histamine solution served as controls. A wheal with a diameter >3 mm in comparison with the negative control was scored as positive. Furthermore, in vitro allergy testing using the Phadia CAP system for specific IgE against shrimp, fish-mix, rainbow trout, rCyp p 1 and protamine sulfate was performed.

**Results:** Skin prick tests were positive to shrimp, fish-mix, mackerel, salmon and protamine sulfate. Intradermal testing with protamine showed a wheal diameter of 7 mm. Analysis of a blood sample showed elevated total IgE (2600 kU/L) and specific IgE to shrimp (2.94 kU/L), fish-mix (0.53 kU/L), rainbow trout (0.39 kU/L), rCyp p1 (0.53 kU/L) and protamine sulfate (0.77 kU/L).

**Conclusions:** Protamine sulfate is a polycationic peptide used to reverse the anticoagulant effects of heparin during cardiac surgery. It is commercially produced from the sperm of salmon and it is considered that persons who have an allergy to fish could be at risk of protamine reactions. The exact mechanisms by which it causes anaphylaxis are not fully understood. Due to a clear sensitization to fish proteins and protamine sulfate and a known allergy to shellfish we disapproved the standard anticoagulation protocol with heparin/protamine. Bivalirudin was used as an anticoagulant and the surgery proceeded without any untoward events.

391 **Description of Drug Allergy Study Conducted in a Teaching Hospital between October 2007 and March 2011**

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**Background:** The World Allergy Organization (WAO) in 2003 defined ‘drug allergy’ as an immunologically mediated drug hypersensitivity reaction. The mechanism of drug allergy may be either IgE or non-IgE mediated. The true incidence of drug allergy is not known. There are only few studies/datasets using standardized clinical questionnaires and validated in vivo or in vitro tests to confirm the diagnosis of drug allergy. Here we have analyzed the obtained results of in vivo test in suspected drug allergy patients.

**Methods:** Data from the Centre of Allergies of the Clinical Hospital of the Universidad de Chile between the months of October 2007 and March 2011 was obtained. The information of the protocols of drug executed, by defining as Protocol the study of a probable allergy by 2 or more procedures, which can be: Prick Test, intradermal reaction, specific IgE and/or Test Patch.

**Results:** For a total of 126 drug protocols, 25% of them were trivírica vac- cine, 24% β-lactams, 21% local anesthetics and 10% to general anesthesia (inductors, muscle relaxants and Latex). Of the total of patients undergoing protocols the most of them were women, there is no clear difference between the number of children and adults. The temporal distribution of protocols was stable between the months of October 2007 and March 2009 (15 protocols/ semester), to then become variable, reaching values between 10 and 29 every 6 months. Of total protocols, 30.1% were positive; only one patient presented a mild adverse reaction (local welt). The β-lactams being most often the positive drugs. Protocols involving pethidine 100% was positive, diclofenac 33%, dipyrene, ketoprofen and hydrocortisone each one 25%. The most accomplished protocol was trivírica vaccine, resulting in 100% negative. Of all negative protocols 58% went to provocation, resulting in a 8% positive, including one provocation to the trivírica vaccine.

**Conclusions:** Methodological study is very important for a possible drug allergy, because history is not enough to certify the diagnosis. To do a provocation test to a negative protocol is crucial.

392 **Lung Toxicity Induced by Novel Antineoplastic Therapies in Cancer Patients**

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**Background:** Pulmonary toxicity and respiratory failure are major adverse events complicating the use of novel antineoplastic agents in the treatment of lung cancer. We aim to investigate the risk and characteristics of cytostatic-induced pulmonary toxicity caused by agents currently used to treat lung cancer.

**Methods:** A literature search was performed in PubMed to identify relative studies published until June 2011.

**Results:** Almost all categories of antineoplastic agents have been associated with some kind of pulmonary complications. Taxanes have been linked to acute pneumonitis, pleural effusion and reactions during infusion. Nucleoside analogs can cause diffuse alveolar damage, bronchospasm and acute respiratory distress syndrome (ARDS). Monoclonal antibodies are associated with pulmonary hemorrhage and hemoptysis. Acute pneumonitis and hypersensitivity reactions have been reported with podophyllotoxins, while diffuse interstitial pneumonia has been attributed to pemetrexed. Tyrosine kinase inhibitors of the epidermal growth factor receptor have been associated with acute pneumonitis, diffuse alveolar damage and pulmonary fibrosis. The exact incidence of lung toxicity caused by these agents remains unclear, although it seems relatively low. Clinical manifestation includes cough, fever, dyspnea and hypoxemia. Chest imaging reveals diffuse or patchy, unilateral or bilateral, ground-glass opacities or consolidations. It is important that other possible causes of respiratory failure be excluded when treating a lung cancer patient receiving chemotherapy.

**Conclusions:** Physicians should be aware of the potential of lung toxicities from antineoplastic agents, especially when they are combined with other cytotoxic drugs or radiation.

393 **Redness of Skin: SSSS in a 10 Month Old Healthy Baby**

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**Background:** Infections are caused by staphylococcus bacteria commonly found on the skin or mucosal membranes of healthy patients. These bacteria can turn into blood stream and cause severe life-threatening conditions: severe erythema multiforme-like eruption of skin and lesions of the oral, genital and anal mucosa associated with fever, arthralgia and neurological symptoms. To find the correct diagnosis among mucocutaneous diseases sometimes difficult but is important for choosing the proper medication.

