic influenza A (H1N1) 2009: the experience of the first six months. *Clin. Chem. Lab. Med.* 2010;**48**:11-21.
6. Sullivan SJ, Jacobson RM, Dowdle WR, *et al.* 2009 H1N1 influenza. *Mayo Clin. Proc.* 2010;**85**:64-76.
7. Gordon SM. Update on 2009 pandemic influenza A (H1N1) virus. *Cleve. Clin. J. Med.* 2009;**76**:577-582.

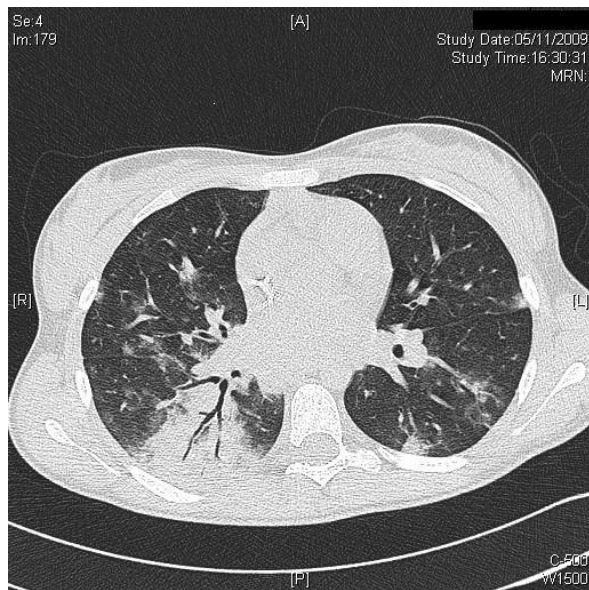


Figure 1
CT scan confirmed the bilateral alveolar condensation syndrome with an air bronchogram, ground glass opacities and numerous fuzzy nodules.