1. Introduction

The drug utilization study, EUROVISION 2, evaluated Angiox utilization in a randomly selected representative sample of EU percutaneous coronary infusion (PCI) centres following implementation of risk minimization measures. In particular, the study assessed the frequency of:

- Bolus-only dosing without subsequent infusion
- Infusion dose adjustment in renally-impaired patients.

The evaluation was conducted at least 12 months after the sites had received (or refused) training. Sites were randomly selected for participation from a database containing approximately 730 EU sites estimated to treat at least 30 patient per year. Participating sites completed an online survey providing dosing and administration data and renal status (if known) on the last 10 consecutive patients who underwent PCI and were treated with Angiox. Data were evaluated for each patient for whom a survey was submitted.

2. Participants

Overall, 267 surveys were collected, providing data for 265 patients who underwent PCI. The majority of patients (77.4%; 205/265) were treated with Angiox within 1 to 3 years of site training. 18.9% of patients were treated at a site that refused training, and 3.8% of patients were treated prior to the site receiving training.

3. Descriptive Data

The majority of patients were male (72.7%; 194/267), the mean age was 65.9 years (range 31 to 94 years) and mean weight was 79.7 kg (range 48 kg to 145 kg). A greater proportion of patients underwent urgent PCI (81.9%, 217/265) than planned PCI (18.1%, 48/265) and 52.5% (139/265) of patients had PCI for treatment of ST-segment elevation myocardial infarction (STEMI) while 44.2% (117/265) of patients had PCI for treatment of stable angina/acute coronary syndrome. Nine patients underwent PCI for reasons categorized as “other”; of these 9 patients, 5 patients had an urgent procedure and 4 patients had a planned procedure and were analyzed accordingly.

4. Angiox Bolus plus Infusion Dosing

With the exception of one patient, all patients received both an Angiox bolus and an Angiox infusion during PCI. Bolus-only dosing was not reported during the study. Most patients received the bolus and infusion as recommended in the Summary of Product Characteristics (SmPC) for the patients with normal renal function (92% of patients with a 0.75 mg/kg bolus and 87.5% with a 1.75 mg/kg/h infusion).

5. Angiox Dose Adjustment for Renal Impairment

Out of the 166 patients with known renal function, 33 patients had moderate renal impairment (Glomerular Filtration Rate (GFR) 30 mL/min to 59.99 mL/min). Twenty-five of these patients underwent urgent PCI and 8 patients had planned PCI.

Of the 33 patients with moderate renal impairment, 10 (10/33; 30.3%) patients received the infusion dose recommended in the SmPC for patients with moderate renal impairment (i.e., 1.4 mg/kg/h) and 23 (23/33; 69.7%) patients did not. Of the 8 patients with moderate renal impairment who underwent planned PCI, 5 (5/8, 62.5%) patients received the correct dose of 1.4 mg/kg/h. Of the 25 patients who underwent urgent PCI, 5 (5/25, 20.0%) patients received the correct dose of 1.4 mg/kg/hr.

Out of the 166 patients with known renal function, 3 patients with severe renal impairment (GFR <30 mL/min) underwent PCI (2 urgent and 1 planned) and all 3 patients were receiving the Angiox infusion dose recommended in the SmPC for patients with normal renal function (i.e. 1.75 mg/kg/h).

Three patients who were dialysis dependent underwent PCI (2 urgent and 1 planned), with 2 of these patients receiving the infusion dose recommended in the SmPC for patients with moderate renal impairment (i.e. 1.4 mg/kg/h) and 1 patient receiving an unknown infusion dose.

6. Higher- and Lower-than-Recommended Angiox Bolus Doses by Site Training

Nineteen patients received an Angiox bolus that was either lower-than-recommended (15/263; 5.7%) or higher-than-recommended (4/263; 1.5%) in the SmPC; these patients were treated at 6 sites, including 2 sites that refused training (accounting for 11/19 patients).

The majority of patients (11/15 patients) who received a lower-than-recommended Angiox bolus dose (i.e., ≤0.5 mg/kg) were treated at the 2 sites that refused training, with most of these patients (10/11 patients) treated at the same site.

Four patients received a higher-than-recommended Angiox bolus dose, with 2 patients treated before site training, 1 patient treated within 1 year of site training, and 1 patient treated within 1 to 2 years after site training. All occurrences were at the same site.

7. Dosing Adjustment for Renal Impairment by Site Training

Of the 33 patients with moderate renal impairment (GFR 30 mL/min to 59.99 mL/min), 23 patients did not receive the reduced Angiox infusion dose recommended in the SmPC (1.4 mg/kg/h). These patients were treated at 12 sites, including one site that refused training. The majority of patients (58.8%, 10/17 patients) with moderate renal impairment and no infusion dose reduction were treated within 1 to 2 years of site training.

Three patients with severe renal impairment were treated within 1 to 2 years of site training (2 patients) or within 2 to 3 years of site training (1 patient). Three dialysis-dependent patients were treated within 1 to 2 years of site training (2 patients) or at a site that refused training (1 patient).

8. Conclusions

With the exception of one patient, all patients received both an Angiox bolus and an Angiox infusion during PCI. Thus, the risk minimization measures assessed in this study were effective in preventing bolus-only dosing in patients with or without renal impairment. However, in the subset of patients with moderate renal impairment 69.7% (23/33 patients) did not receive the recommended Angiox infusion dose adjustment. It appears that selection of the Angiox infusion dose relies on knowledge of the patient's renal status at the time of PCI, the urgency of the PCI, and the physician's assessment of the overall benefit and risk of Angiox for an individual patient.