Case history

Mary Beth, an 80-year-old female, came to the dental office due to pain on the lower right side with swelling in the same region.

Medical history

Mary Beth suffered an ischemic stroke 9 months ago resulting in paralysis of the right hand and leg. After 3 months of extensive physical therapy in a rehabilitation centre, Mary Beth has recently gained limited use of her right hand.

Medications

Warfarin (Coumadin).

Dental findings

Extra-oral examination

The patient exhibited facial asymmetry with dropping on the lower right side with a palpable nodule in the same region.

Intra-oral examination

- Three unit bridge on the lower right with the first premolar and first molar as the abutment teeth and the second premolar as the pontic.
- Fistula on the alveolar mucosa in the region of the lower right first molar
- Generalized gingivitis
- Generalized light calculus deposits
- Moderate plaque deposits
- Periodontal depths ranged from 4 to 6 mm with a distal buccal pocket depth of 8 mm on the lower right molar.

Radiographic interpretation

Periodontal radiolucency located at the apical region of the distal root of the lower right first molar.

Social history

The patient was having difficulty with self-care due to the paralysis of her right hand and is now dependent on her daughter as her caregiver. Prior to the stroke, Mary Beth was independent, fastidious in her appearance and maintained good oral health. She was very active in the community and volunteered in numerous local associations.

Questions and answers

1. Warfarin (Coumadin) is found in which of the following drug classifications?
2. Do contraindications exist for dental hygiene treatment?
3. What are the aetiological factors contributing to the patient's oral health status?
4. During oral hygiene instructions should the patients' caregiver be present?
5. What specific oral hygiene instructions would be indicated for this patient?

Answers/rationale

1. Warfarin is classified as an anticoagulant (1), which is usually prescribed for patients who have suffered from cardiovascular accident (CVS) (2). A CVS or stroke is caused by a thrombus (usual caused in older adults) or a haemorrhage that results in a cerebral infarct (2). An ischemic stroke develops when a blood clot blocks a blood vessel in the brain. The clot may form in the blood vessel or travel from somewhere else in the blood system (2). Warfarin prevents clotting by antagonizing vitamin K. Blocking vitamin K interferes with the synthesis of four clotting factors. Warfarin is absorbed following oral administration. After absorption, 99% of Warfarin is metabolized by the hepatic microsomal enzyme system and excreted by the kidneys (1).
2. Evidence-based findings conclude that most dental patients can undergo procedures without alteration to their anticoagulant provided that local haemostatic measures are used to control bleeding (3, 4). However, consultation with the patient's physician is required for medical clearance prior to commencing any dental treatment, in addition to obtaining prothrombin time. In dentistry, there are some procedures which entail low bleeding such as periodontal therapy (5). Periodontal examinations and supragingival scaling are considered to be low risk of bleeding. However, subgingival debridement may cause significant bleeding especially if the gingival are inflamed (6). Good plaque control is important before performing periodontal procedures in anticoagulant patients. Scaling and root planing should initially be restricted to a limited area such as one quadrant to assess if the bleeding is problematic (7). Local haemostatic measures should include the use of local

anaesthetic containing vasoconstrictor such as adrenaline (epinephrine), ought to be administered by infiltration or by intraligamentary injection whenever practical (8).

Patients should be advised to avoid any analgesic compounds containing aspirin which can increase the likelihood of bleeding by three to five times (7). Due to the patient's periodontal abscess, the use of antibiotics should be prescribed to prevent endocarditis and should be discontinued as reasonably possible (9). Prolonged use of broad spectrum antibiotics should be avoided as it may change the effectiveness of warfarin by altering gut microflora comprising availability of vitamin K (8). The Dental Hygiene Care Plan needs to be modified by scheduling short morning appointment early in the week to facilitate more time to observe re-bleeding problems after the dental procedures (2, 7). A multidisciplinary approach is required during the provision of dental services for the patient who has suffered from a stroke to decrease the occurrence of medical complications and to assist the patient in maintaining their oral hygiene skills during the rehabilitation of their abilities.

3. Physical impairment, co-ordination, sensory or cognitive deficits may accompany a stroke and can impact on independent oral care (10). Toothbrushing and flossing require the fine motor skills or dexterity of the small muscles of the fingers and hands as well as the gross motor skills of the larger muscle groups in the upper extremities (11). Due to the restrictive range of motion, the patient is unable to continue her regular oral hygiene habits, which has resulted in the increase of plaque accumulations and the oral disease progression.

