Analysis of Nursing Clinical Practice of Oral Hygiene on Patient with Hemorrhagic Stroke – A Case Study

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Abstract

Objective: The purpose of this case study was to analyze the oral hygiene intervention performed by nurse in stroke hemorrhagic patient in neurological ward.

Methods: Oral hygiene interventions were performed by using 0.2% chlorhexidine twice daily for seven days. This case study used oral health assessment tool (OHAT) which the measurements were taken before and after the intervention every day.

Results: There was a decrease in oral hygiene assessment score from 9 to 1 which implied an improvement in oral hygiene condition. This study also showed that family of stroke patient was able to perform oral hygiene practice to the patient after simulation performed firstly by nurses.

Conclusion: The study recommends that oral hygiene by using 0.2% chlorhexidine needs to be delivered routinely by nurses and continues by the family at home care.

Keywords: chlorhexidine 0.2%, oral hygiene, stroke.

Introduction

Stroke is the leading cause of death in Indonesia and ranked top as cause of mortality both in home and hospital 1,2. North Sulawesi, Yogyakarta, Bangka Belitung, and DKI Jakarta are regions with the highest prevalence of stroke in Indonesia 1. Stroke requires rapid and proper treatment. Moreover, stroke needs comprehensive and longer period of care than any other disease. Patients with stroke are vulnerable to complications if care delivery is inappropriate. Oral hygiene is often ignored in patients with stroke. Nurses consider oral hygiene as non-priority intervention, thus induces the growth and development of pathogens in oral cavity. Oral hygiene in patient with stroke is the practice of maintaining oral health and preventing complications following the incidence, including upper respiratory tract infection, carotid stenosis, endocarditis, pneumonia, malnutrition, and longer hospital stay 2.

Center for Disease Control and Prevention (CDC) recommends oral hygiene with chlorhexidine solution to kill gram positive and gram negative bacteria, and fungi that populate oral cavity3. Association of Critical Care Nurses (AACN) recommends oral hygiene by using chlorhexidine at least twice a day in order to prevent the colonization and spreading of germs that may contribute to the development of complications.

A study which involved 71 stroke units in Scotland revealed an excellent progress in patients’ conditions following the implementation of oral hygiene. Pathogens would rise in number when stimuli to produce saliva as immunity decrease due to neurological deficits, especially in oral cavity. Hemorrhagic stroke is a disease with a high risk for development of gram negative bacilli (pathogen) in oral cavity which may spread to local or systemic circulation thus necessitate oral hygiene as daily nursing intervention 4.

Method

This paper applied case study method on patient with hemorrhagic stroke and neurologic deficits as well as self-care deficit (oral hygiene) in a ward. The intervention provided was oral hygiene with...
0.2% chlorhexidine solution twice a day for 7 (seven) days.

This study conducted the assessment by using Oral Health Assessment Tools (OHAT) which was developed by Chatman et al. (2005) and modified by Australian Institute of Health and Welfare. OHAT is applicable in long term care or residential care settings and also for patient with cognitive impairment such as in the case of stroke hemorrhagic. OHAT may also be used for long term care. OHAT is international recognized with inter-rater reliability of 0.80 and Kappa test of p < 0.05.

Nurse provided the family an explanation and education of need for hygiene beforehand. Then, nurse cleaned up the debris. Afterwards, nurse wiped patient’s saliva to prevent aspiration as she had swallowing disorder. The oral hygiene practice included cleansing and applying chlorhexidine in oral cavity with following steps: (1). Nurse provided explanation of purpose of oral hygiene based on the assessment and asking for family’s consent, (2). Nurse prepared the equipment’s, ingredient, and method based on OHAT score, (3). Nurse assisted client’s position into Semi Fowler or 300 head elevation to prevent aspiration, (4). Nurse put on gloves to prevent cross contamination, (5). Nurse held forceps or arterial clamps, cleaned mouth and teeth starting from palate, gums, and teeth with circular motion from inward to outward and horizontal moves to maintain cleaned area and expel the dirt (6). Nurse assisted client to open her mouth by using tongue spatula which was wrapped by gauze. (7). Following the cleansing, nurse soaked gauze pad with 0.2% chlorhexidine solution (8). Nurse distributed 0.2% chlorhexidine evenly in whole oral cavity. (9). Nurse performed suction as indicated.

