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QUESTION 2: When do common blood biomarkers such as C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) or Procalcitonin normalize after spine surgery?

RECOMMENDATION: Following spinal surgery with or without instrumentation, CRP values peak on days 2-3 postoperatively and normalize within 14 days. ESR also normalizes within 14 days.

LEVEL OF EVIDENCE: Moderate

DELEGATE VOTE: Agree: 50%, Disagree: 29%, Abstain: 21% (NO Consensus)

RATIONALE

Multiple prospective studies suggest that CRP values peak within 2-3 days postoperatively (peak levels depend on extent of surgery, levels involved, etc.) and decrease back to baseline within 14 days. A rapid decline of CRP postoperatively is interrupted if postoperative infection sets in and a secondary rise occurs [1,2]. Prospective studies have shown that ESR peaks by day four following spinal surgery and in the majority of cases normalizes by two weeks postoperatively [3]. However, monitoring of CRP level was found to be superior to that of ESR for early detection of infections after cervical spine surgery in a series of 51 cases of anterior cervical fusion [4]. A second rise of CRP and ESR or failure to decline is an indicator of potential surgical site infection [5,6]. Limited data is available on the value of Procalcitonin [7].

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QUESTION 3: Is there a role for the use of serum biomarker for the diagnosis of spinal surgical site infection (SSI)?

RECOMMENDATION: Yes, C-reactive protein (CRP) is a predictable, reliable and economical screening tool for early infectious complications following spine surgery. Erythrocyte sedimentation rate and white blood cell count have nonspecific kinetics that are less helpful in identifying early SSI.

LEVEL OF EVIDENCE: Moderate

DELEGATE VOTE: Agree: 67%, Disagree: 25%, Abstain: 8% (Super Majority, Weak Consensus)

RATIONALE

In a prospective study involving 348 patients who underwent decompression laminectomy, postoperative CRP was helpful in detecting early infectious complications following surgery. As a predictor for early wound infection, the sensitivity, specificity, positive predictive value and negative predictive value for abnormal CRP responses were calculated as 100%, 96.8%, 31.3% and 100%, respectively. Close observation of the surgical site is recommended in patients with abnormal CRP values at day five or seven postoperatively, namely for failure to decline or a secondary rise [1].

Of 149 patients undergoing elective spine surgery, 20 developed infectious SSI complications. Postoperative CRP kinetics were predictable and indicative of early infection where a secondary rise or lack of CRP decrease had a sensitivity, specificity, positive predictive value and negative predictive value of 82%, 48%, 41%, and 86% for infectious complications, respectively [2].

Out of 400 patients undergoing lumbar micro-discectomy over a 15-month period, 9 developed infectious complications related to surgery. CRP values were shown to be a reliable and economic screening tool in identifying the patients at risk with a sensitivity for serial CRP testing (day one and five postoperatively) calculated as 100% with a specificity of 95.8% [3].

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