

00514 New option of PDT for peripheral lung cancer

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[Background] In Japan, photodynamic therapy (PDT) was previously recommended only as a treatment option for centrally located early lung cancers. However, it has recently been approved for the treatment of other cancers including advanced lung cancer and peripheral lung cancer by the Japanese Ministry of Health, Labour and Welfare. PDT for peripheral lung cancer could be one of the good treatment options for patients without surgical indication such as poor lung function. To perform PDT for peripheral lung nodules, it is necessary to use a thin and flexible laser fiber that can sufficiently reach the peripheral lung parenchyma. In this study, we evaluated the feasibility of a plastic laser fiber for peripheral PDT.

[Methods] The cylindrical light diffuser Model RD (Medlight, Switzerland) was used as a laser fiber for peripheral PDT. It is a radially emitting fiber that was produced for intraluminal PDT. This fiber is thin (0.98 mm), very flexible, and made of plastic; therefore, we thought that it is suitable as a laser fiber to irradiate laser light for peripheral nodules. The PD laser (Panasonic, Japan) was used for NPe6 PDT, thus a connector PD laser and an RD cylindrical light diffuser were produced. The laser output and the light irradiation distribution of the RD cylindrical light diffuser were measured and compared with those of the Panasonic cylindrical probe currently used for PDT.

[Results] The mean difference in laser output and displayed power on the PD laser was $17.7 \pm 1.6\%$ for the Panasonic cylindrical fiber and $11.6 \pm 3.1\%$ for the RD cylindrical light diffuser. For the light irradiation distribution, the RD cylindrical light diffuser was able to produce equal or more uniform irradiation than the Panasonic cylindrical fiber.

[Conclusion] The cylindrical light diffuser Model RD showed comparable laser irradiation to the Panasonic cylindrical fiber. We conclude that it is feasible to treat peripheral lung cancer by PDT using this new fiber.