Result

The patient was Mrs. A, 68 years old with hemorrhagic stroke (subarachnoid hemorrhagic), had been hospitalized for 26 days with somnolent consciousness at the first day of admission, and Barthel Index score of 10. The patient had been diagnosed with uncontrolled hypertension since 5 years ago and did not comply with the regimen regularly. The family provided her with support for her recovery. The family member looked after her alternately. They seem pleased and encouraged during education of oral hygiene procedure.

The client was provided with oral hygiene by using 0.2% chlorhexidine for 7 days and evaluated every day by using oral health assessment tools (OHAT) to identify progress and improvement in oral hygiene. The daily progress is described in table1.

The table suggested an improvement in patient’s oral hygiene from the first through seventh day. The initial OHAT score was 9 (unhealthy) and increased to 1 in the last day of implementation (Healthy). There was a significant improvement in her oral hygiene than before. The initial assessment revealed dry lips, cracked and thick tongue, scurfy and white spots, plaque and local debris, pain expression when the teeth were touched, hyper salivation and dirty oral cavity, and presence of food residues. The evaluation in the seventh day of intervention revealed lips: moist and pink, tongue: visible papilla, pink and moist, mucous membrane: pink and moist, gum: pink, moist, clean, no debris, no tooth pain, hyper salivation, fewer plaque, and cleaner oral cavity than before.

### Table 1. Oral Health Assessment Tools (OHAT)

<table>
<thead>
<tr>
<th>Day of assessment</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lip</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tongue</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mucous membrane</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gums</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dental plaque</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dental pain</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Saliva</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oral cleanliness</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total score</td>
<td>9</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: Score 0 = Healthy, Score 1 = Changes Score 2 = Unhealthy

Discussion

The patient was admitted due to somnolent consciousness, isochoric pupils, light reflex +/−, Babinski reflex, <−, and hemiparesis on the left side. A hemorrhage in bilateral intraventricular was found with hydrocephalus communicant and bleeding of subarachnoid of right temporoparietal. Also, the impairment of cranial nerve VII and XII were found.

The initial assessment revealed halitosis, appearance of white coating and dirty tongue, gingivitis, tenderness, dirty gums, encrustation on palate, and plaque (biofilms) on surrounding teeth. Based on the assessment, This study determined that patient had an unhealthy oral cavity that required oral hygiene as indicated by total OHAT score of 9.

The patient required oral hygiene with gauze pad or sponge as she was prescribed with Plavix 1x75 mg and Ascardia 1x80 mg which increased the risks for bleeding. The required ingredient for oral hygiene was evident that chlorhexidine solution was the most appropriate and effective choice for patient with loss of consciousness, unhealthy oral cavity, and risk for bleeding. Chlorhexidine is a broad-spectrum antimicrobial and antifungal agent.

Nurse implemented oral hygiene on patient twice a day in the morning and afternoon. It has been revealed that
oral hygiene should be performed at least twice a day for an effective result.

Patient’s oral cavity showed an improvement in OHAT score from 9 to 1 after 7 days of intervention with higher level of cleanliness, moist lips, moist and pink tongue, moist mucous membrane, moist and pink gums, clean and debris-free teeth, watery saliva, a few plaque, no unpleasant bad breath (halitosis), and no encrustation on palate. The improving corresponded with previous study result which reported that oral hygiene may improve quality of life and cleanliness of oral cavity in patients with stroke. Patient met the nurse for the first time with somnolence and inadequate contact and following 7 days of oral hygiene, her level of consciousness improved to apathy with more adequate contact.

The result coincided with findings by Dickinson (2016) which indicated that oral hygiene is a nursing intervention that promotes stimulation of nerves in oral cavity who were affected by neurologic deficits such as dysphagia and dysarthria. Oral hygiene improvement affects improvement in patient’s condition by reactivating the nerves.

