Supplementary material of Clinical characteristics and oncological outcomes of surgically treated early onset gastric adenocarcinoma

Rompen et al.

R-code:
survival analyses univariate and cox regression

name of analysis: early onset gastric adenocarcinoma

```
# packages
install.packages(c("survival", "survminer"))
install.packages(c("ggplot2", "ggpubr", "dplyr" , "ggfortify"))
install.packages(c("ggfortify"))
library(ggplot2)
library(ggpubr)
library(readxl)
library(survival)
library(survminer)
library(dplyr)
library(ggfortify)


#load data
library(readxl)
filexyz <- read_excel("***")
View(filexyz)



###############################univariate
covariates_OS <- c("Earlyonset", "ASA", "Sex",
            "Grade", "Signet_Ring","Neoadjuvant", "OP_Type", "Complications",
            "Stage","pT", "pN","pM", "R1", "Regression", "Timespan", "LNR")
univ_formulas_OS <- sapply(covariates_OS,
                function(x) as.formula(paste('Surv(OS, Status)~', x)))

univ_models_OS <- lapply(univ_formulas_OS, function(x){coxph(x, data = filexyz)})

# Extract data
univ_results_OS <- lapply(univ_models_OS,
                function(x){
                  x <- summary(x)
                  p.value<-signif(x$wald["pvalue"], digits=2)
                  wald.test<-signif(x$wald["test"], digits=2)
```

```r
            beta<-signif(x$coef[1], digits=2);#coeficient beta
            HR <-signif(x$coef[2], digits=2);#exp(beta)
            HR.confint.lower <- signif(x$conf.int[,"lower .95"], 2)
            HR.confint.upper <- signif(x$conf.int[,"upper .95"],2)
            HR <- paste0(HR, " (",
                  HR.confint.lower, "-", HR.confint.upper, ")")
            res<-c(beta, HR, wald.test, p.value)
            names(res)<-c("beta", "HR (95% CI for HR)", "wald.test",
                  "p.value")
            return(res)
            #return(exp(cbind(coef(x),confint(x))))
         })

univ_results_OS

## kaplan

model_km_OS <- survfit(Surv(OS, Status) ~ Earlyonset, type="kaplan-meier", data = filexyz)

model_km_OS

# kaplan meier 2

ggsurvplot(
  model_km_OS,
  data = filexyz,
  xlim = c(0, 60),
  break.x.by = 12,
  size = 1,              # change line size
  palette =
    c("#E7B800", "#2E9FDF"),# custom color palettes
  conf.int = TRUE,        # Add confidence interval
  pval = TRUE,            # Add p-value
  risk.table = TRUE,      # Add risk table
  risk.table.col = "BLACK",# Risk table color by groups
  legend.labs =
    c("late-onset", "early-onset"),   # Change legend labels
  risk.table.height = 0.25, # Useful to change when you have multiple groups
  ggtheme = theme_bw()     # Change ggplot2 theme
)

##multivariate
res.cox_OS <- coxph(Surv(OS, Status) ~ +
            Earlyonset+ASA+
             OP_Type+Complications+Stage+
             R1+LNR,
            data =  filexyz)
```

```r
summary(res.cox_OS)


## ggforest(res.cox_OS)

ggforest(
  res.cox_OS,
  data = filexyz,
  main = "Multivariate Overall Survival - Hazard ratio",
  cpositions = c(0.02, 0.22, 0.4),
  fontsize = 0.7,
  refLabel = "reference",
  noDigits = 2
)

###DFS

covariates_DFS <- c("Earlyonset", "ASA", "Sex",
            "Grade", "Signet_Ring","Neoadjuvant", "OP_Type", "Complications",
            "Stage","pT", "pN","pM", "R1", "Regression", "LNR", "Timespan")
univ_formulas_DFS <- sapply(covariates_DFS,
                function(x) as.formula(paste('Surv(NED_op, RezidivProgress)~', x)))

univ_models_DFS <- lapply(univ_formulas_DFS, function(x){coxph(x, data = filexyz)})

# Extract data
univ_results_DFS <- lapply(univ_models_DFS,
                function(x){
                  x <- summary(x)
                  p.value<-signif(x$wald["pvalue"], digits=2)
                  wald.test<-signif(x$wald["test"], digits=2)
                  beta<-signif(x$coef[1], digits=2);#coeficient beta
                  HR <-signif(x$coef[2], digits=2);#exp(beta)
                  HR.confint.lower <- signif(x$conf.int[,"lower .95"], 2)
                  HR.confint.upper <- signif(x$conf.int[,"upper .95"],2)
                  HR <- paste0(HR, " (",
                        HR.confint.lower, "-", HR.confint.upper, ")")
                  res<-c(beta, HR, wald.test, p.value)
                  names(res)<-c("beta", "HR (95% CI for HR)", "wald.test",
                        "p.value")
                  return(res)
                  #return(exp(cbind(coef(x),confint(x))))
                })

univ_results_DFS

## kaplan
```

```r
model_km_DFS <- survfit(Surv(NED_op, RezidivProgress) ~ Earlyonset, type="kaplan-meier",
data = filexyz)

model_km_DFS

# kaplan meier 2

ggsurvplot(
  model_km_DFS,
  data = filexyz,
  xlim = c(0, 60),
  break.x.by = 12,
  size = 1,              # change line size
  palette =
    c("#E7B800", "#2E9FDF"),# custom color palettes
  conf.int = TRUE,       # Add confidence interval
  pval = TRUE,           # Add p-value
  risk.table = TRUE,     # Add risk table
  risk.table.col = "BLACK",# Risk table color by groups
  legend.labs =
    c("late-onset", "early-onset"),   # Change legend labels
  risk.table.height = 0.25, # Useful to change when you have multiple groups
  ggtheme = theme_bw()    # Change ggplot2 theme
)

##multivariate
res.cox_DFS <- coxph(Surv(NED_op, RezidivProgress) ~ Earlyonset+Neoadjuvant+
            OP_Type+Stage+
            R1+LNR,
          data =  filexyz)
summary(res.cox_DFS)


## ggforest(res.cox_DFS)

ggforest(
  res.cox_DFS,
  data = filexyz,
  main = "Multivariate DFS - Hazard ratio",
  cpositions = c(0.02, 0.22, 0.4),
  fontsize = 0.7,
  refLabel = "reference",
  noDigits = 2
)
```