4. The treatment planning process which can be influenced by the quality of communication between clinicians and the older patient is critical, along with the influence of third parties, including the family members and professional caregivers (12). To ensure dental care and compliance with home self-care preventive programmes, complete cooperation must be established among the family members and/or caregivers, the health provider to the extent possible (11). If long-term compliance with instructions is the goal, the comfort of both the caregiver and the patient in performing the oral hygiene programme is paramount. A number of positions have been recommended for the caregiver to assume when providing oral hygiene care to the patient**.**

5. CVA is the most common neurological cause of problems related to coordination and mobility (2). The role of the dental hygienist is to develop an individualized care plan based on an assessment of the patients' psychomotor and cognitive capabilities prior to any intervention. The muscular strength of the patient's hand can be assessed by a handshake or by grasp of the clinician's fingers (11). The patient's motor skills are documented as a baseline to evaluate future improvement or the need for modifications. Communication with the patient's physical therapists should be encouraged due to the limited gross motor skills such as grasping a toothbrush handle which can be improved by orthotic appliances (11). Recommended oral hygiene instructions can include the use of an electric toothbrush, interdental cleaning aids like floss threaders, proxabrush and wooden sticks. In addition, the dental hygiene care will include the administration of fluoride and antimicrobial rinses like chlorohexidine to minimize sources of oral pathogens that can be aspirated.

References

1 Coleman PW. Pharmacology. In: DeBiase CB, ed. *Dental Hygiene in Review*. Philadelphia, PA, Lippincott Williams & Wilkins, 2002, 248–275.

2 Gluch JI. The older adult. In: Darby ML, Walsh MM, eds. *Dental Hygiene Theory and Practice*, 2nd edn. Philadelphia, PA, Saunders Publisher, 2003, 960–988.

3 Wahl MJ. Dental surgery in anticoagulated patients. *Arch Intern Med* 1998; **158:** 1610–1616.

4 Dodson TB. Managing anticoagulant patients requiring dental extractions: an exercise in evidenced-based clinical practice. *Evid Based Dent* 2002; **3:** 23–26.

5 Baker RI, Coughlin PB, Gallus AS, Harper PL, Salem HH, Wood EM. The warfarin reversal consensus group. Position Statement. Warfarin reversal: consensus guidelines, on behalf of the Australasian Society of Thrombosis and Haemostasis. *Med J Aust* 2004; **9:** 492–497. http://www.mja.com.au/public/issues/181_09_011104/bak10441_fm.html.

6 Muthukrishnan A, Bishop K. An assessment of the management of patients on warfarin by general dental practitioners in South West Wales. *Br Dent J* 2003; **195:** 567–570.

7 Surgical management of the primary care dental patient on warfarin. In: Randall C, ed. North West Medicines Information Centre, NHS, 2001. Available at: http://www.ukmi.nhs.uk/med_info/documents/Dental_Patient_on_Warfarin.pdf.

8 Woods RG, Savage N. Managing the dental patient receiving warfarin therapy. *Aust Prescr* 2002; **25:** 69.

9 Perry DJ, Noakes TLC, Helliwell PS. Guidelines for the management of patients on oral anticoagulants requiring dental surgery. *Br Dent J* 2007; **203:** 389–393.

10 Arai K, Sumi Y, Uematsu H *et al.* Association between dental health behaviours, mental/physical function and self-feeding ability among the elderly: a cross-sectional survey. *Gerodontology* 2003; **20:** 78–83.

11 Mulligan R, Sobel S. Preventive oral health care for compromised individuals. In: Harris NO, Garcia-Godoy F, eds. *Primary Preventive Dentistry*, 6th edn. Upper Saddle River, NJ, Pearson Education Ltd, 2004, 559–588.

12 Johnson TE, Shuman SK, Ofstehage JC. Fitting the pieces together: treatment planning in the geriatric dental patient. *Dent Clin North Am* 1997; **4:** 945–959.

Su-Yan L Barrow

Clinical Associate Professor

Dental Hygiene Program

New York University

New York, NY

USA

E-mail: slb1@nyu.edu