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Curcumin Help Arteriovenous Fistula Maturation

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Abstract Curcumin has many advantages, i.e., antioxidant, antiplatelet, anti-inflammatory, and antidiabetes. It applied for the maturation of arteriovenous fistula (AVF) in the diabetic end-stage renal disease of two diabetic patients. The administration of oral Curcumin examined the maturation on the 4th week and the 8th week. The results in both cases show maturity at the end of eight weeks without any complication.

Keywords: *Curcumin, Arteriovenous fistula, maturation, diabetes mellitus type-2*

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1. Introduction

The successful operation of the arteriovenous shunt (AVF) is necessary to implement hemodialysis in patients with end-stage renal failure. AVF often experience disturbances in maturation so that it cannot function properly. AVF maturation means 600ml/minute blood flow, less than 6 mm below the skin, 6mm vein diameter, and ready for hemodialysis. The trouble is mainly by the formation of blood clots in anastomotic wounds that block blood flow. Various drugs have tried given to prevent and overcome the disorder. In this report, the results of the use of Curcumin will be presented. Curcumin is an antioxidant, antibacterial, anti-inflammatory, anti-clotting, which can prevent the onset of AVF dysfunction [1]. The use of Curcumin has proven to increase the maturation success of AVF as the two cases mentioned below.

Case no.1. Mr. M., a 60-year-old man with type 2 diabetes mellitus, a patient with late-stage kidney failure. No smoking. He must undergo hemodialysis every three days. He underwent surgery to make AVF (arterial-side to venous-end anastomosis) in the left cubital fossa. The day before the operation, he took Curcumin 2gram once a day, continued for 8 weeks. Before surgery, blood levels of sugar were checked when urea, creatinine, cholesterol, all showed normal levels except levels of urea, creatinine, leukocytes. The diameter of the cephalic vein is 3mm, and the diameter of the brachial artery is 5.1 mm. In this case, there were no signs of bleeding. The wound healed with maturation without any complications. In the 4th week, the blood vein flow was 972ml/minute, with the vein diameter 5.9 mm, and 6 mm below the skin. In the 8th week, the blood vein flow was 980ml/minute, with the vein diameter 6mm, and 6 mm below the skin.

Case no.2. Mrs. H., a 55-year-old woman, type 2 Diabetes mellitus sufferer, patients with late-stage kidney failure, undergo hemodialysis every three days. He underwent surgery to make AVF (arterial-side to venous-end anastomosis) in the left cubital fossa. Before surgery, she took 2 gram of oral Curcumin for 8 weeks. The diameter of the cephalic vein is 3mm, and the diameter of the brachial artery is 5 mm. In this case, there were no signs of bleeding. Before surgery, sugar blood levels checked when urea, creatinine, leukocytes, cholesterol. All levels normal except levels of urea and creatinine.

The wound healed with maturation without any complications.

In the 4th week, the blood vein flow was 875ml/minute, the vein diameter 6mm, 6 mm below the skin.

In the 8th week, the blood vein flow was 1204ml/minute, the vein diameter 6 mm, 6 mm below the skin.

Both patients do not smoke. The wound healed uneventfully.

The measurement was applying the portable ultrasonography of G.E. U.S.A LOGIQ™ e Pro Edition (2019).

Curcumin is a chemical compound in turmeric, administered orally in the shape of an oral pill (CURCUMIN® optimized curcumin 500mg, Sabinsa Corporation, New Jersey USA). Side effects not found in both patients.

2. Discussion

In Indonesia, Curcuma longa is a food and drink for health that easily found in the market in the form of

cooked food or the type of drinks in the form of herbs suitable for our bodies. That is Curcumin, as an active substance in the roots of Curcuma longa has the ability as a potent anti-inflammatory, is very popular and cheap. Still, no side effects have reported [2]. Curcumin has an antibacterial, anti-inflammatory, anti-clotting blood, antioxidant [1]. Some community groups also use Curcumin powder as an alternative to effective wound cover.

AVF surgery has performed on patients with end-stage chronic kidney failure for hemodialysis, resulting in about 5-15% causing failure (occluded by thrombus), so it does not mature. Research into the use of oral Curcumin and the relationship between AVF maturation has not conducted. In our experience, given the influence of Curcumin, which can prevent blood clots, the success of AVF expected to increase. As in the two cases above, it shows that Curcumin can improve maturity. In the second case, maturity occurs in the 8th week. It can also say to be a contribution of Curcumin.

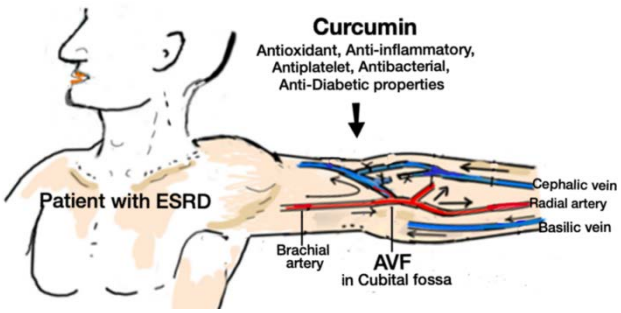

Figure 1. Description of the position of the left brachial artery anastomosis and left Cephalic vein. Curcumin has the ability as antioxidant, anti-inflammatory, antiplatelet, antibacterial, anti-diabetes (ESRD, End-Stage Renal Disease. AVF, Arteriovenous fistula)

Curcumin's vast ability to heal wounds after anastomosis surgery is very beneficial in preventing failure and surgical complications. Curcumin has an antifibrotic via lowering associated inflammation factors and leading the manifestation of anti-inflammation factors [3]. There are reports of hemorrhage (postoperative hematoma) in a patient undergoing a continuous infusion of 3-5gram Curcumin per day with unclear indications [4]. The bleeding stops, and the hematoma subsides after the Curcumin infusion is stopped [4]. Alleged bleeding due to high doses. Both patients have diabetes, then the Curcumin with its anti-diabetic properties is a correct policy provided to the patients [5]. It administered orally every day and chronically.

Conclusion, the Curcumin is strictly correct for getting a better arteriovenous fistula maturation in diabetic end-stage renal disease.

Conflict of Interest

All authors have no conflicts of interest to declare.

References

[1] Sri Vasavi ReddyA, Suresh J, Hemant KS, Singh A. A review on Curcuma longa. Res J Pharm Tech. 2012; 5: 158-65.

[2] Ghosh SS, Gehr TWB, Ghosh S. Curcumin and Chronic Kidney Disease (CKD): Major Mode of Action through Stimulating Endogenous Intestinal Alkaline Phosphatase. Molecules. 2014, 19, 20139-20156.

[3] Sun X, Liu Y, Li C, Wang X, Zhu R, Liu C, et al. Recent Advances of Curcumin in the Prevention and Treatment of Renal Fibrosis. Hindawi BioMed Research International. 2017; Volume 2017, Article ID 2418671, pp.1-9.

[4] Monzon T, Valga F, Henriquez F. Curcumin intake in hemodialysis patients. Nefrologia. 2018; 38(6): 660-680.

[5] Kazazis C, Vallianou NG, Kollas A, Evangelopoulos A. Curcumin and Diabetes: Mechanism of action and anti-Diabetic properties. CURRENT TOPICS IN NUTRACEUTICAL RESEARCH. 2014; 12 (4, pp): 135-142.