**Additional file 4:** Analysis of Progression-Free Survival (PFS), targeted therapy and mutation profile of *EGFR* single (S) and co-mutation (C) cases (N = 23, Lung cancer patients)

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| ***EGFR* mutated lung cancer patients: PFS analyzed**  |
| **No.** | ***EGFR* mutation detected on NGS** | ***EGFR* Pathway specific and/ or TP53 co-mutation** | **Type** | **PFS****(months)** | **Censor** | **Targeted****therapy** | **Other mutation** |
| 1. | Exon 19 deletion - p.E746\_A750del | \_ | S | 6 | 1 | Afatinib | SMAD4 - p.S144\* |
| 2. | Exon 19 deletion - p.E746\_A750del  | \_ | S | 11 | 1 | Osimertinib | \_ |
| 3. | Exon 19 deletion - p.L747\_A750del | \_ | S | 6 | 1 | Erlotinib | c-MET amplification |
| 4. | Exon 19 deletion - p.E746\_A750del; Exon 20 - p.T790M | \_ | S | 12 | 1 | Afatinib | \_ |
| 5. | Exon 19 deletion - p.E746\_A750del; EvIII, CNV | \_ | S | 1.6 | 0 | Osimertinib | \_ |
| 6. | Exon 21 - p.L858R | \_ | S | 9.5 | 1 | Gefitinib | KDR - p.Q472H |
| 7. | Exon 21 - p.L858R | \_ | S | 18 | 1 | Erlotinib | \_ |
| 8. | Exon 21 - p.L858R | \_ | S | 5 | 1 | Osimertinib | FGFR3 - p.G90del; CDK4 - CNV |
| 9. | Exon 19 deletion - p.E746\_A750del | TP53 - p.R273H | C | 1.5 | 1 | Afatinib | \_ |
| 10. | Exon 19 deletion - p.E746\_E749del | TP53 - p.R213Q, p.P72A | C | 4 | 1 | Afatinib | \_ |
| 11. | Exon 19 deletion - p.E746\_A750del | KRAS - p.G13D | C | 6 | 1 | Gefitinib | \_ |
| 12. | Exon 19 - p.E746\_L747delinsVP | TRIM24BRAF.T12B10 | C | 1.5 | 1 | Gefitinib | \_ |
| 13. | Exon 19 deletion - p.E746\_E749del; Exon 20 - p.T790M | *KRAS* - p.G13C | C | 10.5 | 1 | Osimertinib | \_ |
| 14. | Exon 21 - p.L858R | TP53 - p.H168R, p.P72R | C | 1 | 1 | Oral TKI | c-MET amplification |
| 15. | Exon 21 - p.L858R | TP53 - p.F270C | C | 2 | 1 | Afatinib | \_ |
| 16. | Exon 21 - p.L858R | TP53 - p.P72A; PIK3CA - p.H1047R | C | 6 | 1 | Afatinib | \_ |
|  |
| ***EGFR* mutated lung cancer patients not analyzed for PFS** |
| 17. | Exon 19 deletion - p.E746\_A750del |   | S | Terminally ill patient   | Erlotinib | \_ |
| 18. | Exon 19 deletion - p.E746\_A750del; EvIII fusion |   | S | Outpatient | \_ | MET - Exon 14 skipping |
| 19. | Uncommon Exon 20 - p.A767\_S768insSVD |   | S | Patient did not take TKI | \_ | \_ |
| 20. | Uncommon Exon 20 mutation - D770\_771insG | *TP53* - A161T | C | - | \_ |  |
| 21. | Uncommon Exon 20 mutation - p.P772\_H773insHV | TP53 - p.G279E, PTEN - p.K267fs | C | \_ | Nivolumab |  |
| 22. | Uncommon Exon 20 mutation - p.D770delinsES | PIK3CA - p.E542K | C | \_ | Nivolumab |  |
| 23. | Exon 21 - p.L858R; Exon 20 - p.T790M | TP53 - p.A276V | C | Outpatient | \_ | \_ |