Majority of patients with stroke were affected by neurological deficits and require assistance in every aspects including oral hygiene, especially in patient with swallowing disorders and hemiparesis. Nerve dysfunction results in lack of mouth mobility and change in oral cavity which promote the development of pathogens. Decrease of pH from 6.5 to 5 aggravates tooth decay. The environment of oral cavity in stroke patient is altered and it interferes with role of normal flora in preventing growth of pathogen. Pathogen germs in oral cavity are transmitted into the airway by the help of inspiration and into circulation system which may leads to infection of endocardium, meninges, mediastinum, vertebrae, hepatobiliary system, and joint.

Stroke leads to various disabilities. Nurses are required to perform oral hygiene in patient with stroke due to low awareness in its practice in order to improve patient’s quality of life and prevent complications. Oral hygiene was performed by using 0.2% chlorhexidine solution.

It is reported that 0.2% chlorhexidine was more effective in reducing germs in oral cavity than 0.05% chlorhexidine solution for critical, regular, or home care. Additionally, a study revealed that combination of brushing teeth and 0.2% chlorhexidine was more effective in controlling plaque and gum bleeding.

Nurse performed oral hygiene on the patient twice a day, specifically in the morning and afternoon which has been recommended by several studies. JCI stated that in order to achieve the best result in critical care patient, oral hygiene with chlorhexidine solution should be performed every 3-4 hours (6-8 times per day).

Therefore, it can be concluded that there was no significant difference of impact between using chlorhexidine once or twice a day in reducing plaque within oral cavity, however, the patients who used chlorhexidine develop pneumonia while those who did not use it were affected by pneumonia. The 0.2% chlorhexidine solution was applied for oral hygiene as gurgling solution, spray, and swab gauze based on patient’s condition. Another study combined 9 ml of 0.3% chlorhexidine with 1 ml of another solution including normal saline and then swabbed it in patient’s oral cavity.

Oral hygiene is a crucial care for patient with acute or chronic disease who is admitted in hospital or at home. The procedure includes cleaning oral cavity and then followed by applying chlorhexidine all over its surface. The selection of oral hygiene method is based on patient’s condition, it is either using toothpaste for brushing teeth or chlorhexidine solution for swab.

Brushing teeth is the most preferred method of oral hygiene that is effective in reducing plaque and gingivitis though it possesses risk for bleeding, pain, and aspiration. Brushing teeth is not recommended for patient with loss of consciousness, bleeding, or under heparin medication. Gauze swab is applicable for geriatric patient, patient with loss of consciousness, and risk for bleeding. Swab is applied by massaging oral cavity which promotes blood circulation and production of saliva thus maintains the moisture of mucous membrane within oral cavity. This may be used in combination with chlorhexidine solution for oral hygiene purpose.

Among secondary outcomes of intervention is family involvement in performing oral hygiene. It is reported that family support significantly affected patient’s health status, and it could be attained by involving them in decision making, adaptive family coping, stress management, cultural support, spiritual guidance, family visit and involvement in patient’s care that contribute to the health status. The limitation of this intervention was that nurse was only able to perform it in 7 days while it should be 2 weeks for the optimum result. Oral hygiene was performed twice a day (minimum standard) and yet to comply with hospital or JCI accreditation standards. Observation was conducted once per day before and after oral hygiene by using OHAT.

Conclusion

Oral hygiene with 0.2% chlorhexidine solution twice a day was effective in improving hygiene of patient with hemorrhagic stroke and reducing risk for complications. Patient’s oral cavity showed an improvement in OHAT score from 9 to 1 after 7 days of intervention with higher level of cleanliness, moist lips, moist and pink tongue, moist mucous membrane, moist and pink gums, clean and debris-free.
teeth, watery saliva, a few plaque, no unpleasant bad breath (halitosis), and no encrustation on palate. This study may be used as recommended intervention in managing self-care deficit (oral hygiene) to improve quality of care and life of patient with stroke and to increase the frequency of oral hygiene into twice per day for patients with neurologic disease who were admitted.

References

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