Should we use gentamicin cream to prevent exit-site infection in peritoneal dialysis?

Peritoneal Dialysis (PD) is one of the treatment modalities for kidney failure. With PD, the toxins from the blood are removed through the abdominal membrane (peritoneum) into the fluid, which is put into the abdomen through a catheter that has been surgically placed into the abdominal cavity. After dwelling in the abdominal cavity for some time, the fluid which now has the toxins to be removed is drained out from the abdomen (Fig. 1). After that, fresh fluid enters the abdominal cavity. This process is repeated either while the patient sleeps by a cycler machine or 3-4 times during the day using a manual system.

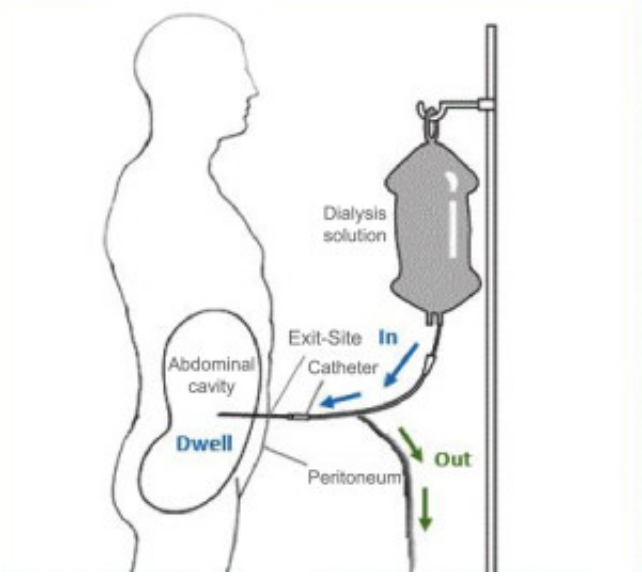

Fig. 1. Peritoneal Dialysis, adapted and modified from National Institute of Diabetes and Digestive and Kidney Diseases.

Patients can do PD at home by themselves or with the help of the family members. Therefore, it is a treatment with convenience and time flexibility. However, as with hemodialysis there are risks of infection. Catheter-related infections such as exit-site infection (redness, swelling, pain or drainage at exit-site of catheter), tunnel infection (redness, pain, or swelling of skin over the catheter) and peritonitis (infection of the fluid in the abdomen) are all serious complications of PD. These infections, especially peritonitis, can lead to catheter loss, hospitalization, PD failure and even death.

There are several potential causes of PD-related infections. One of them is poor exit-site care, which can lead to infection at the exit-site, then at the tunnel of the catheter and also at the fluid in

the abdomen. Therefore, better care at the exit-site of the catheter can prevent those infectious complications. The International Society for Peritoneal Dialysis guidelines recommends using some type of antibiotic prophylaxis to prevent exit-site infections in PD patients. Mupirocin ointment is effective in preventing infections caused by gram positive bacteria but not gram negative bacteria. Using gentamicin cream at the exit-site has been shown to prevent infections better than mupirocin. However, there is a concern about the emergence of gentamicin resistant PD infections after prolonged exposure to gentamicin.

We studied all PD-related infection during over a 10 year period, from 2004 to 2013, a time when the patients applied gentamicin cream at the exit-site (gentamicin period) in our home dialysis program. We compared this to another 10 year period, from 1991 to 2000, during which the patients received alternative approach such as mupirocin ointment or oral rifampin to prevent infection (Non-gentamicin period). We compared the rate of gentamicin resistant gram negative PD-related infections between these two periods. We also looked at the rate of PD-related infections due to yeast.

In our study, there were 265 patients altogether with a total dialysis duration of 430.46 years in the non-gentamicin period and 179 patients with a total 368.8 years of dialysis in the gentamicin period. The rate of gentamicin resistant PD infections was very low and remained the same in both periods. There were only 3 episodes of PD infection secondary to gram negative bacteria resistant to gentamicin in each period. The yeast PD-related infection rate was also very low. The total exit-site infection and the gram negative exit-site infection rates were lower in the gentamicin period when compared to non-gentamicin period: 0.318 versus 0.119 and 0.109 versus 0.027, respectively.

In conclusion, gentamicin cream is effective in preventing exit-site infections. The emergence of gentamicin resistant gram negative and yeast PD-related infections are not common even after exposure to gentamicin for a decade. Therefore, we recommend using gentamicin cream at the exit-site of the catheter to prevent infections.

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