Drugs at the Bedside

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Patient Edward Jones is a non-Hispanic 55-year-old male patient. He is obese and has been smoking a pack of cigarettes a week for the past 20 years. Edward made an appointment with his primary care provider because he has been experiencing heartburn and regurgitation. He stated that he experiences heartburn three to five times a week. He also complains of a tight and burning sensation in his lower sternal area and throat. Edward states that these symptoms have been occurring for the past three years. He finally decided to make an appointment with his primary care provider due to the fact that the pain is now disrupting his sleeping pattern. He noted that he experiences the heartburn symptoms after eating fatty foods such as hotdogs and hamburgers. The physician suspects that Edward is experiencing symptoms of gastroesophageal reflux disease (GERD). A physical exam was preformed to assess Edwards complaints. Starting with Edwards mouth, there were signs of dental erosion in his posterior teeth. This is due to acid reflux going into the mouth. His lungs sounded clear bilaterally however, Edward noted that he would have occasional coughs throughout the day. The cough is due to irritation in the upper airway. Edward was then scheduled for an upper gastrointestinal (GI) endoscopy. The endoscopy was preformed to assess his lower esophageal sphincter. The endoscopy noted the degree of inflammation and scaring in the esophagus. The health care provider decided to use nonsurgical treatments for Edwards GERD. This includes lifestyle modifications such as eating a low-fat diet, exercise, no smoking, and the use of a medication called Metoclopramide.

The Drug and Administration

According to the Mayo Clinic (2018), GERD occurs when contents from the stomach flow back into the esophagus. Prokinetic drugs are medications that can assist with the symptoms of GERD. An approved prokinetic drug used for GERD is metoclopramide. The drugs generic

name is Metoclopramide and the trade name is Reglan. Another Trade name for metoclopramide is Metozolv. The therapeutic class is gastrointestinal stimulants. The pharmacologic class is dopamine agonists (Lippincott Advisor, 2019)

There are many reasons why a person would be prescribed metoclopramide. The indications vary on the route that the medication is taken. Oral metoclopramide is used for diabetic gastroparesis and suppression of GERD reflux. There are four approved indications that the Food and Drug Administration (FDA) approves metoclopramide to be used for. These indications are to control symptoms of postoperative nausea and vomiting, chemotherapy-induced nausea and vomiting, facilitation of a small bowel intubation, and facilitation of a radiological examination for the gastrointestinal tract (Burchum & Rosenthal, 2002, p. 993). There are also off-label uses for this drug. Metoclopramide is seen to be used to help treat hiccups and nausea and vomiting of early pregnancy (Burchum & Rosenthal, 2002, p. 993).

There are a few mechanisms of action of metoclopramide. It blocks dopamine and serotonin receptors in the chemoreceptor trigger zone, it stimulates motility in the upper gastrointestinal tract, and it increases lower esophageal sphincter tone (Lippincott Advisor, 2019). If the medication is taken orally its onset is 30 to 60 minutes. The medications peak is one to two hours and the duration is also one to two hours. If the medication is administered intravenously, the onset is much quicker. The onset of the medication is one to three minutes since it is directly being absorbed into the blood stream. The peak is unknown, and the duration is one to two hours. The medications half-life is four to six hours. If metoclopramide is prescribed to reduce nausea and vomiting from chemotherapy, the nurse should administer the medication 30 minutes before chemotherapy and repeat every two hours for two doses, then every three hours for three doses (Lippincott Advisor, 2019). If the medication is used for

GERD, it should be taken 30 minutes before meals and bedtime. Metoclopramide is absorbed in the gastrointestinal tract and is excreted through the kidneys. A key point to consider with patients is kidney function. If the patient has kidney failure the medication will take longer to be excreted which increases the therapeutic range.

As previously mentioned, metoclopramide has multiple methods of actions. It can reduce symptoms of nausea and vomiting by inhibiting dopamine receptors in the chemoreceptor trigger zone and it can relieve the symptoms of GERD by increasing lower esophageal sphincter tone increase motility of the upper GI tract by stimulating motility and reducing gastric emptying time. These dynamics of the drug can lead to some common and even more serious side effects. Some of the side effects include drowsiness and GI upset. Some of the more serious side effects includes depression and extra pyramidal symptoms such as rigidity tremors, twitching tardive dyskinesia, and restlessness. According to the Food and Drug Administration (2004), Parkinsonian–like symptoms have occurred for patients who have taken metoclopramide for over six months. The symptoms did subside after two to three months after discontinuing the medication. Tardive dyskinesia is of great concern when patients are taking metoclopramide. These repetitive and involuntary movements can be irreversible. Tardive dyskinesia is more common when patients have been taking metoclopramide long term (Food and Drug Administration, 2004).

