



Effects of Platelet Count in Patients Undergoing Total Pneumonectomy

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Case Study

There are lots of indirect evidence that lung disease plays an important role in platelet release or Thrombopoiesis [1-4]. Recently, by using high quality TPBM and a series of megakaryocyte specific reporter markers, Lefrançois et al. [5] directly observed that platelet release occurs in the lungs of mice from extrapulmonary megakaryocytes and that this release accounts for approximately 50% of total platelet production. This is an explosive discovery so we want to validate it from a clinical perspective. According to the author's conclusion, we suspect that platelet values of patients with pneumonectomy, a surgical procedure to remove a lung, are bound to be affected, at least half of the value. In order to verify the results, 124 patients were retrospectively reviewed, of which 85 received total pneumonectomy, and 39 received total gastrectomy. We collected the preoperative platelet counts and postoperative platelet counts of patients. Due to the nonrandomized nature of this study, we compared the total pneumonectomy with total gastrectomy groups that matched on possible confounding variables. The results are as follows. The platelet change counts, postoperative value minus the preoperative value, of patients with pneumonectomy in day 1, day 3, day 5 and day 7 were -27, -20, -17, 13. The platelet change counts of patients with total gastrectomy in day 1, day 3, day 5 and day 7, were -19, -30, -6, 24. The platelet count of the two groups was the lowest in day 1, and then increased gradually, which was higher than the baseline value in day 7. On the day 1, day 5 and day 7, platelet counts in group P were lower than those in group G, but only the result of day 5, -17.1 vs. -5.7, has statistical significance ($p=0.005$) (Table 1).

In terms of the results, there was no significant difference between the two groups. This is in opposition to the findings; approximately 50% of total platelet production in lungs, of Lefrançois et al. Limitations in the study may have led to negative results. One of the limitations is the sampling time, because the study is retrospective, the most timely sampling time is within 24 hrs after completion of total pneumonectomy, if the sampling can be completed immediately after total pneumonectomy to measure platelet values, may obtain a more significant difference in the results. Another limitation is that the number of samples we collect is inadequate, and if we had enough samples, we might be able to support the authors' conclusions. In conclusion, though the authors present a significant finding, how to interpret the result in human beings remains to be explored.

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Table 1: Platelet change counts in day 1, day 3, day 5 and day 7.

	Treatment	Mean, 10^9 /L	p
Day 1	Pneumonectomy (n=77)	-27.0	0.159
	Gastrectomy (n=38)	-19.2	
Day 3	Pneumonectomy (n=52)	-20.8	0.005
	Gastrectomy (n=31)	-30.4	
Day 5	Pneumonectomy (n=39)	-17.1	0.005
	Gastrectomy (n=20)	-5.7	
Day 7	Pneumonectomy (n=53)	12.8	0.180
	Gastrectomy (n=14)	23.6	

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