Objective: Type 2 diabetes is mainly the metabolic defect involving multiple organs. To conclude their intricate relationships, the term ‘ominous octet’ had been proposed to denote this phenomenon. In this study, we are going to enroll older men without any medications for MetS components to further elucidate the relationships between normoglycemic state and MetS. Methods: We enrolled male subjects with FPG less than 100 mg/dL and aged 65 and older undergoing routine health checkups in Taiwan. After excluding subjects taking medications might affect components of MetS, a total of 6,679 men were eligible for analysis. Study subjects were further grouped into tertiles (< 91 mg/dl, 92 ~ 95 mg/dl and 96 ~ 99 mg/dl from FPG1 to 3 respectively). Results: There was a significant trend between the FPG and percentages of subjects having MetS (p = 0.009). The relationships between the MetS components were higher in FPG 2 and FPG 3 than FPG 1. In simple correlation, all of the MetS and LDL-C were positively correlated with FPG level and multiple regression further confirmed the same result except for HDL-C became non-significant. Subjects in FPG3 had significantly higher ORs (ORs = 1.19) for having MetS than those in FPG1. Conclusions: In conclusion, higher FPG still had higher risk of having MetS in normoglycemic range of elderly male. More strict FPG level control may be valuable in CVD prevention and warrants further investigations.