epoetin doses (≤3000 IU) group and we should take this fact into consideration at the change of the ESAs. Though I admit that in this inquiry the number of subjects is too small to reach a definite conclusion, I believe the results show a similar, but partially more remarkable, tendency to the one by Bock *et al.* [1]. And I should apply their conclusion to my original guide mentioned below, particularly in the higher epoetin doses group (>6000 IU/week) because of insufficient number of subjects.

I would like to propose a simple guide regarding the initial conversion ratio from epoetin to darbepoetin according to the proceeding epoetin dose in treating haemodialysis patients with renal anaemia. The ratios from epoetin to darbepoetin are 1:350 in proceeding epoetin doses > 6000 IU/week, 1:300 in 6000 IU/week ≥ epoetin > 4500 IU/week, 1:250 in 4500 IU/week ≥ epoetin > 3000 IU/week and 1:200 in epoetin ≤3000 IU/week. Of course, after the conversion, we should continue to control darbepoetin doses carefully, at least for several months, until a stable target Hb can be kept.

*Conflict of interest statement*. None declared.

Dialysis Center, Kamagaya Daiichi Clinic, Kamagaya, Chiba, Japan
Tetsuya Nakagawa
E-mail: techima@poppy.ocn.ne.jp

1. Andreas Bock H, Hirt-Minkowski P, Brünisholz M *et al*. Darbepoetin alpha in lower-than-equimolar doses maintains haemoglobin levels in stable haemodialysis patients converting from epoetin alpha/beta. *Nephrol Dial Transplant* 2008; 23: 301–308
2. Macdougall IC, Matcham J, Gray SJ. Correction of anaemia with darbepoetin alfa in patients with chronic kidney disease receiving dialysis. *Nephrol Dial Transplant* 2003; 18: 576–581
3. Gejo F, Sito A, Akizawa T *et al*. Guideline for Renal Anemia in Chronic Hemodialysis Patients. *J Japanese Soc Dial Ther* 2004; 9: 1737–1763

doi: 10.1093/ndtplus/sfn066

Advance Access publication 6 June 2008

## *Streptococcus vestibularis* bacteremia following dental extraction in a patient on long-term hemodialysis: a case report

Sir,

*Streptococcus vestibularis* is a normal inhabitant of vestibules of the human oral cavity, and it has rarely been associated with human disease except that two cases of infectious endocarditis of the prosthetic valve [1,2], early neonatal sepsis and bacteremia in both cancer and rheumatic valve disease patients [3–5].

A 24-year-old woman, a known case of end-stage renal disease on haemodialysis was admitted with severe toothache, fever and malaise for a 2-week duration. Dental caries of the upper second molar were found by an expert dental surgeon, the carious tooth was removed and the pain was relieved. However, she developed fever and malaise again 2 days following tooth extraction.

She had no symptoms of infection of the upper or lower respiratory, gastrointestinal or genitourinary systems.

On physical examination her temperature was 38°C, heart rate was 92 bpm and blood pressure was 130/80 mmHg. Her oral hygiene was very poor. Cardiovascular system examination showed a grade 2/6 functional ejection systolic murmur at the lower left sternal edge. There were no clinical findings specific to bacterial endocarditis, either clinically or radiologically. (A trans-esophageal echocardiogram was done to rule out infective endocarditis.)

Her leukocyte count was 11 900 cells/L (92% neutrophils), CRP 55 mg/L and ESR 54 mm/h. We thought that the subclavian catheter (inserted because of a–v fistula disfunction) could have been infected but there were no exit-site features of infection. Vancomycin (1 g iv, three times a week, post-HD) was started immediately. Her temperature returned to normal 48 h later. The patient had no complaints of malaise 3 days later.

Two blood cultures grew gram-positive cocci. Subcultures grown on solid media showed *S. vestibularis* by identification kits (BBL Crystal Gram-Positive Identification Kits®). The microorganism was susceptible to vancomycin.

Two other blood cultures were taken on the 10th day of vancomycin therapy and they were negative. The patient remained on vancomycin therapy for 18 days, with neither fever nor malaise. On the 18th day the patient's leukocyte count was 6900 cells (72% neutrophils), CRP was 5 mg/L and ESR was 21 mm/h. We stopped vancomycin therapy, and the patient was discharged.

Haemodialysis patients are liable to develop blood stream infections following surgical or dental procedures. To our knowledge, ours is the first case of bacteremia caused by *S. vestibularis* in a haemodialysis patient.

We chose vancomycin for treatment as it was shown to be susceptible to vancomycin elsewhere [5]. There is no recommendation for the duration of antibiotic therapy in the literature. We continued the treatment for 3 weeks and stopped therapy after blood cultures were negative.

We suggest that in patients with poor dental hygiene and history of orodental surgery, virulent streptococci should be considered.

*Conflict of interest statement*. None declared.

[1]Department of Family Medicine
[2]Department of Nephrology
Baskent University, Ankara
Turkey
[3]Department of General Surgery
Baskent University, Ankara
Turkey
E-mail: adilek.simsek@gmail.com
A. Dilek Simsek[1]
Siren Sezer[2]
Nurhan F. Ozdemir[2]
Haberal Mehmet[3]

1. Partridge SM. Prosthetic valve endocarditis due to *Streptococcus vestibularis*. *J Infect* 2000; 41: 284–285
2. Doyuk E, Ormerod OJ, Bowler IC. Native valve endocarditis due to *Streptococcus vestibularis* and *Streptococcus oralis*. *J Infect* 2002; 45: 39–41
3. West PW, Al-Sawan R, Foster HA *et al*. Specification of presumptive viridans streptoccocci from early onset neonatal sepsis. *J Med Microbiol* 1998; 47: 923–928

4. Han XY, Kamana M, Rolston KV. Viridans streptococci isolated by culture from blood of cancer patients: clinical and microbiological analysis of 50 cases. *J Clin Microbiol* 2006; 44: 160–165
5. Cunliffe NA, Jacob AJ. Streptococcus bacteremia. *J Infect* 1997; 34: 85

doi: 10.1093/ndtplus/sfn071

Advance Access publication 10 April 2008

## Argatroban caused severe hypercholesterolaemia in a chronic haemodialysis patient with heparin-induced thrombocytopenia: an unreported adverse effect?