**Methods:** A 10 month old boy with symptoms starting 2 days before with upper airway tract infection, external otitis and some urticarial eruption on his body without fever. He was put on oral antibiotic treatment. He was referred to our Department because of high fever, conjunctivitis, stomatitis and redness of his skin all over his body with some blister formation. He was unable to eat, he was in pain, but sleepy. After a few hours of his admission his fever became 39°C, severe exfoliation occurred, and some large flaccid bullae appeared and erupted, drained an amber-colored liquid and spreaded to cover extensive areas of his body revealing denuded skin. His history and symptoms suggested allergic reaction for his medication or auto-immune/mucocutaneous disorder, but interestingly his laboratory tests were in the normal range. In spite of these to prevent a bacterial superinfection after bacterial culturing of throat, nose, skin, and blood, we introduced iv amox- icillin/clavulanic-acid therapy, cephalexine eye drops, antiseptic local treat- ment of mouth (chlorhexidine digluconate) and skin (unguentum antisepticum). After 2 days his fever started and the top layer of his skin started to come off, partly powdery scales formed.

**Results:** The symptoms started to resolve slowly and the child became symptom free after 10 days. Bacterial culturing results confirmed the
diagnosis of SSSS. The antibiotic treatment was completed on the tenth day.

Conclusions: Symptoms and appearance of the disease suggested several diseases but the laboratory tests were normal, making the diagnosis more difficult, the supposed diagnosis did not fit properly for the patient age. Careful observation of patients and the disease, exfoliative cytology and a biopsy, microbiological investigations allow the diagnosis, ruling out erythema multiforme and drug-induced toxic epidermal necrolysis, both which are similar to SSS Syndrome.

394 Desensitization Protocol to Methotrexate
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Background: A 17 year old patient was referred to Allergy outpatient clinic with history of recent anaphylaxis (wheezing, breathlessness, nausea, vomit and hypotension) to methotrexate (MTX) during the induction treatment of ALL L2. The diagnostic confirmation consisted in a skin test, with a positive response at 1:100 dilution. The case was discussed together with Pediatric Oncology service, and was agreed that MTX was necessary for the patient survival, because of that we performed the following desensitization protocol.

Objective: Evaluate the effect and safety of a desensitization protocol to methotrexate in an adolescent with acute lymphoblastic leukemia L2 (ALL L2) and allergy to methotrexate.

Methods: Desensitization protocol consisted in 2 phases. First phase consisted in premedication with hydrocortisone (IV) 1 mg/kgd, cetirizine (PO) 0.2 mg/kgd, chlorpheniramine (IV) 0.35 mg/kgd and montelukast (PO) 10 mgd at 13, 7 and 1 hour prior to desensitization phase which consisted in an 8 hour scheme of IV infusion of 12 dilutions with increasing concentrations starting at 1:1,000,000 at 30 minutes intervals up to the full dose was completed.

Results: Patient was admitted to pediatric intensive care unit and was successfully desensitized, the full protocol was completed as expected, including pre-medication, the desensitization phase lasted 8 hours; at the second dilution (1:100,000) the patient presented nausea, requiring one extra dose of chlorpheniramine, no other adverse reactions were presented in the next 48 hours observation period. He was maintained with 50 mg/m² IV MTX weekly for the full anti-leukemia treatment duration (1–2 years) using the same protocol and stayed out of MTX-related adverse reactions. Today he is followed as an outpatient by our service.

Conclusions: This 12 steps MTX-desensitization protocol was effective and safe. In selected cases of severe allergic reactions to chemotherapeutic agents there no other equally effective treatment option available, desensitization is effective and safe.

395 Clinical Features of Dress Syndrome in 42 Patients
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Background: The clinical features of DRESS syndrome are complicated, and the incidence this condition is very low.

Methods: This study was a retrospective analysis of prospectively collected data in 42 consecutive patients with DRESS syndrome diagnosed between September 2009 and April 2011. We investigated the clinical features, response to treatment, and outcome of 42 patients.

Results: Study patients consisted of 18 men (42.9%) and 24 women (57.1%). The most common causative drugs were antibiotics (33.3%) and anticonvulsants (26.2%), followed by antituberculosis drugs (11.9%), allopurinol (7.1%), nonsteroidal anti-inflammatory drugs (NSAIDs) (7.1%), undetermined agents (7.1%), others (7.1%). The latency period ranged from 2 to 60 days, with a mean of 16.6 days. The longest latency period was noted in the antituberculosis drug group, 35.8 ± 16.2 days. Atypical lymphocytosis was noted in 16 patients (38.1%), and thrombocytopenia in 7 patients (16.7%). Hepatic involvement was noted in all study patients. Additionally, lung involvement was noted in 2 patients (5.8%), CNS involvement was in 1 patient (2.4%). Systemic corticosteroids were administered to 8 patients (19.0%). Complete recovery was noted in 40 patients (95.2%). Two patients had poor outcomes; one died due to opportunistic infection secondary to long-term systemic corticosteroids treatment and the other showed progressive deterioration of liver damage, although the final outcome is not known.

Conclusions: Drugs associated with DRESS syndrome were variable and most frequently included antibiotics and anticonvulsants. DRESS syndrome was more common than generally recognized, and most of patients with this disease showed better clinical outcome than that has been generally expected.