Effectiveness of Atomized Methadone on the Buccal Mucosa in the Last Days of Life: An Innovative Delivery Route When Patients Can No Longer Swallow

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Abstract

Background: Methadone is an effective long acting opioid analgesic used to manage nociceptive and neuropathic pain. Its unique lipophilic properties, absence of active metabolites and high volume of distribution allows for delivery routes that are distinct and innovative enabling patients uninterrupted and effective pain control in the last days of life.

Objective: The purpose of this study was to explore the effectiveness and ease of administration of atomized methadone solution on the buccal mucosa when alternative routes including rectal and sublingual were seen as less desirable by families and health care providers in patients in the last days of life that could no longer swallow medications.

Methods: The charts of thirty patients who took methadone solution at the end of life were retrospectively reviewed and data collected regarding the various transmucosal delivery routes used. Satisfaction questionnaires were completed by families and health care providers after death looking at the effectiveness of pain control and ease of administration when methadone solution was given sublingual, rectal or atomized on the buccal mucosa.

Conclusion: All 30 patients remained on methadone solution until their death. Of the twenty-two patients (73%) who had methadone solution atomized buccally, one was switched to rectal administration due to bitter taste and one to sublingual due to family preference. All families surveyed reported that methadone solution was effective in controlling pain and easy to administer.

Keywords: End of life; Atomized; Methadone solution; Rural

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T e mucosal oral cavity on the other hand is highly acceptable as an alternative route for drug delivery by patients and health professionals [13,14,17]. No studies or clinical trials to date have been done to explore the e f cacy of atomized methadone on the buccal mucosa with respect to its tolerability and ease of administration however anecdotal evidence use suggests that the administration of atomized methadone holds great potential for end of life care in patients needing to be rotated to another delivery route when they are no longer able to swallow their medication. Methadone's qualities of high lipid solubility, high potency and long half-life make this delivery route attractive. A recent case series published in the Journal of Palliative Medicine by Spaner (2014) suggested that methadone administration via buccal mucosa route was reliable and e f ective [17].

Figure 2: Reasons for methadone rotation.

Inclusion criteria included the following:

Presence of a life–limiting illness.

Patients admitted to the palliative care program.

Methadone solution taken where methadone may have been the primary opioid, an adjuvant opioid, or a combination opioid.

Methadone was used for pain.

No patients who used methadone at the end of life were excluded from the case series data base.

Ethics approval was obtained from the Guysborourgh-Antigonish-Strait Health Authority ethics board prior to beginning the case series. Data was collected on patients either admitted to the program on methadone or rotated to methadone during admission to the palliative care program. Demographic data collected regarding study participants and their methadone use was reviewed retrospectively.

Satisfaction questionnaires regarding effectiveness of pain control using methadone solution and ease of administration of the delivery route selected were done by telephone with families while nursing questionnaires were distributed to the various clinical settings by palliative care personnel.

The medication administration records were reviewed in each chart to collect information about opioid dose changes and break through requirements in the last 48 hours of life. Palliative care pin t of

T e average dose of methadone received in all thirty patients in 24 hours was 37.5 mg. One patient continued to swallow medications until death precluding a rotation to methadone solution. Fifeen patients who requested to die at home or in their home community, whether it was a nursing home or a rural hospital were able to stay within their community with palliative care team involvement. None required transfer to the regional hospital (Table 2).

Hospital	
Regional Hospital (89 beds)	15
Rural Hospital (<15 beds)	4
Family Home	
Town 4000-5000 population	1
Rural <3000 population	8
Nursing Home	
Town	1
Rural	1

Table 2: Location in the district health authority where death occurred.

that was easy to administer without the use of a continuous analgesic pumps or frequent dosing of a parenteral opioid to keep loved ones comfortable.

None of the patients who received sublingual or atomized