Sir,

Argatroban is a synthetic direct thrombin inhibitor that is used as an anticoagulant for haemodialysis (HD) in patients with type II heparin-induced thrombocytopenia (HIT) or with antithrombin III deficiency [1,2]. Although there has been no report of hypercholesterolaemia as an adverse effect of argatroban, I recently experienced a case in which severe hypercholesterolaemia was strongly suspected to be induced by argatroban.

I took charge of a 67-year-old female chronic-HD patient in September 2007. She received dialysis three times a week for 3.5 h with 40 mg of arogatroban on the basis of the diagnosis of HIT. Because her anti-heparin and platelet factor 4 complex antibody (HIT antibody) was still detected by ELISA [3] then, I continued to use argatroban in her HD. At that time, she was also suffering from severe hypercholesterolaemia. Her serum low-density-lipoprotein cholesterol (LDL-C) was 175 mg/dL in spite of taking simvastatin of 20 mg every day. But she has no familial history of hypercholesterolaemia and she said that she had never been diagnosed as with hypercholesterolaemia until the initiation of HD therapy.

I reviewed her hospital record in detail again. She started chronic HD with heparin sodium because her end-stage diabetic nephropathy had deteriorated in January 2007 at another hospital. During the first several HD sessions, her platelet count decreased from 318 000/μL to 82 000/μL and the HIT antibody was detected. She was diagnosed with HIT and the anticoagulant was changed to argatroban. Her platelet count quickly increased and reached to 185 000/μL in only 5 days. Since then, her platelet count has never decreased again. However, according to a series of her laboratory data, her serum total cholesterol, which had been <210 mg/dL until just before initiation of argatroban, began to increase obviously thereafter.

She was introduced to our clinic in March 2007. Her total cholesterol had reached 314 mg/dL and her LDL-C was 189 mg/dL at that time. The LDL-C value was extremely higher than 91 mg/dL just before using argatroban at the previous hospital. Soon her LDL-C increased to 210 mg/dL. This value was not reduced until the daily use of simvastatin of 20 mg, as mentioned above, and could not be reduced below 170 mg/dL even after that. (Her LDL-C rather increased a little by the change of the statin to pitavastatin afterwards.) Patients with this LDL-C level are at a high risk of developing coronary artery disease [4]. From her clinical courses, I suspected argatroban as the cause of her severe hypercholesterolaemia. Though I know the use of low-molecular-weight heparins (LMWHs) should also be discouraged in patients with HIT [1], for some reason, I dared to carefully change her argatroban to parnaparin sodium, an LMWH, in November 2007. After eight sessions of HD with 1000 international units (IU) of parnaparin sodium during 19 days, her LDL-C decreased to 87 mg/dL without thrombocytopenia. From that time until now, I have been using 1000 IU of parnaparin sodium in her HD, and her LDL-C has been always <90 mg/dL without thrombocytopenia or any sign of blood coagulation in spite of HIT antibody still being detected in January 2008.

She was given furosemide, asprin, candesartan cilexetil and acarbose orally, and also given epoietin beta intravenously at the time of initiation of HD. Later, other medications were given to her in addition. Cellulose triacetate dialyzer was used initially and changed to a polysulfone one afterwards. But none of these medications seemed to have had any direct effect on her hypercholesterolaemia except for argatroban.

I believe that argatroban could cause severe hypercholesterolaemia as a serious side effect, at least in HD patients with HIT.

*Conflict of interest statement.* None declared.

Dialysis Center, Kamagaya Daiichi Clinic, Kamagaya, Chiba, Japan
Tetsuya Nakagawa
E-mail: techima@poppy.ocn.ne.jp

1. V.4 Heparin-induced thrombocytopenia. *Nephrol Dial Transplant* 2002; 17(Suppl 7): 67
2. Kazuo Ota, Tadao Akizawa, Yoshihei Hirasawa *et al*. Effects of argatroban as an anticoagulant for haemodialysis in patients with antithrombin_deficiency. *Nephrol Dial Transplant* 2003; 18: 1623–1630
3. Amiral J, Wolf M, Fisher A *et al*. Pathogenicity of IgA and/or IgM antibodies to heparin-PF4 complexes in patients with heparin-induced thrombocytopenia. *Br J Haematol* 1996; 92: 954–959
4. Sacks FM, Pfeffer MA, Moye LA *et al*. The effect of pravastatin on coronary events after myocardial infarction in patients with average cholesterol levels. Cholesterol and recurrent events trial investigations. *N Engl J Med* 1996; 335: 1001–1009

doi: 10.1093/ndtplus/sfn038

Advance Access publication 7 April 2008

## Interaction between estradiol and tacrolimus in kidney-transplanted menopausal women

Sir,

Hormone replacement therapy for symptoms caused by oestrogen deficiency is often used by menopausal women. Transdermal administration is regularly used by means of a dermal application gel. Its active principle, the synthesis 17β estradiol, is a well-known substance known as an