It is the nurse's responsibility to ensure the patient understands how to take the medication. If the patient is prescribed metoclopramide to be taken orally, they can either have the orally disengaging tablet or a solid pill that needs to be swallowed. If the patient has the orally disintegrating tablet the nurse should teach the patient that their hands need to be dry when opening the sealed blister and to place the tablet on their tongue and let the pill dissolve for one

minute and then swallow. The medication should be taken 30 minutes before eating food and bedtime. An important point to teach the patient is to avoid activities that require alertness for two hours after doses. Patients should not drink alcohol. The nurse should also teach the patients about the general side effects and also the signs and symptoms of tardive dyskinesia. The patient should know to seek immediate medical attention and to stop taking metoclopramide if they have signs and symptoms of tardive dyskinesia.

According to the Pharmacy Checker (2019), 10 milligram pills come in a pack of 28 for about 18 dollars. This pack of 28 pills is a 1-week supply for the patient. This would mean that a month supply of metoclopramide would be 72 dollars and a year's supply would be 864 dollars. I do not think that this medication is worth the price. There are other medications that can help assist patients with their diseases and symptoms. This medication has too many serious adverse reactions such as the tardive dyskinesia. I believe the cons outweigh the pros and that this medication is not worth the risks of developing the adverse reactions especially for the cost to purchase the drug.

Drug Administration

Before the nurse administers the medication, they should think about why the patient is prescribed the drug. In the scenario of the patient with GERD, the nurse should understand that the patient is taking metoclopramide for the relief of symptoms. An initial assessment of the patient must be completed. The nurse should ask the patient if they have any history of seizures or a diagnosis of Parkinson's disease. The nurse should also ask if the patient has any history of kidney or liver impairment. If the patient answers yes to either one of those questions the nurse must ask the doctor if this medication is appropriate for the patient. The nurse should also do an assessment on the patient which emphasizes on the abdomen. Bowel sounds should be

monitored, and vital signs should be taken. The nurse should check to see if the patient is taking other medications such as medications that effect the nervous system. Since metoclopramide should be taken before meals, the nurse should ensure to administer the medication at the correct time. It is tempting to administer medications all at the same time as the other medications are due. The nurse should be mindful that metoclopramide must be administered before meals and before bedtime. A reminder should be written down or a timer should be in place so that the medication is administered at the appropriate timeframe. The nurse should always do the three checks and keep in mind the five rights of medication. The patient should be informed about the adverse and side effects. The nurse should place the call light near the patient so that they can report to the nurse of any adverse and side effects felt. The patient should be informed that they should not get up on their own or make any compelling decisions within the next two hours. Once the patient takes the medication the nurse should assess and see how the patient handles it. The nurse should come back within the next 30 to 60 minutes to reassess the patient.

What Could Go Wrong

An example of scenario where an adverse event could happen would be if the nurse does not properly assess her patient and administers an inappropriate dose of metoclopramide to the patient. If the patient has renal impairment it may take longer for the drug to be excreted out of the body. This means that the time that the drug is in the body is longer than expected. This may result in accumulation of the drug and lead to toxicity. The patient may feel symptoms of drowsiness, disorientation, and even seizures. In an ideal situation the nurse would check on the patient within the hour of administration to reassess the patient for any signs and symptoms. Once the nurse recognizes that the patient is exhibiting signs of drug toxicity the nurse will then need to contact the physician immediately. If the patient is showing signs of tardive dyskinesia,

the medication may need to be stopped over all. According to the Food and Drug Administration 2004, an anticholinergic medication or an antiparkinsonian medication may be administered to help control the extrapyramidal symptoms. Another solution for administering the medication would be to lower the dose. The oral dose for metoclopramide is 10 milligrams .One solution would be to administer five milligrams rather than the 10 milligrams per dosage. The physician and nurse will need to decide on what is the most appropriate dosage for the patient considering their condition of kidney impairment.

References

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