



Analysis of Transfusion Transmitted Infections in Tattooed versus Non-tattooed Donors in a Tertiary Care Centre from Western India

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ABSTRACT

Background

Transfusion Transmitted Infections (TTI) is an important problem in voluntary blood donors. Certain studies suggest specific association of some of the TTI with the practice of tattooing which is also prevalent in Indian subcontinent. Hence we tried to assess the difference in prevalence of TTI among tattooed and non-tattooed voluntary blood donors at our centre.

Methods

50 tattooed blood donors presenting in our blood bank were compared with 50 non-tattooed donors matched for age and gender. Tattooed donors were assessed for the site and size of tattoo and whether it was done by a professional tattoo artist. As per the institutional policy the deferral period after getting a tattoo was 1 year. The donated blood is tested for TTIs like Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Syphilis and Malaria.

Results

16% of tattooed individuals were positive for TTI as compared to 4% of non-tattooed individuals, the difference being statistically significant. Most common TTIs in tattooed group were HCV (50%) followed by HBV (14%), both HCV and HBV (10%) and HIV (6%). Most common TTI in non-tattooed group was HBV (6%). Size and site of tattoo were not associated with increased risk of TTI; however getting tattoo from a non-professional artist showed increased risk of TTI as compared to a professional one (23.3% versus 5%).

Conclusion

Tattooed donors had a significantly increased risk for TTI, HCV being most common. Spreading awareness about association of tattooing with the risk of TTI in general populations cannot be overemphasized.



INTRODUCTION

- With every unit of blood, there is 1% chance of transfusion-associated problems including transfusion transmitted infections [TTI] [1].
- TTI is an important problem in voluntary blood donor.
- The overall seroprevalence of TTI in blood donors was 1.37% with a higher prevalence in replacement donors than voluntary donors. Seropositivity rates of HIV, HBV, HCV, malaria & Syphilis were 0.06%, 0.91%, 0.11%, 0.25% & 0.01% respectively in an Indian study [2].
- **Tattooing**◇ the production of a permanent design on the human body through the introduction of external pigments and/or dyes into the dermis using needles or other sharp instruments.
- Certain studies suggest specific association of some of the TTI with the practice of tattooing, however the available evidence remains inconsistent.
- Hence we tried to assess the difference in prevalence of TTI amongst tattooed and non-tattooed voluntary blood donors at our centre.

MATERIAL AND METHODS

- ❑ 50 tattooed blood donors presenting in our blood bank from 1st may 2018 to 31st august 2018 were compared with 50 non-tattooed donors matched for age and gender .
- ❑ Detailed history of sexual contact, iv drug use, blood transfusion, liver disease and sexually transmitted disease was taken.
- ❑ Tattooed donors were assessed for the site and size of tattoo and whether it was done by a professional tattoo artist.
- ❑ As per the institutional policy the deferral period after getting a tattoo was 1 year. [9]

◇ The reason for this is to cover the window period when serological tests for infections that could be transmitted by tattoos might be negative.

- ❑ The donated blood was tested for TTIs like Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Syphilis and Malaria.
- ❑ Methods used for screening

HIV ◇ ELISA (Enzaid / Erba)
HBsAg ◇ ELISA (Erba / Merilisa)
Anti-HCV ◇ ELISA (Erba / Merilisa)
Syphilis ◇ Rapid Plasma Reagent test (Reckon)
Malaria ◇ peripheral smear (thick smear)



STATISTICAL METHOD

The Statistical Package for Social Sciences, version 20 (SPSS Inc., Chikago, IL) was used to analyze the data. P value of less than 0.05 was considered statistically significant. Qualitative data was analysed using chi square test to assess contribution of different tattoo characteristics in acquiring TTI.

RESULT

- ❖ 16% (n=8) of tattooed individuals were positive for TTI as compared to 4% (n=2) of non tattooed individuals, the difference being statistically significant (p=0.045).
- ❖ Most common TTIs in tattooed group were HBV (50%, n=4) followed by HCV (25%, n=2), both HCV and HBV (12.5%, n=1) , HIV (12.5%, n=1), syphilis (0%) and malaria (0%).
- ❖ Both the donors in non-tattooed group had HBV (100%, n=2).
- ❖ Size, site and number of tattoo were not associated with increased risk of TTI;
- ❖ However getting tattoo from a non-professional artist showed increased risk of TTI as compared to a professional one (22.8% versus 0%) (p=0.0433).

TABLE 1 : Donor Characteristics

	Tattooed (n=50)	Non-tattooed (n=50)
Median Age, years (Range)	40 (19-55)	44 (18-55)
Male Gender	88% (n=44)	92 (n=46)
Blood Transfusion history		
Has donated blood	50% (n=25)	64% (n=32)
Has received blood	0%	0%



TABLE 2 : Tattoo Characteristics

Site	
Forearm	70 % (n=35)
Leg	30% (n=15)
Chest	20% (n=10)
Back	20% (n=10)
Head	16% (n=8)
Size	
< 5 cm	76% (n=38)
≥ 5 cm	24% (n=12)
Number	
Single	32% (n=16)
Multiple	68% (n=34)
Artist	
Professional	30% (n=15)
Non-professional	70% (n=35)

DISCUSSION

- ❑ *There is inconsistent evidence regarding association of tattooing and TTI worldwide.*
- ❑ A meta-analysis indicated that tattooing is associated with a higher risk of hepatitis C infection [3]
- ❑ A systematic review suggested strong evidence of HBV, HCV and syphilis; and a possible suggestion for HIV transmission with tattooing [4]
- ❑ While another systematic review showed no significant association of tattooing and transmission of HBV [5]
- ❑ A study from Netherlands also suggested lack of association between tattooing and transmission of HBV/HCV [6]



- ***Data on different categories of tattooing and TTI remains very limited.***
- A study from Canada suggested increasing number of tattoos [Odds ratio (OR) of 2 ± 04 for two tattoos and 3 ± 48 for 3 tattoos], & having a non-professional tattoo [OR 3 ± 25] had increased risk of TTI [7]
- We did not find any association between tattoo site and TTI. A few associations between tattoo site and design with certain TTIs were statistically significant in one study [7]
- ❖ We found HBV as the most common TTI. A study in Iran showed HCV followed by HBV and HIV as common TTIs in this population [8].

CONCLUSION

- Tattooed donors had a significantly increased risk for TTI
- Tattooing by non-professional artists significantly increased risk of TTI
- HBV was the most common infection transmitted by tattooed donors
- Larger studies are required for stronger evidence regarding such association
- Need of spreading the awareness about risk of TTI by tattooing in general population cannot be overemphasized

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- [9] 2018.11.29 _ Draft G.S.R. 1152(E)_ Amendment in Part B Part XII B pertains to Blood centre and Blood components